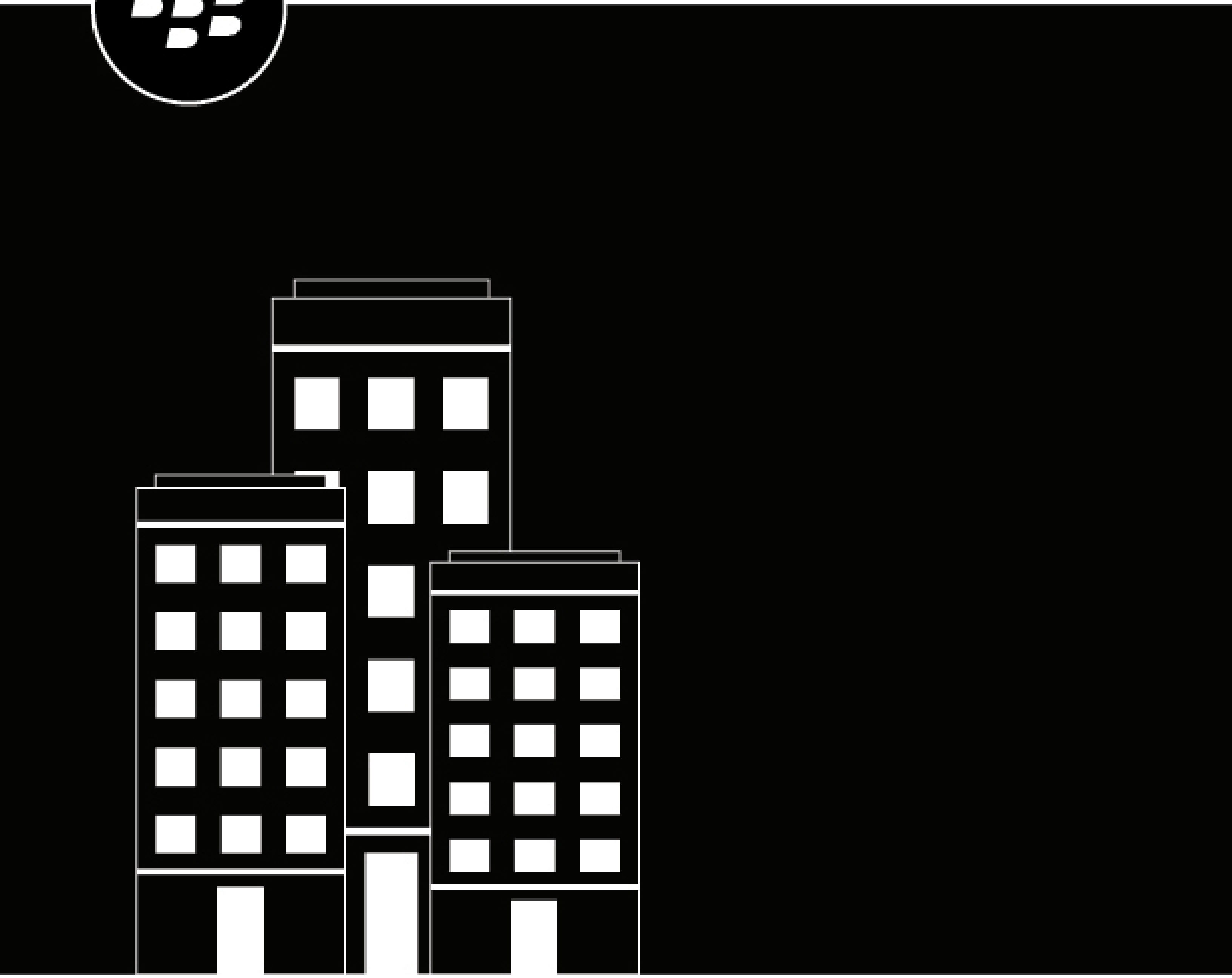


Cylance Endpoint Security

Setup Guide

Contents

Cylance Endpoint Security requirements

To get started setting up Cylance Endpoint Security, review this section and verify that your organization's environment satisfies the requirements of the solution's features and components.

Requirements: Cylance console

Item	Requirements
Supported browsers	Latest version of: • Google Chrome (recommended) • Microsoft Edge • Mozilla Firefox **Note:** If you are using Firefox to access the management console, do not use private browser mode, do not enable "Delete cookies and site data when Firefox is closed", and do not disable service workers. Any of these configurations can cause some screens in the console to not load as expected.
Supported languages	Set your browser to any of the following supported languages: • English • French • German • Italian • Japanese • Korean • Portuguese • Spanish

Requirements: CylancePROTECT Desktop

For information about the operating systems that each of CylancePROTECT Desktop agents supports, see the Cylance Endpoint Security compatibility matrix. To view the support timelines for all BlackBerry products, see the BlackBerry Enterprise Software Lifecycle Reference Guide.

The following tables list the supported operating systems that have additional requirements or considerations. Note that these tables are not a comprehensive list of supported operating systems. If an operating system is not listed in the tables, it means that there are no additional requirements or considerations.

Windows OS

Supported OS	Requirements
All supported Windows OS versions	• .NET Framework 4.6.2 or later • TLS 1.2 • For virtual machine requirements, deployment guidance, and best practices, see Appendix: Best practices for deploying CylancePROTECT Desktop on Windows virtual machines. • CylancePROTECT Desktop does not support scanning unhydrated files from Microsoft OneDrive.
Windows 11 (64-bit)	• Case-sensitive file systems are not supported. • Windows 11 multi-session is currently not supported.
Windows 10 (32-bit, 64-bit)	• Case-sensitive file systems are not supported. • Windows 10 multi-session is currently not supported. • Windows 10 (v1809, October 2018 update): Unified Write Filter (UWF) is not supported. Disable UWF before installing the agent. • Windows 10 (v1709, Fall Creators update): See KB 65750. • Windows 10 Anniversary (v1607, Anniversary update): It is recommended to disable Windows Subsystem for Linux.
Windows 7 (32-bit, 64-bit)	• Embedded Standard 7 and Embedded POSReady 7 are supported. • Install the root certificates required for the agent.
Windows Server 2022 (64-bit)	• Standard, Data Center, and Core editions are supported. • For Data Center editions, the agent does not support: • Hyper-V Server Role for Shielded Virtual Machines • Host Guardian Hyper-V Support • Software-defined Networking • Storage Spaces Direct • Storage Server 2022 is not supported.
Windows Server 2019 (64-bit)	• Standard, Data Center, and Core editions are supported. • For Data Center editions, the agent does not support: • Hyper-V Server Role for Shielded Virtual Machines • Host Guardian Hyper-V Support • Software-defined Networking • Storage Spaces Direct • Storage Server 2019 is not supported.
Windows Server 2016 (64-bit)	• Standard, Data Center, Essentials, and Server Core editions are supported. • Nano Server and Storage Server are not supported.
Windows Server 2012 and 2012 R2 (64-bit)	• Standard, Data Center, Essentials, Server Core, Embedded, and Foundation editions are supported. • Minimal Server Interface and Storage Server are not supported.

macOS

Supported OS	Requirements
All supported macOS versions	• TLS 1.2 • Verify that the following root certificates are installed. If they are missing, the agent might not start, or the device might not be able to communicate with the management console. For more information, see KB66608. • VeriSign Class 3 Public Primary Certification Authority - G5 • GeoTrust Global CA • Thawte Primary Root CA • DigiCert Global Root • For virtual machine requirements, deployment guidance, and best practices, see Appendix: Best practices for deploying CylancePROTECT Desktop on Windows virtual machines. • Case-sensitive volume formats are not supported.
macOS Monterey (12)	• See KB66578. • Enable Full Disk Access. If Full Disk Access is not enabled, CylancePROTECT Desktop cannot process files secured by user data protection. For more information, see KB66427. • See Troubleshooting macOS installations: Supporting the Endpoint Security system extension on macOS Big Sur. • The following Memory Protection violations are supported: Remote Allocation of Memory, Remote Mapping of Memory, Remote Write to Memory, Remote Unmap of Memory. Other Memory Protection violations are not supported for Monterey.
macOS Big Sur (11)	• See KB66578. • Enable Full Disk Access. If Full Disk Access is not enabled, CylancePROTECT Desktop cannot process files secured by user data protection. For more information, see KB66427. • See Troubleshooting macOS installations: Supporting the Endpoint Security system extension on macOS Big Sur. • The following Memory Protection violations are supported: Remote Allocation of Memory, Remote Mapping of Memory, Remote Write to Memory, Remote Unmap of Memory. Other Memory Protection violations are not supported for Big Sur.
macOS Catalina (10.15)	• See KB66578. • Enable Full Disk Access. If Full Disk Access is not enabled, CylancePROTECT Desktop cannot process files secured by user data protection. For more information, see KB66427.

Linux OS

Supported OS	Requirements
All supported Linux OS versions	• See the Supported Linux kernels spreadsheet. • TLS 1.2 • Required packages: • `dbus-libs` (For RHEL/CentOS 7.x or 8.x, version 1.10.24 or higher is required.) • `glibc` • `gtk3` (for RHEL/CentOS 7.x) • `libgcc` • `openssl` (for RHEL/CentOS 6.x) • `openssl-libs` (for RHEL/CentOS 7.x) • `sqlite` • Root certificates: • VeriSign Class 3 Public Primary Certification Authority - G5 • GeoTrust Global CA • Thawte Primary Root CA • DigiCert Global Root • GNOME versions supported for the 1590 agent: • 3.20 • 3.14 • 3.10 • 3.8 • Virtual machines are supported.
Ubuntu 22.04 LTS (64-bit) Ubuntu 20.04 LTS (64-bit) Ubuntu 20.04 (64-bit) Ubuntu 18.04 (64-bit)	• Azure-specific Ubuntu kernels are not supported. • Use the CylancePROTECT Desktop Secure Boot CA certificate to support UEFI Secure Boot. For more information, see KB73487.
Red Hat Enterprise Linux 9 (64-bit) Red Hat Enterprise Linux/CentOS 8 (64-bit) Red Hat Enterprise Linux/CentOS 7 (64-bit)	• Use the CylancePROTECT Desktop Secure Boot CA certificate to support UEFI Secure Boot. For more information, see KB73487. • FIPS is supported. For instructions to enable FIPS, see the Red Hat documentation for your OS.

Using CylancePROTECT Desktop with other antivirus software

If third-party antivirus software is installed on devices with CylancePROTECT Desktop, you may need to perform some additional configuration tasks to ensure that those products do not interfere with the functionality of CylancePROTECT Desktop. For more information, see KB66448.

Hardware requirements

Hardware component	Requirements
Processor (CPU)	Minimum of two processor cores that also: • Supports the SSE2 Instruction set • Supports the x86_64 instruction set • Supports Apple silicon processors, including M1 and M2; requires Rosetta • Does not support the ARM instruction set for Windows and Linux
Memory (RAM)	2 GB
Disk space (hard drive)	• 600 MB • Disk space usage can increase depending on the features that are enabled (for example, setting the log level to verbose)

Root certificates required for the CylancePROTECT Desktop agent for Windows

On some versions of Windows, the CylancePROTECT Desktop agent requires the following root certificates (see Requirements: CylancePROTECT Desktop). If root certificates are missing, the agent might not start or the device might not be able to communicate with the management console. For more information about missing root certificates, see KB66608.

- Thawte Primary Root CA
- Thawte Timestamping CA
- Thawte Primary Root CA - G3
- Microsoft Root Certificate Authority 2010
- UTN-USERFirst-Object
- VeriSign Universal Root Certification Authority
- DigiCert High Assurance EV Root CA
- GlobalSign Root CA
- USERTrust RSA Certification Authority
- DigiCert Assured ID Root CA
- VeriSign Class 3 Public Primary Certification Authority - G5
- DigiCert Global Root CA
- Starfield Class 2 Certification Authority

For more information, see the following resources:

- Thawte Root Certificates
- PKI Repository - Microsoft PKI Services
- DigiCert Roots and Intermediates
- DigiCert Trusted Root Authority Certificates
- GlobalSign Root Certificates
- How to Download & Install Sectigo Intermediate Certificates - RSA
- Obtain the VeriSign Class 3 Public Primary Certification Authority - G5 root certificate

Requirements: CylanceOPTICS

Agents

Agent	Requirements
CylancePROTECT Desktop agent	• You must install the CylancePROTECT Desktop agent on a device before you install the CylanceOPTICS agent. The CylanceOPTICS agent requires the CylancePROTECT Desktop to function. • BlackBerry recommends installing the latest available version of the CylancePROTECT Desktop agent to benefit from the latest features and fixes. • The CylanceOPTICS agent version 3.1 and 3.2 require the following minimum versions of the CylancePROTECT Desktop agent. Depending on the device OS, a later minimum version might be required, and there may be other requirements for that OS. Review the compatibility matrix and the CylancePROTECT Desktop requirements to verify that you install a supported CylancePROTECT Desktop agent and meet all other requirements. • Windows: 2.1.1574.x • macOS: 3.0.1000.x • Linux: 2.1.1580.x
CylanceOPTICS agent	• BlackBerry recommends installing the latest available version of the CylanceOPTICS agent on each device. The latest version of the agent is 3.2, and is available by contacting BlackBerry Sales to transition from CylanceOPTICS 2.x tenant services to CylanceOPTICS 3.x tenant services. • CylanceOPTICS agent version 3.x is required to support automatically storing collected data in the CylanceOPTICS cloud database. Earlier versions of the agent store CylanceOPTICS data in a local database on the device. • In agent 3.x, the data that is collected by the CylanceOPTICS sensors is cached locally before it is sent to the CylanceOPTICS cloud database. If the device is offline, the data is cached until the device can connect to the cloud database. A maximum of 1 GB of data can be stored locally. If more than 1 GB of data is stored before it can be uploaded, the lowest priority data will be deleted so that higher priority data can be cached. • See the Cylance Endpoint Security Release Notes for considerations when upgrading from CylanceOPTICS agent 2.x to 3.x. • When you upgrade from version 2.x to 3.x, the full contents of the CylanceOPTICS local database are uploaded to the cloud database in batches. • After you upgrade to version 3.x, you cannot downgrade the agent to version 2.x. If you want to install version 2.x, you must uninstall version 3.x, then install version 2.x.

OS support and additional requirements

For information about the operating systems that CylanceOPTICS supports, see the Cylance Endpoint Security compatibility matrix. To view support timelines for all BlackBerry products, see the BlackBerry Enterprise Software Lifecycle Reference Guide.

The following table lists the supported operating systems that have additional requirements or considerations. Note that this table is not a comprehensive list of supported operating systems. If an operating system is not listed in the table, it means that there are no additional requirements or considerations.

OS	Requirements or considerations
Windows operating systems	
Windows 8.1 Windows 7 SP1	See this Microsoft article for additional dependencies for .NetCore support.
macOS operating systems	
macOS Ventura (13.x) macOS Monterey (12.x) macOS Big Sur (11.x)	• Enable full disk access. For more information, see KB 66427. • See Configuration requirements for macOS 11.x and later.
macOS Catalina (10.15)	Enable full disk access. For more information, see KB 66427.
Linux operating systems	
All supported Linux systems	• kernel-headers and kernel-devel are required, and the version must match the running kernel. During the installation, the package manager will indicate the versions that are required. For supported Ubuntu and Debian systems, linux-headers is the equivalent of kernel-headers. • One of the following Linux sensor suites is required: eBPF, Netlink (with multicast Netlink socket support 3.16 or later, or audit daemon uninstalled), or Auditdsp (with the auditd and auditdsp plugins enabled to start on boot). eBPF is recommended for the best performance with the CylanceOPTICS agent. If eBPF is not available, the agent tries to use Netlink for the next best level of performance. If Netlink is not available, the agent tries to use Auditdsp. The available sensor suites vary depending on the version of your OS.
RHEL/CentOS 8.x RHEL/CentOS 7.x	• For RHEL/CentOS 8.x, ncurses-compat-libs is required unless devices are running CylanceOPTICS agent version 3.2.1140-x or later. • Firewalld must be enabled and running to support the lockdown device feature. Firewalld is available by default with RHEL/CentOS.
Amazon Linux 2	• ncurses-compat-libs is required unless devices are running CylanceOPTICS agent version 3.2.1140-15000 or later. • Firewalld must be enabled and running to support the lockdown device feature. Firewalld must be installed manually on Amazon Linux 2.
Oracle Linux Server UEK 8 (64-bit) Oracle Linux Server 8 (64-bit) Oracle Linux Server 7 (64-bit)	• ncurses-compat-libs is required unless devices are running CylanceOPTICS agent version 3.2.1140-37000 or later. • Firewalld must be enabled and running to support the lockdown device feature. Firewalld is available by default with Oracle Linux.

OS	Requirements or considerations
Ubuntu 20.04 Ubuntu 18.04	• Ubuntu 20.04 requires libtinfo5 unless devices are running CylanceOPTICS agent version 3.2.1140-x or later. • Firewalld must be enabled and running to support the lockdown device feature. Firewalld must be installed manually for Ubuntu.
SUSE Enterprise Linux 15 SP4 SUSE Enterprise Linux 15 SUSE Enterprise Linux 12	• policycoreutils is required. • For SUSE 15.x, kernel-default-devel to match the kernel is required. libncurses5 is also required unless devices are running CylanceOPTICS agent version 3.2.1140-29000 or later. • Firewalld must be enabled and running to support the lockdown device feature on SUSE 15.x. Firewalld is available by default with SUSE 15.x. The lockdown device feature is not supported for SUSE 12.
Debian 11 Debian 10	• Debian 10 devices require iptables 1.8.5 or later to support the lockdown device feature. • Firewalld must be enabled and running to support the lockdown device feature. Firewalld must be installed manually for Debian.

Compatibility with other EDR solutions

The CylanceOPTICS agent is not compatible with other EDR (Endpoint Detection and Response) solutions installed on the same device. Remove any third-party EDR solutions from a device before you install and enable the CylanceOPTICS agent.

Hardware

Item	Requirements
Processor (CPU)	• In general use, as low as 1% additional CPU • For heavy sustained workloads, additional 5% to 25% CPU bursts can be required, depending on the workload
Memory (RAM)	The agent requires 0.2 to 1.0 GB of additional memory, depending on the workload.
Disk space (hard drive)	Minimum 1 GB • For CylanceOPTICS agent 2.x and earlier, 1 GB minimum is required for the local database. • For CylanceOPTICS 3.0 and later, 1 GB minimum is recommended for caching CylanceOPTICS sensor data before the device can upload the data to the CylanceOPTICS cloud database when it is online.

Virtual machines

CylanceOPTICS is supported for virtual machines. For requirements, deployment guidance, and best practices, see Appendix: Best practices for deploying CylancePROTECT Desktop on Windows virtual machines. If you use

CylanceOPTICS on a virtual machine, BlackBerry recommends disabling the Advanced WMI visibility sensor to reduce the number of recorded events.

Requirements: CylancePROTECT Mobile app

Item	Description
OS	See the Cylance Endpoint Security compatibility matrix.
Supported device browsers	Latest version of: • Android: Google Chrome, Samsung Internet, Firefox, Brave • iOS: Safari
Device configuration	• Instruct users to enable JavaScript in their default mobile browser. This is required to activate the CylancePROTECT Mobile app. • Instruct Android users to allow background activity for the CylancePROTECT Mobile app after it is installed.

Requirements: BlackBerry Connectivity Node

Software

Item	Description
Java Runtime Environment	JRE 8 (latest update version, 64-bit)

Hardware

Component	BlackBerry Connectivity Node
Processor (CPU)	Six processor cores, E5-2670 (2.6 GHz), E5-2683 v4 (2.1 GHz), or equivalent
Memory (RAM)	12 GB
Disk space (hard drive)	64 GB

Additional BlackBerry Connectivity Node requirements

- Choose a directory account with read permissions for each configured directory connection that the BlackBerry Connectivity Node can use to access the company directories.
- Use a Windows account with permissions to install and configure software on the computer that will host the BlackBerry Connectivity Node.

- Verify that the following outbound ports are open in your organization's firewall so that the BlackBerry Connectivity Node components can communicate with the BlackBerry Infrastructure (<*region*>.bbsecure.com, for example ca.bbsecure.com):
  - 443 (HTTPS) to activate the BlackBerry Connectivity Node
  - 3101 (TCP) for all other outbound connections
- Install the software on a version of Windows Server supported by Microsoft.
- You can install the BlackBerry Connectivity Node on English, French, Spanish, Japanese, or German implementations of the operating system.

Requirements: CylanceGATEWAY Connector

Hardware

Component	CylanceGATEWAY Connector
Processor (CPU)	Two processor cores
Memory (RAM)	5 GB
Disk space (hard drive)	2 GB

Requirements: CylanceGATEWAY agents

If you enabled the CylanceGATEWAY feature for your mobile users, users can enable Work Mode from the CylancePROTECT Mobile app. For information on CylancePROTECT Mobile requirements, see the Requirements: CylancePROTECT Mobile app.

Item	Requirements
Processor (CPU)	• Supports all Apple devices, including Apple Silicon devices via Rosetta 2 • Supports all x64-based processors • Does not support 32-bit operating systems • Does not support ARM devices
OS	For information about the operating systems that the CylanceGATEWAY agent supports, see the Cylance Endpoint Security compatibility matrix. To view support timelines for all BlackBerry products, see the BlackBerry Enterprise Software Lifecycle Reference Guide.

Requirements: CylanceAVERT

Item	Description
CylanceAVERT agent	CylanceAVERT is a bundled installer which includes the CylanceAVERT Microsoft Outlook plugin and browser extensions for Chrome, Firefox, and Microsoft Edge.

Item	Description
CylancePROTECT Desktop agent	CylancePROTECT Desktop agent version 3.1 or later.
OS and Microsoft Outlook support	For information about the operating systems and Microsoft Outlook versions that CylanceOPTICS supports, see the Cylance Endpoint Security compatibility matrix. To view support timelines for all BlackBerry products, see the BlackBerry Enterprise Software Lifecycle Reference Guide.
.NET	• Microsoft .NET 4.6.2 or later • .NET Standard 2.0 or later
Microsoft Visual C++	Microsoft Visual C++ 2017 Re-distributable or later

Cylance Endpoint Security network requirements

Cylance Endpoint Security agents

Port 443 (HTTPS) must be open for the Cylance Endpoint Security desktop agents to communicate with the management console.

The agents communicate over secure websockets (WSS) and must be able to establish this connection directly. Configure your organization's network to allow connections to the following domains.

Note:

- The management console is hosted by AWS and does not have fixed IP addresses. You can allow HTTPS traffic to *.cylance.com. For the cylance-optics-files-use1.s3.amazonaws.com host (and similar hosts for other regions), it is recommended to allow that specific host. It is not recommended to allow *.amazonaws.com because it can open your network to other hosts.
- Please note that the domain api2.cylance.com is deprecated, but is kept open to support older CylancePROTECT Desktop agents. api2.cylance.com directs to the same destination as api.cylance.com for the purpose of threat analysis and risk scoring.

Item	Description
North America	Required for logging in to the Cylance console: • login.cylance.com • idp.blackberry.com • cdn.cylance.com
	Required for CylancePROTECT Desktop and CylanceOPTICS: • cement.cylance.com

Item	Description
	Required for CylancePROTECT Desktop: • data.cylance.com • protect.cylance.com • update.cylance.com • api.cylance.com • download.cylance.com • venueapi.cylance.com
	Required for CylanceOPTICS: • cylance-optics-files-use1.s3.amazonaws.com • opticspolicy.cylance.com • content.cylance.com • rrws-use1.cylance.com • collector.cylance.com
	Required for the CylanceGATEWAY agent: • idp.blackberry.com • quip.webapps.blackberry.com • us1.cs.blackberry.com Required for the CylanceGATEWAY Connector: • deb.nodesource.com Required for the CylanceGATEWAY agent and the CylanceGATEWAY Connector: • us1.bg.blackberry.com For more information, see KB79017.
Asia-Pacific Northeast	Required for logging in to the Cylance console: • login-apne1.cylance.com • idp.blackberry.com • cdn.cylance.com
	Required for CylancePROTECT Desktop and CylanceOPTICS: • cement-apne1.cylance.com
	Required for CylancePROTECT Desktop: • data-apne1.cylance.com • protect-apne1.cylance.com • update-apne1.cylance.com • api.cylance.com • download.cylance.com • venueapi-apne1.cylance.com

Item	Description
	Required for CylanceOPTICS: • cylance-optics-files-apne1.s3.amazonaws.com • opticspolicy-apne1.cylance.com • content-apne1.cylance.com • rrws-apne1.cylance.com • collector-apne1.cylance.com
	Required for the CylanceGATEWAY agent: • idp.blackberry.com • quip.webapps.blackberry.com • jp1.cs.blackberry.com Required for the CylanceGATEWAY Connector: • deb.nodesource.com Required for the CylanceGATEWAY agent and the CylanceGATEWAY Connector: • jp1.bg.blackberry.com For more information, see KB79017.
Asia-Pacific Southeast	Required for logging in to the Cylance console: • login-au.cylance.com • idp.blackberry.com • cdn.cylance.com
	Required for CylancePROTECT Desktop and CylanceOPTICS: • cement-au.cylance.com • cement-apse2.cylance.com
	Required for CylancePROTECT Desktop: • data-au.cylance.com • protect-au.cylance.com • update-au.cylance.com • api.cylance.com • download.cylance.com • venueapi-au.cylance.com
	Required for CylanceOPTICS: • cylance-optics-files-apse2.s3.amazonaws.com • opticspolicy-au.cylance.com • content-apse2.cylance.com • rrws-apse2.cylance.com • collector-apse2.cylance.com

Item	Description
	Required for the CylanceGATEWAY agent: • idp.blackberry.com • quip.webapps.blackberry.com • au1.cs.blackberry.com Required for the CylanceGATEWAY Connector: • deb.nodesource.com Required for the CylanceGATEWAY agent and the CylanceGATEWAY Connector: • au1.bg.blackberry.com For more information, see KB79017.
Europe Central	Required for logging in to the Cylance console: • login-euc1.cylance.com • idp.blackberry.com • cdn.cylance.com
	Required for CylancePROTECT Desktop and CylanceOPTICS: • cement-euc1.cylance.com
	Required for CylancePROTECT Desktop: • data-euc1.cylance.com • protect-euc1.cylance.com • update-euc1.cylance.com • api.cylance.com • download.cylance.com • venueapi-euc1.cylance.com
	Required for CylanceOPTICS: • cylance-optics-files-euc1.s3.amazonaws.com • opticspolicy-euc1.cylance.com • content-euc1.cylance.com • rrws-euc1.cylance.com • collector-euc1.cylance.com

Item	Description
	Required for the CylanceGATEWAY agent: • idp.blackberry.com • quip.webapps.blackberry.com • eu1.cs.blackberry.com Required for the CylanceGATEWAY Connector: • deb.nodesource.com Required for the CylanceGATEWAY agent and the CylanceGATEWAY Connector: • eu1.bg.blackberry.com For more information, see KB79017.
South America	Required for logging in to the Cylance console: • login-sae1.cylance.com • idp.blackberry.com • cdn.cylance.com
	Required for CylancePROTECT Desktop and CylanceOPTICS: • cement-sae1.cylance.com
	Required for CylancePROTECT Desktop: • data-sae1.cylance.com • protect-sae1.cylance.com • update-sae1.cylance.com • api.cylance.com • download.cylance.com • venueapi-sae1.cylance.com
	Required for CylanceOPTICS: • cylance-optics-files-sae1.s3.amazonaws.com • opticspolicy-sae1.cylance.com • content-sae1.cylance.com • rrws-sae1.cylance.com • collector-sae1.cylance.com

Item	Description
	Required for the CylanceGATEWAY agent: • idp.blackberry.com • quip.webapps.blackberry.com • br1.cs.blackberry.com Required for the CylanceGATEWAY Connector: • deb.nodesource.com Required for the CylanceGATEWAY agent and the CylanceGATEWAY Connector: • br1.bg.blackberry.com For more information, see KB79017.
GovCloud	Required for logging in to the Cylance console: • login.us.cylance.com • idp.blackberry.com
	Required for CylancePROTECT Desktop and CylanceOPTICS: • cement.us.cylance.com
	Required for CylancePROTECT Desktop: • data.us.cylance.com • protect.us.cylance.com • update.us.cylance.com • api.us.cylance.com • download.cylance.com • download.us.cylance.com • venueapi.us.cylance.com
	Required for CylanceOPTICS: • cylance-optics-files.us.s3.amazonaws.com • opticspolicy.us.cylance.com • rrws.us.cylance.com • collector.us.cylance.com

CylancePROTECT Mobile app

The CylancePROTECT Mobile app requires a secure, direct connection to the following URLs to communicate with the CylancePROTECT Mobile cloud services. If devices are connected to your organization's Wi-Fi network, your network configuration must allow connections to:

- CylancePROTECT Mobile cloud service:
  - US: https://us1.mtd.blackberry.com
  - JP: https://jp1.mtd.blackberry.com
  - EU: https://eu1.mtd.blackberry.com
  - AU: https://au1.mtd.blackberry.com

    - SP: https://br1.mtd.blackberry.com
- Common services gateway:
    - US: https://us1.cs.blackberry.com
    - JP: https://jp1.cs.blackberry.com
    - EU: https://eu1.cs.blackberry.com
    - AU: https://au1.cs.blackberry.com
    - SP: https://br1.cs.blackberry.com
- https://score.cylance.com
- https://idp.blackberry.com
- https://mobile.ues.blackberry.com

Cylance Endpoint Security proxy requirements

Configuring a proxy for the CylancePROTECT Desktop and CylanceOPTICS agents

- If you want to configure both the CylancePROTECT Desktop agent and the CylanceOPTICS agent on a device to use a proxy server for outbound communication to BlackBerry servers, in the Registry Editor, navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Cylance\Desktop and create String Value REG_SZ:
    - Value Name = ProxyServer
    - Value Data = *<proxyIP:port>* (for example, http://123.45.67.89:8080)
- The proxy must accept unauthorized requests. SSL inspection is not supported and must be bypassed for all agent traffic (*.cylance.com).

Proxy options for the CylanceOPTICS agent

- The CylanceOPTICS agent is proxy aware and will query the .NET framework to identify and use the available proxy settings. If you configured the ProxyServer value in the registry, the CylanceOPTICS agent will use the specified proxy. The CylanceOPTICS agent will try to communicate first as the Local System, then as the currently logged in user.
- If you configure the CylanceOPTICS agent to use a proxy and the agent cannot communicate with the cloud services, the agent will attempt to bypass the proxy to make a direct connection. On Windows devices, you can disable this proxy bypass. Before you install the CylanceOPTICS agent on a device, in HKLM\SOFTWARE\Cylance\Optics\, create String Value REG_SZ:
    - Value Name = DisableProxyBypass
    - Value Data = True
- When CylanceOPTICS creates a detection event that involves a signed file as an artifact, it uses a command from the Windows API to validate the signature or certificate. The command sends a validation request to an OCSP server. The OCSP server address is determined by Windows. If your proxy server reports attempts to send external traffic to an OCSP server, update the proxy settings on devices to allow connections with the OCSP server.

Linux: Configure the CylancePROTECT Desktop and CylanceOPTICS agents to use a proxy server

On supported versions of RHEL, CentOS, Ubuntu, Amazon Linux 2, and SUSE 15, use the following commands to configure the agents to use an unauthenticated or authenticated proxy. You can use these commands before you install the agents. The commands below configure a proxy for the CylancePROTECT Desktop agent. To set a proxy for the CylanceOPTICS agent:

- Replace all instances of "cylancesvc" with "cyoptics"
- Duplicate each http_proxy line and replace "http_proxy" with "https_proxy". In most cases https_proxy will use the same value as http_proxy because HTTPS traffic is tunneled using TCP Connect, but if your organization uses an HTTPS termination proxy server, specify the appropriate value for https_proxy.

Unauthenticated proxy:

```
mkdir /etc/systemd/system/cylancesvc.service.d
echo "[Service]" > /etc/systemd/system/cylancesvc.service.d/proxy.conf
echo "Environment=http_proxy=http://proxyaddress:port" >> /etc/systemd/system/
cylancesvc.service.d/proxy.conf
systemctl stop cylancesvc
systemctl daemon-reload
systemctl start cylancesvc
```

Authenticated proxy:

```
mkdir /etc/systemd/system/cylancesvc.service.d
echo "[Service]" > /etc/systemd/system/cylancesvc.service.d/proxy.conf
echo "Environment=http_proxy=user:password@proxyaddress:port" >> /etc/systemd/
system/cylancesvc.service.d/proxy.conf
systemctl stop cylancesvc
systemctl daemon-reload
systemctl start cylancesvc
```

Logging in to the management console

Upon activation of your account, you will receive an email with your login information for the Cylance Endpoint Security management console. Click the link in the email to open the login page or go to:

- **North America:** https://login.cylance.com
- **Asia-Pacific Northeast:** https://login-apne1.cylance.com
- **Asia-Pacific Southeast:** https://login-au.cylance.com
- **Europe Central:** https://login-euc1.cylance.com
- **South America East:** https://login-sae1.cylance.com
- **GovCloud:** https://login.us.cylance.com

The email address will serve as your account login. After you create a password, you can proceed to the console.

Password requirements

Your password must have three of the following characters:

- A lowercase character
- An uppercase character
- A special character (examples * # $ %)
- A numeric character
- A Unicode character/data (examples ♥☀☆)

Session timeout

The session will time out 1 hour after the last successful authentication.

Custom authentication

Important: Custom authentication has been deprecated and will be removed in the near future. If you are using custom authentication to access Cylance Endpoint Security, you can migrate your external IDP to an authenticator and use enhanced authentication to access the Cylance console. For more information on enhanced authentication, see Enhanced authentication sign in. To see a walkthrough on how to configure your external IDP as an authenticator, see Migrate external IDPs from Legacy Custom Authentication to the Modern Authenticator Framework.

Use external identity providers (IdP) to login to the management console. This requires configuring settings with your IdP to obtain an X.509 certificate and a URL for verifying your IdP login. Custom authentication works with Microsoft SAML 2.0. This feature has been confirmed to work with OneLogin, Okta, Microsoft Azure, and PingOne. This feature also provides a custom setting and should work with other IdP's who follow Microsoft SAML 2.0.

Examples of using custom authentication, see the following articles.

- Microsoft Azure
- Okta
- OneLogin
- PingOne
- Using SAML 2.0

Note: Custom authentication does not support Active Directory Federation Services (ADFS).

Configure custom authentication

1. In the management console, click **Settings > Application** from the menu.

2. Select the **Custom Authentication** checkbox. Configuration options display.
3. Select the options you want to use for authentication. See Custom authentication descriptions for a description of options.
4. Click **Save**.

Custom authentication descriptions

Option	Description
Strong Authentication	Select this option to provide multi-factor authentication access.
Single Sign-On	Select this option to provide single sign-on (SSO) access. Selecting strong authentication or SSO does not affect the custom authentication settings, because all configuration settings are handled by the Identity Provider (IdP).
Allow Password Login	Selecting this option allows you to login to the console directly and using SSO. This allows you to test your SSO settings without being locked out of the console. Once you have successfully logged into the console using SSO, it is recommended that you disable this feature.
Provider	Select the service provider for the custom authentication.
X.509 Certificate	Enter the X.509 certification information.
Login URL	Enter the URL for the custom authentication.

Migrate external IDPs from Custom Authentication to an authenticator

When you sign in to the management console using an external identity provider (IDP) that is configured for custom authentication, you must sign in using the 'Or sign in with your External Identity Provider' link with your external IDP credentials. BlackBerry recommends that you configure your external IDP as an authenticator and use an authentication policy to sign in from the main sign in screen using your IDP credentials. Configuring your external IDP as an authenticator provides more granularity and flexibility in the authentication configuration.

To configure an external IDP to sign in to the management console from the main sign in screen, perform the following actions. For more information, see How Do I Migrate external IDPs from custom authentication to an authenticator.

Step	Action
1	Review the Considerations for adding SAML authenticators.
2	Sign in to the Cylance console with your external IDP.
3	Configure the external IDP to communicate with Cylance Endpoint Security. • Record the custom authentication information • Configure the authenticator

Step	Action
4	Manage authentication policies for your tenant that uses the authenticator that you created. **Note:** As a failsafe, create one user policy that only uses the Cylance console password and assign it to one administrator.
5	Verify that the Allow Password Login check box (Settings > Application > Custom Authentication) is selected. This option allows you to log in to the console directly and use SSO. Enable this option to test your SSO settings without being locked out of the console.
6	Sign in to the Cylance console from the main sign in screen and test the external IDP sign in credentials policy.
7	(Optional) Disable Custom Authentication (Settings > Application).

Enhanced authentication sign in

The management console provides enhanced authentication capabilities, including local multi-factor authentication and more granular authentication policies and policy assignments. You can configure the environment to specify the types of authentication that administrators must complete to sign in to the Cylance console and users must complete before they can activate Cylance Endpoint Security apps and agents. By default, administrators use the Cylance console password to access the management console and users to activate Cylance Endpoint Security apps and agents.

You can create authentication policies for your tenant that specify the types of authentication that must be completed by all administrators and users on the tenant. Only one tenant policy can be created for Cylance console sign-in, Cylance Endpoint Security apps, and Cylance Endpoint Security desktop agents. You can create authentication policies for users that specify the types of authentication administrators and users on the tenant must complete. The type of authentication added to the tenant policy and authentication policy must be completed in the order that they are specified in the policy. As a failsafe, you may configure one administrator to access the Cylance console using their username and a strong password.

Note: The updated sign-in flow is now the only method to access the Cylance console. Any authentication policies that you applied in your console during the preview period have taken effect.

To configure enhanced authentication for sign-in, perform the following actions:

Step	Action
1	Sign in to the Cylance console using your existing username and password.
2	Add an authenticator (for example, One-Time Password or Enterprise). By default, the following authenticators are configured for use in your environment: One-time password, Cylance console password and enterprise authentication.

Step	Action
3	Create an authentication policy that uses the password and the authenticator that you created (optional). **Note:** As a failsafe, create one authentication policy that only uses the Cylance console password and assign it to one administrator.
4	Create a tenant policy for administrators and users.

Sign in to the Cylance Endpoint Security management console using enhanced authentication

You can configure authentication policies that specify the types of authentication that administrators must complete to sign in to the Cylance Endpoint Security management console and users must complete to activate Cylance Endpoint Security apps or agents (for example, the CylancePROTECT Mobile app and the CylanceGATEWAY agent). A transitioning screen appears briefly before the Cylance Endpoint Security management console is accessed.

If you sign in with an external IDP that was configured for custom authentication in the management console (Settings > Custom Authentication), you must continue to sign in using the 'Or sign in with your External Identity Provider' link with your external third-party IDP credentials. BlackBerry recommends that you configure your external IDP configuration as an authenticator so that you can use an authentication policy to sign in with your third-party IDP credentials from the main sign in screen. This provides more granularity and flexibility in the authentication configuration. For more information on how to configure your external IDP as an authenticator, see Migrate external IDPs from Custom Authentication to an authenticator.

Before you begin: Create an authentication policy and assign it to administrators, users, and groups that administrators and users are a member of.

1. In a browser, navigate to the Cylance Endpoint Security management console.
2. Complete one of the following tasks to access the management console.

Task	Steps
Sign in with your Cylance account.	**a.** Enter your email address. **b.** Click **Sign In**. **c.** Enter your password. **d.** Click **Sign In**.
Sign in with your External Identity Provider that is configured as an authenticator.	**a.** Enter your email address. **b.** Click **Sign In**. **c.** Enter your password. **d.** Click **Sign In**.
Sign in with your External Identity Provider.	**a.** Click **Sign in with your External Identity Provider**. **b.** In the browser, enter your email address. **c.** Click **Sign In**. **d.** Enter your password **e.** Click **Sign In**.

Installing the BlackBerry Connectivity Node

The BlackBerry Connectivity Node allows you to create a secure connection between Cylance Endpoint Security and an on-premises Microsoft Active Directory or LDAP directory. Cylance Endpoint Security can synchronize devices, users, and groups from Active Directory. Users created through directory synchronization can be enabled for the CylancePROTECT Mobile app, CylanceGATEWAY, and CylanceAVERT.

You can install one or more instances of the BlackBerry Connectivity Node to provide redundancy. Each instance must be installed on a dedicated computer. If you have more than one BlackBerry Connectivity Node, you must upgrade them all to the same software release. After you upgrade the first instance, directory services are disabled until all instances are upgraded to the same version.

You can configure one or more directory connections, but if you have multiple instances of the BlackBerry Connectivity Node, all of the directory connections must be configured identically in every instance. If one directory connection is missing or incorrectly configured, that BlackBerry Connectivity Node will appear as disabled in the management console.

You don't need to install the BlackBerry Connectivity Node to synchronize with Microsoft Azure Active Directory. For more information, see "Configure Cylance Endpoint Security to synchronize with Azure Active Directory."

To install the BlackBerry Connectivity Node, perform the following actions.

Step	Action
1	Review the requirements.
2	Set an environment variable for the Java location.
3	Download the installation and activation files for the BlackBerry Connectivity Node.
4	Install and configure the BlackBerry Connectivity Node.
5	If your environment has multiple instances of the BlackBerry Connectivity Node, Copy directory connection configurations.
6	Configure proxy settings for a BlackBerry Connectivity Node instance (Optional).

Set an environment variable for the Java location

You must install a JRE 8 (x64) implementation on the server where you will install the BlackBerry Connectivity Node, and you must have an environment variable that points to the Java home location. When you begin the installation, the BlackBerry Connectivity Node verifies that it can find Java. If you have installed the Oracle Java SE Runtime Environment in the default location, the BlackBerry Connectivity Node will find it and automatically set the environment variable. If the BlackBerry Connectivity Node can't find Java, the setup application will stop and you must set an environment variable for the Java location and ensure that the Java bin folder is included in the Path system variable.

For more information on setting up JRE, visit support.blackberry.com to read article 52117.

Before you begin: Verify that you have installed a supported 64-bit JDK on the server where you will be installing the BlackBerry Connectivity Node.

1. Open the **Windows Advanced system settings** dialog box.
2. Click **Environment Variables**.
3. Under the **System variables** list, click **New**.
4. In the **Variable name** field, type `BB_JAVA_HOME`.
5. In the **Variable value** field, type the path to the Java installation folder and click **OK**.
6. In the **System variables** list, select **Path** and click **Edit**.
7. If the Path doesn't include the Java bin folder, click **New** and add `%BB_JAVA_HOME%\bin` to the Path.
8. Move the %BB_JAVA_HOME%\bin entry high enough in the list that it won't be superseded by another entry and click **OK**.

After you finish: Download the installation and activation files for the BlackBerry Connectivity Node.

Download the installation and activation files for the BlackBerry Connectivity Node

Before you begin: Set an environment variable for the Java location.

1. In the management console, on the menu bar, click **Settings > Directory Connections**.
2. Click the **Connectivity Node** tab.
3. Click **Add Connectivity Node**.
4. On the software download page, click **Download**.
5. Select **BlackBerry Connectivity Node for UES**
6. Click **Download**.
7. Extract the BlackBerry Connectivity Node installation files to the computer.

   If you install more than one instance of the BlackBerry Connectivity Node, do not copy used installation files between computers. You must re-extract the installation files on each computer.
8. In the management console, click **Download Activation File**.
9. Save the activation file (.txt).

   The activation file is valid for 60 minutes. If you wait longer than 60 minutes before you use the activation file, you must download a new activation file. Only the latest activation file is valid.

After you finish: Install and configure the BlackBerry Connectivity Node.

Install and configure the BlackBerry Connectivity Node

Before you begin: Download the installation and activation files for the BlackBerry Connectivity Node.

1. Open the BlackBerry Connectivity Node installation file (.exe) that you downloaded from the management console.

   If a Windows message appears and requests permission to make changes to the computer, click **Yes**.

2. Choose your language. Click **OK**.
3. Click **Next**.
4. Select your country or region. Read and accept the license agreement. Click **Next**.
5. The installation program verifies that your computer meets the installation requirements. Click **Next**.
6. To change the installation file path, click **...** and navigate to the file path that you want to use. If you receive a message asking you to create the installation and logs folder locations, click **Yes**. Click **Next**.
7. In the **Service account** dialog box, type the password for the service account. Click **Install**.
8. When the installation completes, click **Next**.

   The address of the BlackBerry Connectivity Node console is displayed (http:/localhost:8088). Click the link and save the site in your browser.
9. Select your language. Click **Next**.
10. When you activate the BlackBerry Connectivity Node, it sends data over port 443 (HTTPS) to the BlackBerry Infrastructure (for example na.bbsecure.com or eu.bbsecure.com). After it is activated, the BlackBerry Connectivity Node uses port 3101 (TCP) for all other outbound connections through the BlackBerry Infrastructure. Do any of the following:

    - If you want to use a proxy setting other than the default port 443 to connect to the BlackBerry Infrastructure (<*region*>.bbsecure.com) to activate the BlackBerry Connectivity Node, click the "here" link to configure the proxy settings and enter the information for the enrollment proxy. This link is only available on the "Name your BlackBerry Connectivity Node" screen. If you do not configure the proxy settings from this screen and click **Next**, you can configure the proxy settings from the top right corner of the screen by clicking **Settings > Proxy** before it is activated.

      Note: The proxy must be able to access port 443 to the BlackBerry Infrastructure. You cannot change the enrollment proxy setting after you activate the BlackBerry Connectivity Node.
    - Configure other proxy settings. For more information about the available proxy options, see Configure proxy settings for a BlackBerry Connectivity Node instance.
11. In the **Friendly name** field, type a name for the BlackBerry Connectivity Node. Click **Next**.
12. Click **Browse**. Select the activation file that you downloaded from the management console.
13. Click **Activate**.

    If you want to add a BlackBerry Connectivity Node instance to an existing server group when you activate it, your organization's firewall must allow connections from that server over port 443 through the BlackBerry Infrastructure (for example na.bbsecure.com or eu.bbsecure.com) to activate the BlackBerry Connectivity Node and to the same bbsecure.com region as the main BlackBerry Connectivity Node instance.
14. Click + and select the type of company directory that you want to configure.
15. Link your directory to the BlackBerry Connectivity Node by following the appropriate task:

    - Connect to Microsoft Active Directory
    - Connect to an LDAP directory

After you finish:

- To install a second BlackBerry Connectivity Node instance for redundancy, download another set of installation and activation files and repeat this task on a different computer. This should be done after the first instance has been activated.
- You can configure one or more directory connections, but if you have multiple BlackBerry Connectivity Nodes, all of the directory connections must be configured identically. If one directory connection is missing or incorrectly configured, that BlackBerry Connectivity Node will appear as disabled in the management console. You can make this task easier by copying directory connection configurations from one BlackBerry Connectivity Node to another.

- To change the directory settings that you configured, in the BlackBerry Connectivity Node console (http:/ localhost:8088), click **General settings > Company directory**. Click ✎ for the directory connection.
- Configure BlackBerry Connectivity Node logging.
- You can remove directory connections from a BlackBerry Connectivity Node as long as you have no users or groups associated with it. If you remove a connection from a BlackBerry Connectivity Node, you can re-add the connection using the same name as the deleted connection.

Copy directory connection configurations

If your environment has multiple instances of the BlackBerry Connectivity Node, the directory connections must be configured identically on all nodes. To help make this task easier, you can export the directory connection configuration from one BlackBerry Connectivity Node and import it to another.

Note: Before you can import company directory configurations to a BlackBerry Connectivity Node, you must remove any existing company directory connections from that node.

Before you begin: Copy directory connection configurations.

1. In the BlackBerry Connectivity Node that you want to copy the configuration from, in the **Company directory connection** screen, click **Export the directory connections in .txt file**.

   A .txt file containing information about the company directory connections is downloaded to your computer.
2. On the BlackBerry Connectivity Node that you want to copy the configuration to, on the **Company directory connection** screen, browse to the .txt file you downloaded.
3. Click **Import connections**.

   The company directory connections are added to the BlackBerry Connectivity Node.

Configure proxy settings for a BlackBerry Connectivity Node instance

You can configure the components of the BlackBerry Connectivity Node to send data through a TCP proxy server (transparent or SOCKS v5) before it reaches the BlackBerry Infrastructure.

1. On the computer that hosts the BlackBerry Connectivity Node, open the BlackBerry Connectivity Node console from the Start menu or open a browser and navigate to http://localhost:8088.
2. Click **General settings > Proxy**.
3. Perform any of the following tasks:

Task	Steps
Send data through a SOCKS v5 proxy server (no authentication) to the BlackBerry Infrastructure.	**a.** Select the **Proxy server** option. **b.** Select the **Enable SOCKS v5** check box. **c.** Click **+**. **d.** Type the IP address or host name of the SOCKS v5 proxy server. Click **Add**. **e.** Repeat steps 3 and 4 for each SOCKS v5 proxy server that you want to configure. **f.** In the **Port** field, type the port number. **g.** Click **Save**.

Task	Steps
Send data through a transparent proxy server to the BlackBerry Infrastructure.	• In the **BlackBerry Connectivity Node** fields, type the FQDN or IP address and port number of the proxy server.

4. Click **Save**.

Linking to your company directory

You can configure Cylance Endpoint Security to synchronize with your company directory to simplify adding and managing users and groups. Connecting Cylance Endpoint Security to a company directory allows you to create user accounts by searching for and importing user data from the company directory. Users created through directory synchronization can be enabled for the CylancePROTECT Mobile app, CylanceGATEWAY, and CylanceAVERT.

You can link to a company directory in two ways.

- If you want to synchronize with Microsoft Azure Active Directory, you can configure Cylance Endpoint Security to connect with it.
- If you want to synchronize with an on-premises Microsoft Active Directory or LDAP directory, you must first install the BlackBerry Connectivity Node to create a secure connection between Cylance Endpoint Security and your directory.

To link Cylance Endpoint Security to your company directory, you perform the following actions.

Step	Action
1	If you want to link to an on-premises company directory, install a BlackBerry Connectivity Node.
2	Depending on the type of directory you want to connect to, configure Cylance Endpoint Security to synchronize with Azure Active Directory, or connect to a Microsoft Active Directory or LDAP directory.
3	Add a directory group.
4	Configure onboarding and offboarding.
5	Configure directory synchronization schedules.

Configure Cylance Endpoint Security to synchronize with Azure Active Directory

To configure Cylance Endpoint Security to synchronize with Azure Active Directory, you must configure both Azure and Cylance Endpoint Security to make the connection.

1. Log in to the Azure portal.
2. Create a new app registration for Azure Active Directory and assign the appropriate settings and permissions.
   a) Add a name for the app.
   b) Specify the account types can use the application or access the API.
   c) Select **Web** as the redirect URI type and set the URI as `http://localhost`.
   d) Set the following application permissions:
      - Group.Read.All (Application)

- User.Read (Delegated)
- User.Read.All (Application)

e) Grant Admin consent to the application.

3. Record the name you assigned to the app and the Application (client) ID.
4. Create a new client secret and record the information in the Value column of the secret.

   Important: The Value is available only when you create it. You cannot access it after you leave the page. If you do not record the value, you must create a new one. This is used as the Client secret in the management console.
5. In the management console, on the menu bar, click **Settings > Directory Connections**.
6. Click **Add New Connection**.
7. Type a **Name** for the directory connection and the **Domain** for your Azure Active Directory.
8. In the **Client ID** field, type the application ID generated by the Azure app registration.
9. In the **Client secret** field, type the client secret value that was generated by the Azure app registration in step 4.
10. Click **Add**.

Update the Microsoft Azure Active Directory connection credentials

You must update the client credentials in the management console when your client secret has expired or has been changed in the Azure portal. If your client secret has expired or has been changed, the Directory connections screen displays an ❗ beside the directory connection that is affected. You can choose to update only the client secret, or you can update both the client ID and the client secret.

Before you begin:

- Verify that you have recorded the name that you assigned to the app in Configure Cylance Endpoint Security to synchronize with Azure Active Directory.
- Verify that you have a valid client secret and recorded the information in the Value column of the secret. Optionally, you can create both a new client ID and client secret.

1. In the management console, on the menu bar, click **Settings > Directory Connections**.
2. Click the Microsoft Azure Active Directory connection that you want to update.
3. Click the **Connections Settings** tab.
4. Click **Update client credentials**. Choose to update only the client secret, or update both the client ID and the client secret. Complete one of the following:
   - Update client secret only: Enter the client secret value that you recorded in the Azure portal.
   - Update client ID and client secret: Enter the new client ID and client secret value that you recorded in the Azure portal.
5. Click **Submit**.
6. Click **Save**. If the save fails, both the client ID and the client secret will revert to the previous values.

Connect to Microsoft Active Directory

Before you begin: Install at least one instance of the BlackBerry Connectivity Node.

1. In the BlackBerry Connectivity Node console (http:/localhost:8088), click **General settings > Company directory**.
2. Click +.
3. Select **Microsoft Active Directory**.

4. In the **Connection name** field, type a name for this company directory connection.
5. In the **Username** field, type the username of the Microsoft Active Directory account.
6. In the **Domain** field, type the FQDN of the domain that hosts Microsoft Active Directory. For example, domain.example.com.
7. In the **Password** field, type the password of the Microsoft Active Directory account.
8. In the **Domain controller discovery** drop-down list, click one of the following:
    - If you want to use automatic discovery, click **Automatic**.
    - If you want to specify the domain controller computer, click **Select from list below**. Click + and type the FQDN of the computer. Repeat this step to add more computers.
9. In the **Global catalog search base** field, type the search base that you want to access (for example, OU=Users,DC=example,DC=com). To search the entire Global Catalog, leave the field blank.
10. In the **Global catalog discovery** drop-down list, click one of the following: .
    - If you want to use automatic catalog discovery, click **Automatic**.
    - If you want to specify the catalog computer, click **Select from list below**. Click + and type the FQDN of the computer. If necessary, repeat this step to specify more computers
11. If you want to enable support for linked Microsoft Exchange mailboxes, in the **Support for linked Microsoft Exchange mailboxes** drop-down list, click **Yes**. To configure the Microsoft Active Directory account for each forest that you want to access, in the **List of account forests** section, click +. Specify the forest name, user domain name (the user can belong to any domain in the account forest), username, and password.
12. To synchronize more user details from your company directory, select the **Synchronize additional user details** check box. The additional details include company name and office phone.
13. Click **Save**.

After you finish:

- If you want to configure automatic onboarding for Cylance Endpoint Security, see Configure onboarding and offboarding.
- If you want to add a directory synchronization schedule, see Configure directory synchronization schedules.
- If you have more than one instance of the BlackBerry Connectivity Node, you can copy directory connection configurations from one instance into the others.

Connect to an LDAP directory

Before you begin: To connect to an on-premises LDAP directory, you must first install at least one instance of the BlackBerry Connectivity Node.

1. In the BlackBerry Connectivity Node console (http:/localhost:8088), click **General settings > Company directory**.
2. Click +.
3. Select **LDAP**.
4. In the **Connection name** field, type a name for this company directory connection.
5. In the **LDAP server discovery** drop-down list, click one of the following: If you want to use automatic discovery, click **Automatic**.
    - If you want to use automatic discovery, click **Automatic** then in the **DNS domain name** field, type the DNS domain name.
    - If you want to specify the LDAP computer, click **Select server from list below**. Click + and type the FQDN of the computer. Repeat this step to add more computers.

6. In the **Enable SSL** drop-down list, select whether you want to enable SSL authentication for LDAP traffic. If you click **Yes**, click **Browse** and select the SSL certificate for the LDAP computer.
7. In the **LDAP port** field, type the port number of the LDAP computer.
8. In the **Authorization required** drop-down list, select whether authentication is required with the LDAP computer. If you click **Yes**, type the username and password of the LDAP account. The username must be in DN format (for example, CN=Megan Ball,OU=Sales,DC=example,DC=com).
9. In the **Search base** field, type the search base that you want to access (for example, OU=Users,DC=example,DC=com).
10. In the **LDAP user search filter** field, type the filter that you want to use for LDAP users. For example: (&(objectCategory=person)(objectclass=user)). If you want to restrict searching to all members of a single group for the entire Cylance Endpoint Security tenant, you can use the following example: (&(objectCategory=person)(objectclass=user)(memberOf=CN=Local,OU=Users,DC=example,DC=com)).
11. In the **LDAP user search scope** drop-down list, click one of the following: If you want user searches to apply to all levels below the base DN, click **All levels**. If you want to limit user searches to one level below the base DN, click **One level**.
12. In the **Unique identifier** field, type the attribute for each user’s unique identifier (for example, uid). The attribute must be immutable and globally unique for every user.
13. In the **First name** field, type the attribute for each user’s first name (for example, givenName).
14. In the **Last name** field, type the attribute for each user’s last name (for example, sn).
15. In the **Login attribute** field, type the attribute for each user’s login attribute (for example, cn).
16. In the **Email address** field, type the attribute for each user’s email (for example, mail).
17. In the **Display name** field, type the attribute for each user’s display name (for example, displayName).
18. To synchronize more user details from your company directory, select the **Synchronize additional user details** check box. The additional details include company name and office phone.
19. To enable directory-linked groups, select the **Enable directory-linked groups** check box.

    Specify the following information:

    - In the **Group search base** field, type the value to use as the base DN for group information searches.
    - In the **LDAP group search filter** field, type the LDAP search filter that is required to find group objects in your company directory.
    - In the **Group Unique Identifier** field, type the attribute for each group's unique identifier. This attribute must be immutable and globally unique.
    - In the **Group Display name** field, type the attribute for each group's display name.
    - In the **Group Membership attribute** field, type the name of the attribute for group membership. The attribute values must be in DN format.
    - In the **Test Group Name** field, type an existing group name for validating the group attributes specified.
20. Click **Save**.

After you finish:

- If you want to configure automatic onboarding for Cylance Endpoint Security, see Configure onboarding and offboarding.
- If you want to add a directory synchronization schedule, see Configure directory synchronization schedules.
- If you have more than one instance of the BlackBerry Connectivity Node, you can copy directory connection configurations from one instance into the others.

Configure onboarding and offboarding

Onboarding allows you to automatically add user accounts to Cylance Endpoint Security based on user membership in a company directory group. Directory groups and user accounts are added to CylanceGATEWAY during the synchronization process.

If you enable onboarding, you can also choose to configure offboarding. When a user is disabled in the directory or removed from all company directory groups in the onboarding directory groups, Cylance Endpoint Security deletes the user account and stops allowing network connections from the user's devices.

You can use offboarding protection to delay the deletion of user accounts to avoid unexpected deletions because of directory replication latency. Offboarding protection delays offboarding actions for two hours after the next synchronization cycle.

Before you begin: Depending on the type of directory that you want to connect to, configure Cylance Endpoint Security to synchronize with Azure Active Directory, or connect to a Microsoft Active Directory or LDAP directory.

1. In the management console, on the menu bar, click **Settings > Directory Connections**.
2. In the **Directory Connection** list, click the connection that you want to configure onboarding for.
3. On the **Sync settings** tab, select **Directory onboarding**.
4. In the **Sync** field, type the maximum number of changes you want to allow for each synchronization process.

   By default, there is no limit. If the number of changes to be synchronized exceeds the limit you set, the synchronization process stops. Changes include users added to groups, users removed from groups, users to be onboarded, and users to be offboarded.
5. In the **Nesting level** field, type the number of nested levels to synchronize for company directory groups. By default, there is no limit.
6. To force the synchronization of directory groups, select **Force synchronization**.

   If this option is selected, when a group is removed from your company directory, the links to that group are removed from onboarding directory groups and directory-linked groups. If not selected, if a company directory group is not found, the synchronization process is canceled.
7. To delete a user account from Cylance Endpoint Security when a user is removed from all linked groups in the directory, select **Delete user when the user is removed from all onboarding directory groups**. The first time that a synchronization cycle occurs after a user account is removed from all linked directory groups, the user account is deleted from Cylance Endpoint Security.
8. To prevent user accounts or device data from being deleted from Cylance Endpoint Security unexpectedly, select **Offboarding protection**.

   Offboarding protection means that users will not be deleted from Cylance Endpoint Security until two hours after the next synchronization cycle.
9. Click **Save**.

Configure directory synchronization schedules

You can add a schedule to automatically synchronize Cylance Endpoint Security with your organization's company directory.

Before you begin: Connect to Microsoft Active Directory or Connect to an LDAP directory.

1. In the management console, on the menu bar, click **Settings > Directory Connections**.
2. In the **Directory Connection** list, click the connection that you want to set a sync schedule for.
3. On the **Sync schedule** tab, click **Add Schedule**.
4. In the **Sync type** drop-down list, select one of the following options:

- **All users and groups**: This is the default setting. If you choose this option and onboarding is enabled, users are onboarded and offboarded and linked to the appropriate directory linked groups during the synchronization. Users who are not onboarded or offboarded but change directory groups, and users with changes to their attributes are synchronized.
- **Onboarding groups**: If you choose this option and onboarding is enabled, users are onboarded and offboarded and linked to the appropriate directory linked groups during the synchronization, and users with changes to their attributes are synchronized. Users who are not onboarded or offboarded but change directory groups are not synchronized.
- **Directory linked groups**: If you choose this option, users are not onboarded and offboarded during the synchronization. Users with changes to their directory groups are linked appropriately. Users with changes to their attributes are synchronized.
- **User attributes**: If you choose this option, users are not onboarded and offboarded during the synchronization. Users with changes to their directory groups are not synchronized. Users with changes to their attributes are synchronized.

5. In the **Recurrence** drop-down list, select one of the following options:

    - **Interval**: This is the default setting. If you choose this option, you can specify the number of minutes between synchronizations and the hours and days during which synchronization can occur.
    - **Once a day**: If you choose this option, you can specify the days of the week and the time of day when synchronization occurs.
    - **No recurrence**: If you choose this option, you can specify a day and time within the next week for one synchronization.
6. Specify appropriate day and time details for the schedule.
7. Click **Submit**.
8. Click **Save**.

Synchronize with your company directory

You can synchronize Cylance Endpoint Security with your directory connections at any time.

1. In the management console, on the menu bar, click **Settings > Directory Connections**.
2. In the **Directory Connection** list, click ⟳ for the connection that you want to synchronize.

Setting up administrators

You can control how administrator users access and use the management console by assigning predefined or custom roles to them. This role-based access control allows you to give administrators access to the specific console features needed for their role and restrict the features you don't want them to have access to.

For more information on roles and permissions, see Permissions for administrator roles.

Add an administrator

You can add administrator users to the management console to grant those users the ability to control and configure your Cylance Endpoint Security environment. Existing and newly added administrator accounts are displayed on the User page (Assets > Users) in the management console. You can add the Administrator column to display an 👤 icon beside each administrator account. The screens that an administrator user can view in the management console, and the features that the user is able to configure and change, depend on the role that you assign to that user. For more information on roles and permissions, see Permissions for administrator roles.

1. In the management console, on the menu bar, click **Settings > Administrators**. Do any of the following:

Task	Steps
Add a new administrator.	**a.** Under **Add users**, in the **Enter email** field, type the user's email address **b.** In the Select role drop-down list, click a role. For more information about roles and their associated permissions, see Managing roles. **c.** If you selected a zone manager or user role, in the **Select Zone** drop-down list, click a zone. **d.** Click **Add**. Cylance Endpoint Security sends an email to the new administrator user with a link to create a password.
Change an administrator role.	**a.** Click an administrator user. **b.** In the drop-down list, click a new role. **c.** If the administrator is a zone manager or user, in the **Select Zone** drop-down list, click a zone. **d.** In the pop-up window, enter your password. **e.** Click **Save**.

2. On the menu bar, click **Assets > Users**. Do any of the following:

- To add or remove columns, click ||| and select the columns that you want to view.
- To sort users in ascending or descending order by a column, click the column.
- To filter users by a column, use the filter field and icon for the column.
- To view only administrator accounts, click ≡ and set the Administrator option to **True**.

Permissions for administrator roles

The following tables list out the default permissions for system-defined roles within the management console. Permissions in bold have child permissions that are only available after the main permission is selected.

Dashboard

These permissions provide access to the dashboard page and cannot be disabled. The information displayed on the dashboard is determined by the role and permissions assigned to the administrator role.

Permission	Administrator	Zone Manager	User	Read-Only
Dashboard	√			√

Endpoint Detection Response

These permissions allow you to manage CylanceOPTICS features.

Permission	Administrator	Zone Manager	User	Read-Only
View detections	√	√		√
Edit detections	√	√		
Delete detections	√	√		
View, create InstaQuery	√	√		√
Delete InstaQuery	√	√		
View, create advanced query	√	√		
Create shared template	√	√		
Delete shared template	√			
Delete shared snapshots	√			
Delete shared export query	√			
Create scheduled query	√	√		
Edit shared scheduled query	√			
Delete shared scheduled query	√			
View, create focus data	√	√		√

Permission	Administrator	Zone Manager	User	Read-Only
View package deploy	√			√
Create package deploy	√			
Update package deploy	√			
Delete package deploy	√			
View playbook results	√			√
Delete playbook results	√			
View package	√			√
Create package	√			
Delete package	√			
View playbook	√			√
Create, edit playbook	√			
Delete playbook	√			
View ruleset*	√			
Edit ruleset*	√			
Delete ruleset	√			
View rules	√			√
Create, edit custom rule	√			
Delete custom rule	√			
View exceptions	√			√
Create, edit exceptions	√			
Delete exceptions	√			
View lockdown configuration	√			√
Create, Edit lockdown configuration	√			
Delete lockdown configuration	√			

*To view a rule set, you require an administrator role with the View ruleset and Edit ruleset permissions.

Users and Devices

These permissions control what you can do with users and devices in the management console. You have to have global list permissions to global quarantine or add a threat to the safe list from these pages.

Permission	Administrator	Zone Manager	User	Read-Only
View users and groups	√			√
Create users and groups	√			
Edit users and groups	√			
Delete users and groups	√			
View mobile devices	√			√
Delete mobile devices	√			
View devices	√			√
Edit devices	√			
Delete devices	√			
Run background scan	√			
Lock CylanceOPTICS device	√			
Unlock CylanceOPTICS device	√			
Execute remote response	√			
Allow file download	√			
View device policies	√			√
Create device policies	√			
Edit device policies	√			
Delete device policies	√			
View Zones	√			√
Create zones	√			
Edit zones	√			

Permission	Administrator	Zone Manager	User	Read-Only
Delete zones	√			

Threat Protection

These permissions provide access to the protection menu, CylancePROTECT Mobile alerts, and vulnerabilities.

Permission	Administrator	Zone Manager	User	Read-Only
View threat protection	√			√
Edit Protect Mobile events	√			
View Protect Mobile policies	√			√
Create Protect Mobile policies	√			
Edit Protect Mobile policies	√			
Delete Protect Mobile policies	√			

Network

These permissions allow you to manage network protection settings, including network access control, CylanceGATEWAY settings, and CylanceGATEWAY alerts and events.

Permission	Administrator	Zone Manager	User	Read-Only
View Gateway service policies	√			√
Create Gateway service policies	√			
Edit Gateway service policies	√			
Delete Gateway service policies	√			
View network access controls	√			√
Edit network access controls	√			

Permission	Administrator	Zone Manager	User	Read-Only
View Gateway settings	√			√
Create Gateway settings	√			
Edit Gateway settings	√			
Delete Gateway settings	√			
View Gateway reporting events	√			√
View Gateway alerts and events	√			√

Avert

These permissions allow you to manage CylanceAVERT features.

Permission	Administrator	Zone Manager	User	Read-Only
View Avert settings	√			√
Edit Avert settings	√			
View Avert device identifier	√			√
View Avert risk scores	√			√
View Avert device events	√			√
View Avert policies	√			√
Create Avert policies	√			
Edit Avert policies	√			
Delete Avert policies	√			
View Avert sensitive file summary	√			
View Avert file content	√			
Delete Avert files	√			

Common

These permissions allow administrators to manage tenant-level settings that affect multiple features in the Cylance Endpoint Security solution, including EMM providers and directories, enrollment for mobile devices and

CylanceGATEWAY, and adaptive risk options and events. For directory connections, you can create Microsoft Azure active directories (AD) only.

Permission	Administrator	Zone Manager	User	Read-Only
View EMM connections	√			√
Create EMM connections	√			
Edit EMM connections	√			
Delete EMM connections	√			
View directory connections	√			√
Create directory connections	√			
Edit directory connections	√			
Delete directory connections	√			
View on-prem directory connector	√			
Create on-prem directory connector	√			
Edit on-prem directory connector	√			
Delete on-prem directory connector	√			
View authentication controls	√			√
Create authentication controls	√			
Edit authentication controls	√			
Delete authentication controls	√			
View enrollment policies	√			√
Create enrollment policies	√			
Edit enrollment policies	√			
Delete enrollment policies	√			

Permission	Administrator	Zone Manager	User	Read-Only
View adaptive risk policies	√			√
Create adaptive risk policies	√			
Edit adaptive risk policies	√			
Delete adaptive risk policies	√			
View adaptive risk settings	√			√
Create adaptive risk settings	√			
Edit adaptive risk settings	√			
Delete adaptive risk settings	√			
View alerts	√			√
Edit alerts	√			
Delete alerts	√			

Logging

These permissions allow you to view reports and the audit log.

Permission	Administrator	Zone Manager	User	Read-Only
View reports	√			√
View audit log	√			

Settings

These permissions allow you to manage management console settings. User management permissions and role management permissions are associated. If a user is assigned a role with user management permissions selected, the user will also have access to role management functionality.

Permission	Administrator	Zone Manager	User	Read-Only
Application	√			√
Installation Token Management	√			
Installer Download	√			

Permission	Administrator	Zone Manager	User	Read-Only
Uninstall Password Management	√			
Support Login	√			
Syslog/SIEM	√			
Custom Authentication	√			
Threat Data Report	√			
User Management	√			
View Global List	√			√
Create Global List	√			
Edit Global List	√			
Delete Global List	√			
View Agent Update Settings	√			√
Create Agent Update Settings	√			
Edit Agent Update Settings	√			
Delete Agent Settings	√			
Certificates	√			√
Integrations	√			
View device lifecycle settings	√			√
Create device lifecycle settings	√			
Edit device lifecycle settings	√			
Delete device lifecycle settings	√			
View activation settings	√			√
Edit activation settings	√			

Managing roles

You can use predefined roles or create custom roles to manage administrator access to features in the management console. Predefined roles have set permissions that cannot be modified. Based on your role's permissions, some menu options, pages, and features may not be available. For example, if a user does not have access to the zones feature, the zones menu option does not display. The dashboard displays for all predefined and custom roles, regardless of their permissions.

For a comprehensive list of user permissions allowed for each predefined role, see Permissions for administrator roles. Users assigned to a custom role cannot enable notifications on the My Account page.

Add a role

Custom roles are globally scoped and provide full operational access to the related pages and actions for a defined area. For example, if a custom role has permissions allowed for the zone features, any user assigned to the role has access to all functionality available on the Zones or Zone Details pages.

If access is not selected for a role, users will not see that page in the menu or be able to navigate to the page from anywhere within the console. For example, if a custom role has permissions allowed for threats and disallowed for devices, the Threat Protection page displays in the menu while the Devices page does not. If the user views the Threat Details page for a threat, the affected devices and zones will display but the user will receive an error page when attempting to click the link for details for a specific device.

1. In the management console, on the menu bar, click **Settings > Administrators**.
2. Click **Roles**.
3. Click **Add New Role**.
4. Type a name for the role.
5. Click the **Access** checkbox beside any feature that you want to allow this role to access. Expand sections to see more options. See Permissions for administrator roles for more information.
6. Click **Add Role**.

After you finish:

- To edit a role, click an existing role and modify the name or permissions. The updated name or permissions will be applied to any users assigned to the existing role.
- If a predefined or custom role has users assigned, you can click the link in the **Assigned Users** column to view the email for any users assigned to that role. You can click the email to view the User Details page for that user.
- To delete a role, click a checkbox beside a role that does not have any users assigned to it, then click **Remove**. If a role has users assigned to it, you cannot select the checkbox.

Configure the session and idle timeout limits

You can specify how long an administrator can remain logged in to the management console before they are signed out, even if the session is active. You can also specify how long a session is allowed to remain idle before the administrator is logged out of the console.

1. In the management console, on the menu bar, click **Settings > Authentication**.
2. On the **Settings** tab, in the **Console Timeout** section, configure the **Session timeout** limit.

   Administrators will receive a countdown prompt a few minutes before the console timeout limit is reached that will allow them to authenticate again to continue the session. If the administrator does not actively respond to the prompt by clicking **Verify** and logging in again, they are logged out when the timeout limit is reached.

3. Configure the **Idle timeout** limit.
4. Click **Save**.

Adding users and devices

You must add user accounts in the management console so that you can enable the following Cylance Endpoint Security services for those users:

- Services available in the CylancePROTECT Mobile app: CylancePROTECT Mobile and CylanceGATEWAY Mobile
- CylanceGATEWAY Desktop

You can use any of the following methods to add users:

- Link to your company directory and enable onboarding to add users automatically when Cylance Endpoint Security synchronizes with the directory. You can configure the directory synchronization schedules to synchronize Cylance Endpoint Security with your organization's company directory. By default, all users and groups are synchronized at 30-minute intervals daily.
- Link to your company directory and add directory users individually. You can use this option if you do not want to enable onboarding.
- Add individual users as BlackBerry Online Account users.

You do not need to add user accounts to enable other Cylance Endpoint Security services such as CylancePROTECT Desktop and CylanceOPTICS. After the agents are installed on devices, you can view and manage those devices and associated data in the management console.

Add CylancePROTECT Mobile app and CylanceGATEWAY users

Before you begin: If you want to add users from your company directory, follow the instructions in Linking to your company directory. If you enable onboarding, directory groups and user accounts are added to the management console during the synchronization process. Follow the steps below if you want to add directory users individually without onboarding, or if you want to add individual users as BlackBerry Online Account users.

1. In the management console, on the menu bar, click **Assets > Users**.
2. Click **Add Users**.
3. Do any of the following:

Task	Steps
Add a directory user.	**a.** Type the name of the user and click the matching result from the drop-down list. **b.** Optionally, if you have already added user groups, add the user to one or more groups.
Add a BlackBerry Online Account user.	**a.** Click in the search field and click **Add a new user manually**. If you have not configured a directory connection, skip to the next step. **b.** Specify the user's name and email address. **c.** Optionally, if you have already added user groups, add the user to one or more groups. **d.** Direct the user to the BlackBerry Online Account password reset to enter their email and set a password. The user will use this password to activate the CylancePROTECT Mobile app. Users can also access the password reset link from the CylancePROTECT Mobile app when they activate the app.

4. Click **Save**. If you want to add another user, click **Save and New** and repeat the previous step.

After you finish:

- To add users to a group, in **Assets > User Groups**, select the group and add users to it from the **Users** tab. If you enabled onboarding, group membership is synchronized from the directory.
- To enable CylancePROTECT Mobile for users that you added, follow the instructions in Setting up CylancePROTECT Mobile.
- To enable CylanceGATEWAY for users that you added, follow the instructions in Setting up CylanceGATEWAY.
- Assign policies to administrators, users, and groups.

Adding user groups

You can create groups for users who are enabled for the CylancePROTECT Mobile app and for CylanceGATEWAY users. A user group is a collection of related users who share common properties. Administering users as a group is more efficient than administering individual users because properties can be added, changed, or removed for all members of the group at the same time. When you assign policies to user groups, the policies apply to all members of the group.

You can assign policies to a group from the group settings page or from the policy page. If a user belongs to two or more groups that are assigned different policies, the highest ranked of the assigned polices is applied to the user.

You can create two types of user groups:

- Directory groups link to groups in your company directory. The membership of the group synchronizes with the membership list in the directory. For more information, see Configure onboarding and offboarding.
- Local groups are created and maintained in the management console. You can assign any local user or directory user to a local group.

Add a directory group

If you have linked to one or more company directories and configured onboarding, directory groups can be automatically added to Cylance Endpoint Security. You can also add a directory group if it has not been added through onboarding.

1. In the management console, on the menu bar, click **Assets > User Groups**.
2. Click **Add Group > Directory group**.
3. Start typing the name of a group as it appears in the directory.
4. Select the group name when it appears in the search results.
5. If you want the group and any nested groups to be enabled for onboarding, select **Nested directory groups**
6. To assign a policy to the group, click ⊕ and select the type of policy that you want to add.
7. Select the policy and click **Save**.

Add a local group

1. In the management console, on the menu bar, click **Assets > User Groups**.
2. Click **Add Group > Local group**.
3. Type a name and description for the group.
4. To assign a policy to the group, click ⊕ and select the type of policy you want to add.
5. Select the policy and click **Save**.
6. When you've finished assigning policies, click **Save**.
7. To add users to the group, on the **User Groups** page, click the group name, then click **Users**.

8. Click **Add user**.
9. Start typing a name to search for the user you want to add.
10. Select one or more names from the search results.
11. Click **Save**.

    You can also add and remove individual users from groups on the user page.

Add an authenticator

You add authenticators so that you can add them to authentication policies. An authenticator typically defines one authentication method, such as a password (for example, a Cylance console password) or a connection to a third-party for authentication like Active Directory, Okta, or Ping Identity. You add them to authentication policies to specify the types of authentication that administrators must complete to sign in to the Cylance console and users must complete to activate Cylance Endpoint Security apps or agents (for example, the CylancePROTECT Mobile app or CylanceGATEWAY). You can combine multiple authenticators in an authentication policy to provide multiple authentication steps. For example, you can combine the Enterprise authenticator with a one-time password prompt in a policy to require users to authenticate with both their work or Cylance console password and a one-time password.

Before you begin: If you add a SAML authenticator, download a copy of the signing certificate for your IDP.

1. On the menu bar, click **Settings > Authentication**.
2. Click **Add Authenticator**.
3. In the **Authenticator Type** drop-down list, select one of the following authenticators:

Item	Description
Azure (SAML)	Select this option if you want users to enter their Azure credentials. Do the following: **a.** Enter a name for the authenticator. **b.** If you want users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**. The code is sent to the email address that is associated with the user in your tenant. **c.** In the **Login request URL** field, enter the Login URL that is specified in the app registration single sign-on settings for your identity provider. For example, in the Azure Portal, go to Enterprise Application > CylancePROTECT application > Properties > Single Sign-On Settings > Login URL. **d.** In the **IDP signing certificate** field, paste the the body of the signing certificate that you downloaded, including the Begin Certificate and End Certificate lines. When you copy and paste the body of the certificate, make sure that you don't alter any line breaks or the format of the certificate information. **e.** In the **SP entity ID** field, enter the **Identifier (Entity ID)** that is used in the SAML configuration in Azure. This field is required, and the value that you enter must match the Identifier (Entity ID) in Azure. **f.** Specify any other optional settings. **g.** Click **Save**.

Item	Description
Custom (SAML)	Select this option if you want users to enter custom credentials. Do the following: **a.** Enter a name for the authenticator. **b.** If you want users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**. **c.** In the **Login request URL** field, enter the identity provider's single sign-on URL. **d.** In the **IDP signing certificate** field, paste the the body of the signing certificate that you downloaded, including the Begin Certificate and End Certificate lines. When you copy and paste the body of the certificate, make sure that you don't alter any line breaks or the format of the certificate information. **e.** Specify any other optional settings. **f.** Click **Save**.
Cylance Administrator Password	Select this option if you want users to enter their Cylance console credentials. Do the following: **a.** Enter a name for the authenticator. **b.** Click **Save**.
Deny Authentication	Select this option if you want to use an authentication policy to prevent users or groups of users from accessing the Cylance console or another service. You can add another policy or an app exception to allow access to a subset of users. **a.** Enter a name for the authenticator. **b.** Click **Save**.
Duo MFA	Select this option if you want users to authenticate using Duo multi-factor authentication. Before you add Duo as an authenticator, you should create an Auth API application. For instructions, see the information from Duo. Do the following: **a.** Enter a name for the authenticator. **b.** In the **DUO MFA Configuration** section, enter the API hostname, Integration key, and Secret key. You can find this information on the Applications tab in your organization's Duo account. For more information, see the Duo documentation.
Enterprise	Select this option if you want users to authenticate using their credentials for Active Directory, LDAP, or *my*Account. The credentials that a user will use depends on the account type that is the source for their user account in the console. Do the following: **a.** Enter a name for the authenticator. **b.** Click **Save**.

Item	Description
FIDO	Select this option if you want users to register a FIDO2 device and use it verify their identity. Supported device types include smartphones, USB security keys, or Windows Hello. **a.** Enter a name for the authenticator. **b.** Click **Save**. When FIDO is the first factor of authentication and a user registers a device for the first time, a one-time password is also sent to the email address that they use to sign in. When FIDO is used as a second factor in a policy, a one-time password isn't required when a user registers a device for the first time. For information about how to remove registered devices from a user account, see Remove a registered FIDO device for a user account in the Administration content.
Integrated Directory (Active Directory/Azure AD/LDAP)	Select this option if you want users to enter their Active Directory password. If you select this option, your Cylance Endpoint Security tenant must have a connection to the company directory instance. For more information, see Linking to your company directory. Do the following: **a.** Enter a name for the authenticator. **b.** Click **Save**.
IP Address	Select this option if you want to restrict users' access based on their IP address. You can create multiple IP address authenticators and use them to manage access for different groups, but you can only assign one IP address authenticator in a policy. **a.** Enter a name for the authenticator. **b.** In the **IP address ranges** field, specify one or more IP addresses, IP ranges, or CIDRs. Separate entries with a comma. **c.** Click **Save**.
Local Account	Select this option if you want users to enter their BlackBerry Online Account (*my*Account) credentials. Do the following: **a.** Enter a name for the authenticator. **b.** Click **Save**.
Okta MFA	Select this option if you want users to authenticate using Okta. Do the following: **a.** Enter a name for the authenticator. **b.** In the **Okta MFA Configuration** section, enter the Auth API Key and the Auth Domain. **c.** Click **Save**.

Item	Description
Okta (OIDC)	Select this option if you want users to authenticate using Okta. Do the following: **a.** In the drop-down list below **Okta**, select **OIDC**. **b.** Enter a name for the authenticator. **c.** In the **Identity Provider Client** section, enter the OIDC discovery document URL, the Client ID, and the Private key JWKS. **d.** Click **Save**.
Okta (SAML)	Select this option if you want users to enter their Okta credentials. Do the following: **a.** In the drop-down list below**Okta**, select **SAML**. **b.** Enter a name for the authenticator. **c.** If you want users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**. **d.** In the **Login request URL** field, enter the identity provider's single sign-on URL. **e.** In the **IDP signing certificate** field, paste the the body of the signing certificate that you downloaded, including the Begin Certificate and End Certificate lines. When you copy and paste the body of the certificate, make sure that you don't alter any line breaks or the format of the certificate information. **f.** Specify any other optional settings. **g.** Click **Save**.
OneLogin (OIDC)	Select this option if you want users to authenticate using OneLogin. Do the following: **a.** In the drop-down list below **OneLogin**, select **OIDC**. **b.** Enter a name for the authenticator. **c.** If you want users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**. **d.** In the **OneLogin Configuration** section, enter the OIDC discovery document URL, the Client ID, Client Secret, and Authentication Method. **e.** Click **Save**.

Item	Description
OneLogin (SAML)	Select this option if you want users to enter their OneLogin credentials. Do the following: **a.** Enter a name for the authenticator. **b.** If you want users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**. **c.** In the **Login request URL** field, enter the identity provider's single sign-on URL. **d.** In the **IDP signing certificate** field, paste the the body of the signing certificate that you downloaded, including the Begin Certificate and End Certificate lines. When you copy and paste the body of the certificate, make sure that you don't alter any line breaks or the format of the certificate information. **e.** Specify any other optional settings. **f.** Click **Save**.
One-Time Password	Select this option if you want users to enter a one-time password in addition to another type of authentication. **Note:** If you select this option, you must also add another authenticator to your authentication policy and rank it higher than the one-time password. Do the following: **a.** Enter a name for the authenticator. **b.** In the **One-Time Password Configuration** section, in the first drop-down list, select a number of intervals in the drop-down list. Any code within the window is valid if it precedes or follows the expected code by the number of refresh intervals that you specify. The refresh interval is 30 seconds, and the default setting is 1. **c.** In the **One-Time Password Configuration** section, in the second drop-down list, specify the number of times that users can skip the OTP app setup and authenticate without entering a code.
Ping Identity (OIDC)	Select this option if you want users to authenticate using Ping Identity.Do the following: **a.** In the drop-down list below **Ping**, select **OIDC**. **b.** Enter a name for the authenticator. **c.** In the **Identity Provider Client** section, enter the OIDC discovery document URL, the client ID, and the private key JWKS. **d.** In the **ID token signing algorithm** drop-down list, select a signing algorithm. **e.** Click **Save**.

Item	Description
Ping Identity (SAML)	Select this option if you want users to enter their Ping Identity credentials. Do the following: **a.** In the drop-down list below **Ping**, select **SAML**. **b.** Enter a name for the authenticator. **c.** If you want users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**. **d.** In the **Login request URL** field, enter the identity provider's single sign-on URL. **e.** In the **IDP signing certificate** field, paste the the body of the signing certificate that you downloaded, including the Begin Certificate and End Certificate lines. When you copy and paste the body of the certificate, make sure that you don't alter any line breaks or the format of the certificate information. **f.** Specify any other optional settings. **g.** Click **Save**.

4. Click **Save**.

After you finish: Create an authentication policy.

Considerations for adding SAML authenticators

When you add a SAML authenticator, the login request URL and IDP signing certificate values are required. You should note the following considerations for optional fields.

Note: When you configure an external identity provider, you must add the following Cylance Endpoint Security login request URL: `https://idp.blackberry.com/_/resume`. Because external SAML configurations support a list of single sign-on or assertion consumer service reply URLs, in existing configurations, you can add the new URL to the list as a secondary option or replace the original.

Item	Description
NameID format	You can use this field to specify an optional name identifier format to request from the identity provider.
Federated ID claim	You can use this field to specify an optional claim value that is used as your federated ID to link accounts across systems. The default value is NameID. If your IDP is setup to return the email address in a claim other than “NameID”, you must specify the claim in this field. You should use a unique, immutable, and persistent value in this claim (for example, an objectGUID or UUID). Using a value that is not unique or susceptible to change like an email address is not recommended. When users log in, Cylance Endpoint Security will use the value in the Federated ID claim to create a unique ID for the user to map their identities in both systems. After you specify the value to use as the federated ID claim it cannot be changed because it is used to link a user in the external identity provider and Cylance Endpoint Security after they log in for the first time.

Item	Description
Active Directory claim	You can use this field to specify an optional claim value that is used to match Active Directory objectGUIDs across systems to validate users.
Email claim	You can use this field to specify an optional claim value that is used to match email addresses across systems. The default value is 'email'. Cylance Endpoint Security requires that all SAML responses must contain the users full email address, and it must match the email address that is registered with Cylance Endpoint Security. If your IDP is setup to return the email address in a claim other than “email”, you must specify the claim in this field. For example, if the claim configured in your IDP is called “emailAddress”, then you must set “emailAddress” in the Email Claim field. If these do not match, users cannot sign in.
SP entity ID	You can use this field to specify an optional service provider entity ID to send to the identity provider (also known as the issuer string). For Azure SAML authenticators this field is required, and the value that you enter must match the Identifier (Entity ID) in the SAML configuration in Azure.
IDP entity ID	You can use this field to specify an optional identity provider entity ID (also known as the IDP Issuer). If provided, the IDP issuer will be validated on all responses.
Accepted clock drift	You can use this field to specify, in milliseconds, the acceptable clock drift between client and server.
Signature algorithm	You can use this field to specify the signature algorithm for signing requests.
Signature private key	You can use this field to specify, in PEM format, an optional private key that is used to sign all outgoing requests.

Migrate custom authentication settings to the authenticators list

You can migrate your existing SAML authenticators to the authenticators list in Settings so that you add them to authentication policies for users and groups or your tenant. When you migrate the authenticators, you must update the single sign-on URL to the URL used by Cylance Endpoint Security. You must also update the NameID claim in your external IDP configuration so that it returns a persistent, immutable value instead of a user's email address or create a claim in the identity provider that can be used as the Federated ID claim.

Before you migrate your settings, as a failsafe, you should create one authentication policy that requires only the Cylance console password and assign it to one administrator.

Note: When you migrate the custom authentication settings, in the external identity provider, you must add the following Cylance Endpoint Security login request URL: `https://idp.blackberry.com/_/resume`. Because external SAML configurations support a list of single sign-on or assertion consumer service reply URLs, in existing configurations, you can add the new URL to the list as a secondary option or replace the original.

For more information about SAML authenticators, see Considerations for adding SAML authenticators.

Before you begin: Download a copy of the signing certificate for your IDP.

1. In the management console, on the menu bar, click **Settings** > **Application**.
2. In the **Custom authentication** section, copy the following information to a text file:
   - Provider name
   - Login URL
3. On the menu bar, click **Settings** > **Authentication**.
4. On the **Authenticators** tab, click **Add authenticator**.
5. In the **Authenticator Type** drop-down list, click the SAML authenticator that corresponds to the provider you copied in step 2 (for example, Azure or Okta) or click Custom SAML.
6. In the **General Information** section, enter a name for the authenticator.
7. In the **SAML Configuration** section, if you want to require users to validate their email with a one-time code when they log in for the first time, turn on **Validation required**.
8. In the **Login request URL** field, enter the single sign-on URL for the identity provider.
9. In the **IDP signing certificate** field, paste the the body of the signing certificate that you downloaded, including the Begin Certificate and End Certificate lines.

   When you copy and paste the body of the certificate, make sure that you don't alter any line breaks or the format of the certificate information.
10. Do one of the following:

Task	Steps
Update the NameID and email claim values in the external identity provider.	**a.** Sign in to your external identity provider. **b.** Update the single sign-on URL for Cylance Endpoint Security to `https://idp.blackberry.com/_/resume`. You can add this URL to the existing login.<*region*>.cylance.com URL. **c.** Edit the NameID claim so that it returns a persistent, immutable value (for example, objectGUID or a UUID) that can be used in the Federated ID claim instead of the user's email address. For instructions, see the documentation from the identity provider. **d.** Create a new email claim that will return the user's email address.
Create a new claim in your external identity provider and add it to the authenticator settings.	**a.** Sign in to your external identity provider. **b.** Update the single sign-on URL for Cylance Endpoint Security to `https://idp.blackberry.com/_/resume`. You can add this URL to the existing login.<*region*>.cylance.com URL. **c.** Create a new claim that returns a persistent, immutable ID for a user. For instructions, see the documentation from the identity provider. **d.** In the Cylance management console, in the **Email claim** field, enter `nameID`. The nameID value must use a lowercase "n." **e.** In the **Federated ID claim** field, enter the name of the new claim that you created in the external identity provider.

11. Click **Save**.

After you finish:

- Create an authentication policy.
- If you encounter issues logging in using the SAML authenticator in an authentication policy, you can download a sample SAML response from your IDP and validate the claim names.

Manage authentication policies for your tenant

By default, Cylance Endpoint Security has three tenant authentication policies that are used to manage the types of authentication that administrators must complete to sign in to the Cylance console and users must complete to activate Cylance Endpoint Security apps or agents (for example, the CylancePROTECT Mobile app or CylanceGATEWAY). The tenant policies are applied when no app exception or authentication policy is assigned to the user for the console or the app that they are trying to access. The default policies and their authenticators are:

- Administration Console: This policy uses the Cylance console password as the default authenticator. It used for authentication to the Cylance Endpoint Security management console.
- CylanceGATEWAY: This policy uses the user's enterprise password as the default authenticator. It is used when users activate the CylanceGATEWAY app or desktop agent.
- CylancePROTECT Mobile app: This policy uses the user's enterprise password as the default authenticator. It is used when users activate the CylancePROTECT app on mobile devices. It is not applied when the user activates the desktop agent.

You can edit the policies to add other types of authentication that users must complete in the order that you specify in the policy. For example, if you add One-Time Password after the Enterprise authenticator, users enter their work or *my*Account credentials before they receive a one-time password prompt.

Before you begin: Add an authenticator.

1. On the menu bar, click **Settings > Authentication > Default Authentication**.
2. Click the policy that you want to edit.
3. In the **App Authentication** section, click **Add Authenticator**.
4. In the **Add authenticator** dialog box, in the drop-down list, select an authenticator. Click **Add**.

   Repeat this step to add more authenticators to the policy. Users must complete the types of authentication in the order that you specify. To change the order, click **Set Order**, drag the authenticators to the order that you want and click **Set Order**

   Note: If you add One-Time Password as an authenticator, it must be set after the enterprise password.

   again.
5. Click **Save**.

If you add authenticators to a default policy, you can click Revert to Default Method on the policy list page to restore the default setting.

Create an authentication policy

You create an authentication policy to specify the types of authentication that administrators must complete to sign in to the Cylance Endpoint Security management console and users must complete to activate Cylance Endpoint Security apps or agents (for example, CylancePROTECT Mobile or CylanceGATEWAY) . Users must complete the types of authentication in the order that you specify in the policy. For example, if you add Enterprise before One-Time Password, users enter their work or *my*Account credentials before they receive a one-time password prompt.

In a policy you can also configure app exceptions and specify different authenticators for specific apps. App exceptions take precedence over the authentication policy. Any authentication policies that are configured in your tenant are applied in the following order:

1. App exceptions in authentication policies that are assigned to users or groups
2. Authentication policies that are assigned to users or groups
3. Tenant authentication policy

Before you begin: Add an authenticator

1. On the menu bar, click **Policies > User Policy**.
2. Click the **Authentication** tab.
3. Click **Add policy**.
4. Enter a name and description for the policy.
5. In the **Authenticator rules** section, click **Add Authenticator**.
6. In the **Add authenticator** dialog box, select an authenticator in the drop-down list.

   Repeat this step to add more authenticators to the policy. Users receive prompts from each authenticator in the order that they are listed in the policy. If you add Duo MFA to the policy, you should also add another authenticator so that Duo is used as a second factor for authentication. To change the order, click **Set Order**, drag the authenticators to the order that you want, and click **Set Order** again.
7. If you want to add app exceptions, click **Manage App Exceptions**.
8. In the **Manage App Exceptions** dialog box, select the apps that you want to include in the **Available apps** pane.
9. Click ❯.
10. Click **Save**.
11. In the **Manage app exceptions** section, click the tab for one of the apps that you added as an exception.
12. Click **Add Authenticator**.
13. In the **Add authenticator** dialog box, select an authenticator from the drop-down list. Click **Save**.

    Repeat this step to add more authenticators to the app exception. Users must complete the types of authentication in the order that you specify. To change the order, click **Set Order**, drag the authenticators to the order that you want and click **Set Order** again.
14. To save the policy, click **Save**.

After you finish: Assign policies to administrators, users, and groups.

Assign policies to administrators, users, and groups

You can assign user policies to any number of groups, administrators, and users, but each administrator and user can have only one user policy of each type assigned to them. A policy assigned directly to a user or administrator takes precedence over policies assigned to groups that the user or administrator belongs to. If no policy is assigned directly to an administrator or user and the administrator or user belongs to two or more groups that are assigned different policies of the same type, the highest ranked of the assigned polices is applied to the administrator and user.

Each log in to the management console is evaluated against the policies that are assigned to administrators and users, in order, until a policy that is assigned matches. If no policy is assigned to the administrator or user directly, or through a group that they are a member of, the default policy is applied and they can only sign in to the Cylance console using their Cylance password. The enhanced authentication policies are applied to administrators and users in the following order:

- User policy app exceptions
- User policy
- Tenant app policy
- Default policy

Before you begin: Create one or more of the following policy types:

- Enrollment policy
- CylancePROTECT Mobile policy

- CylanceGATEWAY service policy
- Authentication policy

1. On the menu bar, click **Policies > User Policy**.
2. Select the tab for the policy type that you want to assign.
3. Click the name of the policy that you want to assign.
4. Click **Assigned Users and Groups**.
5. Click **Add user or group**.
6. Start typing a name to search for the user or group that you want to add.

   Administrator accounts are displayed with an 👤 icon in the user list. In some scenarios, you might see two user accounts for one user, an administrator account and an Active Directory user account.
7. Select one or more names from the search results.
8. Click **Add**.

   You can also assign policies to a user on the user configuration page and assign policies to a group on the group settings page
9. To unassign the policy from a user or group, select the users and groups that you want to unassign the policy for and click **Remove**.

Rank policies

You can assign policies to individual users and to user groups. If you assign a policy to an individual user, it takes precedence over policies assigned to groups that the user belongs to. If no policy is assigned directly to a user and the user belongs to two or more groups that are assigned different policies, the highest ranked of the assigned polices is applied to the user.

Before you rank policies you should decide on a strategy based on your objectives and which groups you assign policies to. For example, you may want network access control policies that apply to specific departmental groups to be ranked highest and more restrictive polices to be ranked below them, or you may want your most restrictive policy to be ranked highest.

1. On the menu bar, click **Policies > User Policy**.
2. Select the tab for the policy type that you want to assign.
3. Click **Rank**.
4. To change the order of a policy in the list, drag ⠿ for the policy to a new position in the list.
5. Click **Save**.

Enrolling CylancePROTECT Mobile and CylanceGATEWAY users

You assign an enrollment policy to users to allow them to activate the CylancePROTECT Mobile app on mobile devices and CylanceGATEWAY agent on Windows and macOS devices.

The enrollment policy includes separate settings for mobile and desktop devices. You can specify the supported device types and the text for email messages to be sent to users to provide activation instructions and a password or QR Code required to begin the activation process. You can specify the number of days that the activation password or QR Code is valid under **Settings > Activation**. The setting applies to all enrollment policies.

Users must have the following policies assigned to them before they can activate the CylancePROTECT Mobile app or the CylanceGATEWAY agent.

User type	Required policies
CylancePROTECT Mobile app user without CylanceGATEWAY support	• Enrollment policy • CylancePROTECT Mobile policy
CylancePROTECT Mobile app user with only CylanceGATEWAY support	• Enrollment policy • Gateway Service policy
CylancePROTECT Mobile app user with both CylancePROTECT Mobile and CylanceGATEWAY support	• Enrollment policy • CylancePROTECT Mobile policy • Gateway Service policy
Desktop user with CylanceGATEWAY agent	• Enrollment policy • Gateway Service policy

Note: The CylanceGATEWAY agent communicates over secure websockets (WSS) with the management console and must be able to establish this connection directly. You must configure your organization's network to allow connections to the appropriate domains. For example, to allow the CylanceGATEWAY agent to activate and periodically authenticate, you must allow access to idp.blackberry.com and the domain for your region. If your environment uses an authentication proxy, you must allow the traffic on the proxy server. If the appropriate domains are not allowed, the CylanceGATEWAY agent will not be able to open the browser to complete the authentication process. For more information on the domains that must be allowed for CylanceGATEWAY, visit support.blackberry.com/community to read article 79017. For information on the network requirements for Cylance Endpoint Security, see Cylance Endpoint Security network requirements.

Create an enrollment policy

1. In the management console, on the menu bar, click **Policies > User Policy**.
2. Click the **Enrollment** tab.
3. Click **Add Policy**.
4. Type a name and description for the policy.
5. To set enrollment options for mobile device users with the CylancePROTECT Mobile app, perform the following actions:
   a) Click **Mobile**.
   b) To limit the device types that the user can enroll, under **Allowed Platforms**, turn off **iOS** or **Android**.

c) Under **UES Mobile Welcome email**, review the subject for the email message sent to users and update it if necessary.
d) Update the body of the message as necessary to provide information specific to your organization.

You can use variables in the email message.

6. To set enrollment options for the CylanceGATEWAY agent on Windows and macOS devices, perform the following actions:
   a) Click **Gateway Desktop**.
   b) To limit the device types that the user can enroll, under **Allowed Platforms**, turn off **Windows** or **macOS**.
   c) Under **Welcome email**, review the subject for the email message that is sent to users and update it if necessary.
   d) Update the body of the message as necessary to provide information specific to your organization.

   You can use variables in the email message. Users must enter the {{CustomDomain}} value in the Custom Domain field on the first sign-in page. You can use the variable to insert the value or find it in **Settings > Application** in the **Company** field.
7. Click **Add**.

After you finish: Assign the policy to users and groups.

Supported enrollment email variables

You can use the following variables in the text of the email message specified by the enrollment policy:

Variable	Description
{{UserDisplayName}}	User display name as it appears on the User page or in the directory the user was onboarded from.
{{FullUserName}}	Full user name as it appears on the User page or in the directory the user was onboarded from.
{{UserName}}	User name as it appears on the User page or in the directory the user was onboarded from.
{{UserEmailAddress}}	User email address as it appears on the User page or in the directory the user was onboarded from.
{{CustomDomain}}	Your organization's Cylance Endpoint Security company domain name. This value is displayed under **Settings > Application** in the **Company** field.
{{EnrollmentQRCode}}	QR code generated by Cylance Endpoint Security to simplify activating the CylancePROTECT Mobile app on mobile devices. This variable can be used only in the email message sent to mobile device users.
{{EnrollmentPasscode}}	Activation password generated by Cylance Endpoint Security
{{EnrollmentPasscodeExpiry}}	The date the activation password and QR code expire. You can set the number of days that the activation password or QR code is valid under **Settings > Activation**.

Setting up zones to manage CylancePROTECT Desktop and CylanceOPTICS

You can use zones to group and manage CylancePROTECT Desktop and CylanceOPTICS devices. You can group devices based on geography (for example, Asia and Europe), function (for example, Sales and IT staff), or by any criteria that your organization requires.

You can assign a device policy to a zone and apply that device policy to the CylancePROTECT Desktop and CylanceOPTICS devices that belong to that zone. You can also add a zone rule to assign devices to a zone based on selected criteria, like domain name, IP address range, or operating system. A zone rule will add new devices to the zone if the device meets the rule requirements.

Note that administrator users with the Zone Manager role can install agents on devices, but they do not have access to the default zone (Unzoned), so they cannot assign devices to zones.

Add and configure a zone

1. In the management console, on the menu bar, click **Zones**.
2. Click **Add New Zone**.
3. In the **Zone Name** field, type a name for the zone.
4. In the **Policy** drop-down list, click a device policy to associate with the zone.
5. In the **Value** field, click the appropriate priority level for the zone. This setting has no impact on managing zones or devices.
6. Click **Save**.
7. In the zones list, click the name of the zone that you created.
8. Do any of the following:

Task	Steps
Create a zone rule.	The rule conditions that you specify are processed in order from top to bottom. **a.** Click **Create Rule**. **b.** Configure the zone rule. **c.** Click **Save**.
Add devices to the zone.	**a.** On the **Devices** tab, click **Add Device to Zone**. **b.** Select the devices that you want to add. **c.** If you want to apply the zone device policy to those devices, select the **Apply zone policy to selected devices** check box. **d.** Click **Save**.
Apply the zone device policy to all the users in the zone.	This action replaces any device policies that are currently assigned to devices with the device policy that is currently assigned to the zone. **a.** Select the **Apply to all devices in this zone** check box. **b.** Click **Save**.

Task	Steps
Copy devices to another zone.	**a.** On the **Devices** tab, select one or more devices. **b.** Click **Copy Device**. **c.** Select one or more zones. **d.** Click **Save**.
Remove devices from the zone.	**a.** On the **Devices** tab, select one or more devices. **b.** Click **Remove Device from Zone**. **c.** Click **Yes**.

Setting up CylancePROTECT Desktop

Step	Action
1	Review the CylancePROTECT Desktop requirements.
2	Create and configure a device policy. • Review the recommendations for creating and testing device policies. • Review the recommendations for zone management.
3	Install the CylancePROTECT Desktop agent on devices. • Installing the CylancePROTECT Desktop agent for Windows • Installing the CylancePROTECT Desktop agent for macOS • Installing the CylancePROTECT Desktop agent for Linux
4	Manage updates for the CylancePROTECT Desktop and CylanceOPTICS agents.

Testing your CylancePROTECT Desktop deployment

Before you deploy the CylancePROTECT Desktop agent to your organization, you should test how it behaves with other applications in a test environment so that you can make sure that the applications that are used in your organization are allowed to run and work as expected. For example, if you discover that the agent blocks some applications, such as custom-built apps or scripts from running properly, you can configure exclusions in your environment to allow them to do so.

When you want to test the agent, install it on test systems that include applications that are used in your organization to make sure that it accurately represents the environment that you expect users to be using.

To test the agent, you do the following:

1. Create test policies.
2. Create test zones.

The testing process includes creating test device policies and test zones. Device policies contain the settings for the agent and tell it what to do when it encounters a threat. Zones help you group your systems by geographical location, business unit, operating system, or other group properties. Zone rules help you automatically assign systems to a zone based on the criteria that you set (for example, operating system, IP address range, and other criteria). You should test policies and zones to familiarize yourself with these features and to help you plan how to use these features in your organization.

Create a CylancePROTECT Desktop test policy

You should implement CylancePROTECT Desktop policy features in a phased approach to ensure performance and operations are not impacted. By default, when you create a device policy, policy features are not enabled and you must manually enable them. As you understand the types of threats that are logged in your environment and how the CylancePROTECT Desktop agent behaves, you can gradually enable more policy features.

It is recommended that you test device policies on devices that include the applications that are used in your organization. It is important that the devices that you use to test device policies accurately represent the devices that are in your production environment, and not just a clean machine, to ensure that applications are allowed to run properly when policies are enforced through the CylancePROTECT Desktop agent. For example, you might select a subset of devices in your production environment that include all applications (proprietary and custom) that users need for their daily activities.

The agent uses execution control and process monitoring to analyze running processes only. This includes all files that run at startup, that are set to auto-run, and that are manually executed by the user. The agent only sends alerts to the management console. By default, no files are blocked or quarantined.

1. In the management console, click **Policies > Device Policy > Add new policy**.
2. In the **Policy Name** field, type a name for the test policy.
3. Enable **Auto Upload** to analyze and send suspicious files to the CylancePROTECT cloud services for further analysis.
   a) In the **File Actions** tab, in the **Auto Upload** section, select all the file types that are available.
   b) Click **Create** to create the initial test policy.
   c) Assign the initial test policy to the CylancePROTECT Desktop endpoints that you are using for testing.
   d) Allow the devices that are assigned to the test policy to run for at least one day to allow applications and processes that are typically used on the device to run and be analyzed. You may want to consider any required applications that run periodically on a device (for example, once a week) that may need to be monitored outside of this test run.
   e) While testing the policy, navigate to the **Protection > Threats** screen in the management console to view a list of applications and processes that CylancePROTECT considers to be a threat (abnormal or unsafe) and identify the ones that should be allowed to run on the endpoint. You can click a threat to view more information about it and download the malicious file to perform your own threat research. The malicious file is unaltered but renamed using the SHA256 hash without a file extension to prevent the accidental detonation of it. If you rename it to include the original file extension, the malicious file may be run. No personally identifiable information is shared with the console or with other tenants or organizations.
   f) Navigate to **Policies > Device Policy** and edit the device policy to allow specific applications and processes to run on endpoints that have this policy assigned to them. You can add files to the **Policy Safe List** section in the **File Actions** tab.

      You may also quarantine or waive files on specific devices or all devices in your organization. For more information, see Managing safe and unsafe lists for CylancePROTECT Desktop.
4. Edit the device policy to enable the background threat detection scans to analyze executable files on the disk that may be dormant threats.
   a) In the **Protection Settings** tab, enable the **Background Threat Detection** setting and select the **Run Once** option. Although periodic scanning is not necessary due to the predictive abilities of the solution, you may select **Run Recurring** to enable it, for example, for compliance purposes.
   b) Enable the **Watch For New Files** setting. This setting may negatively impact performance on the device. Adding folder exclusions may help reduce the impact.
   c) To exclude specific folders from background threat detection, select **Exclude Specific Folders (includes subfolders)** and specify the folders to exclude. To allow the execution of files in the folders that you specified, select **Allow execution**. For more information about these fields, see Protection settings.
   d) Click **Save** to save the policy.
   e) Test the policy again and make sure that any applications that users are required to use are allowed to run. Background threat detection scanning may take up to one week, depending on how busy the system is and the number of files that require analysis. If necessary, make sure to add files to the policy safe list, global safe list, or waive them for individual devices. You can also exclude the folder containing the file in the protection settings.

5. Edit the device policy to kill unsafe processes that are running on the system. For example, when a threat is detected in an executable file (.exe or .msi) and it is considered to be unsafe, this setting kills running processes and their sub-processes.
    a) In the **Protection Settings** tab, enable the **Kill Unsafe Running Processes** setting.
6. Edit the policy to enable the auto-quarantine settings for unsafe and abnormal files.
    a) In the **File Actions** tab, under the **Unsafe** table column, enable the **Auto Quarantine** setting beside **Executable** to automatically move unsafe files to the quarantine folder on the device. Unsafe files have malware attributes and are likely to be malware.
    b) Under **Abnormal**, enable **Auto Quarantine** to automatically move abnormal files to the quarantine folder on the device. An abnormal file has fewer malware attributes than an unsafe file and is less likely to be malware.
7. Edit the policy to enable memory protection settings to handle memory exploits, process injections, and escalations.
    a) In the **Memory Actions** tab of the device policy, enable **Memory Protection** and set the violation types to **Alert**. When a violation type is set to alert and a threat of that type is detected, the agent sends information to the console but does not block or terminate any processes running in the device memory.
    b) While testing the policy, navigate to the **Protection > Memory Protection** screen in the console to view a list of memory protection alerts for processes may be a threat.
    c) If you determined that any of the processes are safe for daily business activities, you can add exclusions for the processes that you want to allow to run. In the **Memory Actions** tab of the device policy, click **Add exclusion** and specify the relative path to the file.
    d) After you have specified the exclusions for processes that you want to allow to run, set the action to **Block** for all violation types. When a violation type is blocked, the agent sends information to the console and blocks the malicious process from running in the memory. The application that called the malicious process is allowed to continue to run.
8. Edit the policy to enable the device control settings. This example demonstrates how to block access to all device types and allow the exceptions, but you may choose to allow full access to all device types and block the exceptions instead.
    a) In the **Device Control** tab of the device policy, enable the **Device Control** policy.
    b) Set the access level for each of the USB device types to **Full Access**.
    c) Save the policy.
    d) On the test device, insert a USB device.
    e) In the management console, navigate to **Protection > External Devices** and identify the vendor ID, product ID, and serial number of any devices that you want to allow. Not all manufacturers use a unique serial number with their products; some manufacturers use the same serial number for multiple products.
    f) In the **Device Control** tab of the device policy, in the **External Storage Exclusion List** section, click **Add device** to add any devices that you want to allow.
    g) Once testing is complete, set the access level for each of the device types to **Block**. You can add any exclusions as needed.
9. Edit the policy to enable the script control settings. The suggested testing time is 1 to 3 weeks.
    a) In the **Script Control** tab of the device policy, enable the **Script Control** policy.
    b) Set the policy for each of the script types to **Alert**. The longer the time script control is set to alert, the more likely you are to find infrequently run scripts used in the organization.

       Note: Enabling the script control setting can cause a high-volume of events if scripts are used to manage Active Directory settings.
    c) Navigate to **Protection > Script Control** and identify the scripts that were run on devices that you want to allow.

d) In the **Script Control** tab of the device policy, in the **Exclude Files, Scripts or Processes** section, click **Add exclusion** and specify a relative process path of the scripts that you want to allow (for example, `\Cases\AllowedScripts`).
e) After you have added the exclusions for scripts that you want to allow to run, you can set the policy for each of the script types to **Block**.

Exclusions and when to use them

The following table provides a description of each type of exclusion and general guidance about when and how to use them appropriately.

Exclusion type	Description and example
Policy safe list (File Actions)	The policy safe list is specified in the **File Actions** tab in a device policy. When a device policy is assigned to a device, the device is allowed to run files that are specified in the policy safe list. The policy safe list is applied at the policy level for specific devices whereas the global safe list or quarantine list is applied at the global level for all devices. The policy safe list takes precedence over the global quarantine list. A file that is added to the policy safe list is allowed to run on any device that is assigned the policy, even if that file is in the global quarantine list, which blocks files from running on all devices. Example: You frequently use privilege escalation tools like PSEXEC to perform your daily tasks. You do not want other users to have the same ability, and you want to prevent them from using such tools without impacting your own daily duties. To do this, you can add PSEXEC to the global quarantine list and add the same file hash to your policy safe list. Then you ensure that only you and other authorized users are assigned to that particular device policy where you added PSEXEC to the safe list. The result is that all users that are not assigned to the device policy will have PSEXEC quarantined, but users that are assigned to the device policy are able to use it.

Exclusion type	Description and example
Exclude executable or macro files (Memory Protection)	Exclusions for the memory protection policy are specified in the **Memory Actions** tab in a device policy when **Memory Protection** is enabled. When you specify exclusions for memory protection, the agent ignores violations of specific types from each specific application. In other words, you avoid blocking or terminating an application when it performs an action that causes a violation of a certain type. When memory protection is enabled, the agent monitors application processes for specific actions that they perform. If a process performs a particular action that the agent is monitoring for, such as an LSASS read, the agent reacts to that action according to the device policy. Sometimes false positives occur and memory protection blocks an action that an application tried to perform, or terminates the application completely. In this situation, you can specify exclusions for memory protection so that certain applications are exempt from specific violation types and can run as intended without being blocked or terminated. Example: Your organization blocks all memory protection violations from all applications by default. You use Test.exe frequently and you understand that it has legitimate reasons for LSASS read violations only. You can add an exclusion so that the agent ignores only LSASS read violations from Test.exe. The agent still blocks Test.exe when a violation of any other type occurs. Memory protection exclusions use relative paths (drive letters are not required) and can be specified down to the executable level. For example: • `\Application\Subfolder\Test.exe` • `\Subfolder\executable` **Note:** It is not recommended to specify an exclusion at the executable level without a relative path. For example, if an exclusion is set for `\Test.exe`, a malicious file with the same name would be allowed to run from any folder on the device.
Exclude specific folders (Protection Settings)	Exclusions for background threat detection are specified in the **Protection Settings** tab in a device policy when **Background Threat Detection** is enabled. This may be known as directory safelisting. When a directory is excluded, the agent ignores any files in that directory during a scan, including any sub-folders. If you select **Allow Execution**, the agent ignores any executables that are launched from the excluded directories. Example: An application developer in your organization uses a directory (for example, `C:\DevFiles\Temp`) to store temporary files that are generated during compilation. The agent scans these files, considers them to be unsafe due to various characteristics found in them, and subsequently quarantines them. The developer submits a request to allow the temporary directory. You can add the `C:\DevFiles\Temp` directory so that the temporary files are ignored and the developer can perform their work.

Exclusion type	Description and example
Folder exclusions (Script Control)	Exclusions for the script control policy are specified in the **Script Control** tab in a device policy when **Script Control** is enabled. You can add exclusions when you want to allow scripts to run in a specified directory. When adding script control exclusions, specify the relative paths. Subfolders are also included in the exclusion. Example: An IT administrator is attempting to run a script located in `C:\Scripts\Subfolder\Test`. The script is blocked by script control every time the IT administrator attempts to run it. To allow the script to run, you can add one of the following relative paths as an exclusion to the script control policy: • `\Scripts\Subfolder\Test` • `\Subfolder\Test\` • `\Scripts\Subfolder\` • `\Scripts\` • `\Subfolder\` • `\Test\`

Using device policies to manage CylancePROTECT Desktop devices

Device policies define how the CylancePROTECT Desktop agent handles suspicious files and malware that it encounters. Execution control is enabled by default in all device policies, which allows the agent to alert the management console when unsafe or abnormal files attempt to run. After the agent is installed, the agent also analyzes all running processes and modules to determine whether there are threats that are already active. Each device is assigned to one device policy. The default policy is assigned if no other policy is assigned to a device.

You can use device policies to do the following:

- Enable auto-quarantine for unsafe or abnormal files so that they are prevented from executing on the device. You can define the policy safe list for files that your organization considers as safe, even if the files have a threat score that indicates that they're unsafe or abnormal.
- Enable memory protection settings to prevent memory exploits, including process injections and escalations. You can add exclusions for executable and macro files that you want to allow to run.
- Enable protection settings such as preventing shutdown of the CylancePROTECT service, killing unsafe processes and sub-processes that are running, and running background threat detection to analyze files that may be dormant threats.
- Enable and configure CylanceOPTICS settings.
- Enable the application control feature to restrict new applications from running and blocks any updates or modifications to applications that were already installed.
- Enable agent settings, such as the auto-upload of log files or desktop notifications.
- Enable script control settings to prevent malicious scripts from running on devices. You can add exclusions to allow certain scripts to run if your organization considers them to be safe.
- Enable device control settings to prevent USB mass storage devices (such as USB flash drives, external hard drives, and smartphones) from connecting to a device.

Create and manage a device policy

Device policies allow you to control the features of the CylancePROTECT Desktop and CylanceOPTICS agents. You can create different device policies to meet the different needs of groups within an organization.

1. In the management console, on the menu bar, click **Policies > Device policy**.
2. Do any of the following:

Task	Steps
Add a new device policy	**a.** Click **Add new policy**. **b.** In the **Policy Name** field, enter a name for the device policy. **c.** Select device policy settings. **d.** Click **Create**.
Edit a device policy	**a.** Click the name of the device policy that you want to edit. **b.** Update the device policy settings. **c.** Click **Save**.
Copy a device policy	**a.** Click the name of a device policy that you want to copy. **b.** In the **Policy Name** field, change the name of the device policy. **c.** If necessary, update the device policy settings. **d.** Click **Save As**.
Device policy settings	For information about device policy settings, see the following sections: • File actions • Memory actions • Protection settings • Application control • Agent settings • Script control • Device control • CylanceOPTICS settings
Automatically assign a device policy to devices in a zone	You can specify a device policy when you configure a zone so that when devices are added to that zone, they are automatically assigned to a policy. For more information, see Add and configure a zone.
Manually assign a device policy to a device	**a.** In the management console, on the menu bar, click **Assets > Devices**. **b.** Select the devices that you want to assign a device policy to. **c.** Click **Assign policy**. **d.** Select the device policy that you want to assign. **e.** Click **Save**.

File actions

The following settings can be found in the **File Actions** tab in a device policy. They specify how the CylancePROTECT Desktop agent handles a file when it detects a threat that it considers to be unsafe or abnormal.

Option	Description
Auto Quarantine with Execution Control	This setting specifies whether to automatically quarantine unsafe or abnormal files to prevent them from executing. If you want to quarantine abnormal files, you must first select the option to quarantine unsafe files. Unsafe files contain significantly more malware attributes and are more likely to be malware than abnormal files. When a file is quarantined, the following occurs: • The file is renamed with a `.quarantine` extension. • The file is moved from its original location to one of the following quarantine directories: • **For Windows devices:** `C:\ProgramData\Cylance\Desktop\q` • **For macOS devices:** `/Library/Application Support/Cylance/Desktop/q` • **For Linux devices:** `/opt/cylance/desktop/q` • The Access Control List (ACL) for the file is modified to prevent to prevent the user from interacting with the file. Some malware is designed to create files in other directories and continues to do so until it is successful. Instead of removing the files, CylancePROTECT Desktop modifies them so that the malware doesn't try to create them again and so that they could not be executed.
Enable auto-delete for quarantined files	This setting specifies whether to automatically delete quarantined files after a specified number of days. For example, you can set it so that a file is deleted after it has been quarantined for 14 days. The number of days can range from 14 to 365. When the file is deleted, the following occurs: • The action is included in the agent log file for verification and auditing purposes. • The file is removed from the quarantine list in the agent UI.
Auto Upload	Make sure that you enable **Auto Upload** for all available file types. If the agent finds a file that CylancePROTECT cloud services has never analyzed before, it requests to upload the file for analysis. CylancePROTECT Desktop only uploads and analyzes unknown files such as Portable Executable (PE), Executable and Linkable Format (ELF) and Mach Object file format (Mach-O) files. If the same unknown file is discovered on multiple devices in the organization, CylancePROTECT Desktop uploads one file only from a single device for analysis, not one file per device.
Policy Safe List	Add files that you consider to be safe to the policy safe list to allow them to run. The policy safe list takes precedence over the global safe list or global quarantine list. For example, a file that is added to the policy safe list is allowed to run on a device that is assigned the policy, even if that file is in the global quarantine list which blocks files from running on all devices.

Add files to the policy safe list

You can add files to the policy safe list so that all agents in that policy consider them as safe, even if the threat score indicates that they are unsafe or abnormal. For more information about policy safe lists, see Exclusions and when to use them.

Before you begin: Obtain the SHA256 value of the file that you want to exclude from the **Protection > Threats** screen.

1. In the management console, on the menu bar, click **Policies > Device Policy**.
2. Click the name of a policy to edit it or click **Add new policy**.
3. In the **File Actions** tab, in the **Policy Safe List** section, click **Add file**.
4. Specify the SHA256 value for the file that you want to exclude.
5. Optionally, specify the MD5 value and file name.
6. Select a category and enter the reason for this exclusion.
7. Click **Submit**.

Memory actions

The following settings can be found in the **Memory Actions** tab in a device policy. You can enable **Memory Protection** and specify how the CylancePROTECT Desktop agent handles memory exploits, including process injections and escalations. You can also add executable files to an exclusion list, allowing these files to run when this policy is applied.

Option	Description
Memory Protection	This setting specifies whether to enable memory protection settings in this policy. When enabled, the agent detects various types of process calls that may be a threat and handles each type according to the setting that you choose. • **Ignore**: The agent does not take any action. • **Alert**: The agent logs the violation and reports the incident to the management console. • **Block**: The agent logs the violation, reports the incident to the management console, and blocks the process call. The application that made the call is allowed to continue to run. • **Terminate**: The agent logs the violation, reports the incident to the management console, blocks the process call, and terminates the application that made the call.

Option	Description
Exclude Executable Files	This setting specifies the relative path of the files that you want to ignore. When files are added to this exclusion list, you allow them to run or be installed on devices that are assigned this policy. You specify the relative path of the file and the violation types that you want to ignore. On Windows devices, you can also specify the absolute file path. Use shortened relative paths with caution because it may exclude other executables that have the same relative path. After applying the exclusion, all instances of that process must be terminated to stop the driver from injecting into it. **Windows examples** • Relative path: `\Application\Subfolder\application.exe` • Absolute path: `C:\Application\Subfolder\application.exe` **Linux examples** • Relative path: `/opt/application/executable` • Relative path for Dynamic Library files: `/executable.dylib` **macOS examples** • Relative path without spaces: `/Applications/SampleApplication.app/Contents/MacOS/executable` • Relative path with spaces: `/Applications/Sample Application.app/Contents/MacOS/executable` • Relative path for Dynamic Library Files: `/executable.dylib` You can can also use wildcards for memory protection exclusions. For more information, see Wildcards in memory protection exclusions. **Note:** If you save an exclusion without adding at least one violation type to ignore, the exclusion is applied to both memory protection and script control events. Adding at least one violation type to ignore means the exclusion is applied to memory protection only.

Option	Description
Ignore Specific Violation Types	When you add an exclusion, select this checkbox to ignore a file violation based on any or all of the following: • Violation type categories (for example, Exploitation, Process Injection, Escalation) • Individual violations types under each category (for example, Stack Pivot, Remote Allocation of Memory, Zero Allocate, and so on) When adding exclusions to a memory protection policy, if you want the policy to apply to memory protection violations only and not script control violations, specify at least one violation type that you want to ignore. If you do not select any violation types to ignore, a warning message appears and the exclusion will apply to both memory protection and script control policies. For existing memory protection policies: • If the **Ignore Specific Violation Types** exclusion setting is already checked but the script control policy is not enabled, no action is required. • If the **Ignore Specific Violation Types** exclusion setting is unchecked and you want to ensure the policy is applied to memory protection violations only (and not script control), you must check it and specify at least one the violation type that you want to ignore. If you edit an existing policy and add an exclusion, the “Ignore specific violation types” checkbox is not displayed until you modify the violation type (for example, move it from block to terminate or alert). For each file that has specific violation types that are ignored, you can view detailed information, edit, or delete the settings.
Treat as DLL exclusion	Select this setting when you want to add exclusions for third-party DLLs. For example, if you are running third-party security products in addition to CylancePROTECT Desktop for Windows, you can add an exclusion for the appropriate .dll files so that CylancePROTECT ignores specific violations for those products. This feature supports the Malicious Payload and System DLL Overwrite violation types only. The following rules apply when you specify a DLL exclusion: • You must select the **Treat as DLL exclusion** option in the device policy. • The device must be running CylancePROTECT Desktop agent version 3.1.1001 or later on a Windows device. • The file path that you specify must be the full, direct path to the .dll file. Wildcards are not allowed. • The .dll file must be signed using a certificate that is trusted on the device where CylancePROTECT Desktop is installed. Otherwise, it will not be excluded. For more information about supporting DLL exclusions, visit support.blackberry.com to read KB 108909.

Memory protection violation types

Exploitation violation types

Violation type	Description	Supported OS
Stack Pivot	The stack for a thread has been replaced with a different stack. Generally, the system only allocates a single stack for a thread. An attacker might use a different stack to control execution in a way that is not blocked by Data Execution Prevention (DEP).	Windows macOS* Linux
Stack Protect	The memory protection of a thread's stack has been modified to enable execution permission. Stack memory should not be executable, so this can mean that an attacker is preparing to run malicious code stored in stack memory as part of an exploit, an attempt that would otherwise be blocked by Data Execution Prevention (DEP).	Windows macOS* Linux
Overwrite Code	Code that resides in a process's memory has been modified using a technique that might indicate an attempt to bypass Data Execution Prevention (DEP).	Windows
RAM Scraping	A process is trying to read valid magnetic stripe track data from another process. Typically, this violation is associated with point of sale systems (POS).	Windows
Malicious Payload	A generic shellcode and payload detection associated with exploitation has been detected. This memory protection violation type supports DLL exclusions.	Windows
Violation types available with agent 2.1.1580 or later		
System Call Monitoring	A system call made to an application or operating system has been detected.	Windows
Direct System Calls	An attempt to silently inject malicious code into other processes has been detected. This violation type cannot be blocked.	Windows
System DLL Overwrite	An attempt to overwrite a system DLL has been detected. This memory protection violation type supports DLL exclusions.	Windows
Dangerous COM Object	Malicious code that has a reference to a Component Object Model (COM) object has been detected.	Windows

Violation type	Description	Supported OS
Injection via APC	A process that is injecting arbitrary code into the target process using an asynchronous procedure call (APC) or start remote thread to call `LoadLibrary`, or similar function has been detected. If this policy is set to alert, you can expect to see alerts for both valid and malicious injections that take place for applications on Windows devices. The alert reports the application that received the injection but you must determine the executable source that caused the alert. For information about gathering the necessary data that might help you determine whether an injection was valid or malicious, visit support.blackberry.com to read KB 92422. If this policy is set to block or terminate the application, it prevents reported applications from running on the device even if they are valid. This can cause a disruption to a user's day-to-day activities.	Windows
Violation types available with agent 3.0.1000 or later		
Dangerous VBA macros	A macro that contains dangerous implementations has been detected. This setting protects devices running agent version 2.1.1580 and later against malicious macros. The exclusions that are specified in the memory protection policy are supported on agent version 3.0 and later. To protect devices running agent version 2.1.1578 and earlier against malicious macros, enable and configure the script control policy and its exclusions.	Windows

* Supported on macOS Catalina and earlier only.

Process injection violation types

Violation type	Description	Supported OS
Remote Allocation of Memory	A process has allocated memory in another process. Most allocations only occur within the same process. This might indicate an attempt to inject code or data into another process to reinforce a malicious presence on a system.	Windows macOS
Remote Mapping of Memory	A process has introduced code or data into another process. This might indicate an attempt to begin executing code in another process and thereby reinforce a malicious presence.	macOS

Violation type	Description	Supported OS
Remote Write To Memory	A process has modified memory in another process. This might indicate an attempt to store code or data in previously allocated memory (see `OutOfProcessAllocation`) but it is possible that an attacker is trying to overwrite existing memory to divert execution for a malicious purpose.	Windows macOS
Remote Write PE To Memory	A process has modified memory in another process to contain an executable image. Generally this indicates that an attacker is attempting to execute code without first writing that code to disk.	Windows
Remote Overwrite Code	A process has modified executable memory in another process. Under normal conditions, executable memory is not modified, especially by another process. This usually indicates an attempt to divert execution in another process.	Windows
Remote Unmap of Memory	A process has removed a Windows executable from the memory of another process. This might indicate an intent to replace the executable image with a modified copy for the purpose of diverting execution.	Windows macOS
Remote Thread Creation	A process has created a new thread in another process. A process's threads are usually only created by that same process. This method is generally used by an attacker to activate a malicious presence that has been injected into another process.	Windows macOS*
Remote APC Scheduled	A process has diverted the execution of another process's thread. Generally, an attacker uses this method to activate a malicious presence that has been injected into another process.	Windows
DYLD Injection	An environment variable has been set that will cause a shared library to be injected into a launched process. Attackers can modify the list of applications such as Safari or replace applications with bash scripts that allow their modules to be loaded automatically when an application starts.	macOS* Linux
Violation types available with agent 2.1.1580 or later		
Doppelganger	A new malicious process was started from a file that has not yet been written to the file system. The file write transaction is usually rolled back after the process starts (so that the malicious file is never committed to disk), and any attempt to scan the file on disk will only see the unmodified, benign file.	Windows
Dangerous Environmental Variable	An environment variable that might have malicious code attached to it has been detected.	Windows

* Supported on macOS Catalina and earlier only.

Escalation violation types

Violation type	Description	Supported OS
LSASS Read	Memory belonging to the Windows Local Security Authority process has been accessed in a manner that indicates an attempt to obtain user passwords.	Windows
Zero Allocate	A null page has been allocated. The memory region is typically reserved, but in certain circumstances it can be allocated. Attacks can use this to setup privilege escalation by taking advantage of some known null de-reference exploit, typically in the kernel.	Windows macOS*
Violation types available with agent 2.1.1580 or later		
Memory Permission Changes in Other Processes	A violating process has modified memory access permissions within another process. This is usually done to inject code into another process and make memory executable by modifying memory access permissions.	Windows
Memory Permission Changes Child Processes	A violating process has created a child process and has modified memory access permissions in that child process.	Windows
Stolen System Token	An access token has been modified to allow a user to bypass security access controls.	Windows
Low Integrity Process Start	A process has been set to run with a low integrity level.	Windows

* Supported on macOS Catalina and earlier only.

Wildcards in memory protection exclusions

Memory protection exclusions can include the following special characters (all OS): ^ & ' @ { } [ ] , $ = ! - # ( ) % . + ~ _ *

On Windows devices, any letter value followed by a colon (for example, C:) is also supported.

Escaping the asterisk (*) is not supported at this time. For example, you cannot use it to exclude a file that contains an asterisk in its file name.

When adding DLL exclusions, wildcards are not allowed.

Wildcard	Description
*	This matches zero or more characters, except for the platform-specific file path separators. The file path separators are '\' on Windows devices, and '/' on Linux and macOS.

Wildcard	Description
**	This matches zero or more directories in an absolute path to exclude drives, directories, and child directories. For example, `C:\MyApp\''\**\''`. Follow these rules when using the `**` wildcard: • Always use `**` with file path separators, such as `\**\` or `/**/` • The pattern `**\` is valid if it is at the beginning of pattern for Windows devices only. It matches all directories inside all drives. • You can use `\**\` or `/**/` multiple times in a path without limitation.

Note: In a normal wildcard, three asterisks "***" are valid and equal a single asterisk"*". However, three asterisks are not valid for exclusions because it would hide typos. For example, in the pattern "C:\***.exe", users might have wanted to type "C:\***.exe" but missed one "\". If "***" were treated as a single "*" it could result in different behavior than was intended.

Windows examples of wildcards used in memory protection exclusions

The following examples are based on excluding an executable that is stored in the following path: `C:\Application\TestApp\MyApp\program.exe`

	Examples

Examples of valid exclusion paths	**Relative path exclusion without any wildcards**:
	`\Application\TestApp\MyApp\program.exe`
	Exclude program.exe as long as program.exe is located in the "MyApp" directory in C:\Application:
	`C:\Application\**\MyApp\program.exe`
	Exclude any .exe file that is located in the "MyApp" directory in C:\Application :
	`C:\Application\**\MyApp\*.exe`
	Exclude any executable (regardless of its file extension) as long as it is located in the "MyApp" directory in C:\Application :
	`C:\Application\**\MyApp\*`
	Exclude program.exe as long as it is located in any child directory of the C:\Application\TestApp:
	`C:\Application\TestApp\**\program.exe`
	Exclude program.exe as long as it is located in \Application\TestApp\MyApp\ of the C: drive:
	`C:\**\Application\TestApp\MyApp\program.exe`
	Exclude any .exe executable as long as it is located in \Application\TestApp\MyApp\ of the C: drive:
	`C:\**\Application\TestApp\MyApp\*.exe`
	Exclude any executable (regardless of extension) as long as it is located \Application\TestApp\MyApp\ of the C: drive
	`C:\**\Application\TestApp\MyApp\*`

Incorrect use of asterisks in exclusions	Only use a single asterisk (*) to match characters in a folder name or file name. Double asterisks (**) are reserved to match directory paths and cannot be used at the end of an exclusion. The following is a list of examples in the context of excluding `C:\Application\TestApp\MyApp\program.exe`. • **Incorrect:** `C:\Application\TestApp\MyApp**.exe` • **Incorrect:** `C:\Application**\MyApp\program.exe` • **Correct:** `C:\Application\TestApp\MyApp\*.exe` • **Correct:** `C:\Application\TestApp\*\*.exe` • **Correct:**`C:\Application\**\program.exe`

	Examples
Exclusions that are not recommended	Avoid using a double asterisk (**) immediately after a drive letter. For example: `C:\**\program.exe` In this example, `program.exe` is allowed to run from any folder in the `C:` drive. Although this exclusion is technically correct, it would exclude anything in any directory (including child directories) located on the drive.

macOS examples of wildcards used in memory protection exclusions

The following examples are based on excluding an executable that is stored in the following path: `/Application/TestApp/MyApp/program.dmg`

Type	Description

Correct use of exclusions	**Excludes program.dmg as long as program.dmg is located under the "MyApp" child directory**:
	`/Application/**/MyApp/program.dmg`
	Excludes any executable with the .dmg as long as the it is located under the "MyApp" child directory:
	`/Application/**/MyApp/*.dmg`
	Excludes any executable as long as it is located under the "MyApp" child directory:
	`/Application/**/MyApp/*`
	Excludes program.dmg as long as it is located in any directory that is a child of the "TestApp" directory :
	`/Application/TestApp/**/program.dmg`

Incorrect use of asterisks in exclusions	Only use a single asterisk (*) to match characters in a folder name or file name. Double asterisks (**) are reserved to match directory paths and cannot be used at the end of an exclusion. The following is a list of examples in the context of excluding `/Application/TestApp/MyApp/program.dmg`. • • **Incorrect:** /Application/TestApp/MyApp/pro**am.dmg • **Correct:** /Application/TestApp/MyApp/progra*.dmg • • • **Incorrect:** /Application/** • **Correct:** /Application/**/*

Type	Description
Exclusions that are not recommended	Avoid using a double asterisk (**) at the beginning of an exclusion. For example: `/**/program.dmg` In this example, `program.dmg` is allowed to run from any folder on the drive. Although this exclusion is technically correct, it would exclude anything in any directory (including child directories) located on the drive.

Protection settings

CylancePROTECT Desktop always watches for the execution of malicious processes and alerts the console when anything unsafe or abnormal attempts to run. You can configure the CylancePROTECT Desktop agent using the following settings that can be found in the **Protection Settings** tab in a device policy.

Option	Description
Prevent Service Shutdown from Device	If selected, device users cannot stop the service for the CylancePROTECT Desktop agent or for the following versions of the CylanceOPTICS agent: • CylanceOPTICS agent for Windows 3.1 or later with CylancePROTECT Desktop 3.0 or later CylancePROTECT Desktop agent version 3.1 and later runs as a trusted service using Antimalware Protected Process Light (AM-PPL) technology from Microsoft, which also helps prevent the agent from being shut down. This feature requires the device to be running Windows 10 1709 or later or Windows Server 2019 or later.
Kill Unsafe Running Processes and Their Sub Processes	If this setting is selected, the agent terminates processes and child processes (.exe or .dll), regardless of their state when a threat is detected. This offers a high level of control over malicious processes that might be running on a device. The file must be auto-quarantined, manually quarantined, or quarantined using the global quarantine list. This feature must be enabled before the file is quarantined. If this feature is enabled but the file is not quarantined or auto-quarantined, the processes will continue to run. **Example:** A file is allowed to run, then you decide to quarantine the file. When this setting enabled, the file is quarantined and the process is terminated, along with any child processes. If this setting is disabled, the file would be quarantined, but because the file was allowed to run, any processes started by the file could continue to run.

Option	Description

Background Threat Detection	A full disk scan is performed to detect and analyze any dormant threats on the disk. The full disk scan is designed to minimize impact to the end-user by using a low amount of system resources. The background threat detection scan can take up to one week, depending on how busy the system is and the number of files on the system that require analysis. The date and time that the most recent background scan completed is logged in the console.
	You can choose to run the scan once to scan upon installation only, or set it to scan at a recurring interval that you specify. The default scan interval is 10 days. A significant upgrade to the detection model, like adding new operating systems, might also trigger a full disk scan. Note that increasing the frequency of the scans might impact the device performance.
	It is recommended that you enable the **Background Threat Detection** setting to **Run Once** and enable **Watch for New Files** which watches for new and updated files on the disk. If you are watching for new and updated files, you need to check scan all existing files once only. Due to the predictive nature of the technology, periodic scans of the entire disk are not necessary but can be implemented for compliance purposes (for example, PCI compliance).
	To manually run the scan, use one of the following commands:
	• On Windows devices:
	`C:\Program Files\Cylance\Desktop\CylanceSvc.exe /backgroundscan`
	• On macOS devices:
	`/Applications/Cylance/CylanceUI.app/Contents/MacOS/CylanceUI -background-scan`
	• On Linux devices:
	`/opt/cylance/desktop/Cylance -b`
	`/opt/cylance/desktop/Cylance --start-bg-scan`

Watch for New Files	This setting enables the agent to scan and analyze any new or modified files for dormant threats. If a threat is detected, the file is quarantined even though there wasn't an attempt to execute it. It is recommended that you enable this setting together with background threat detection (run once). Auto Quarantine (execution control) mode blocks unsafe or abnormal files at execution. Therefore, it is not necessary to enable Watch for New Files when Auto Quarantine mode is also enabled, unless you prefer to quarantine a malicious file as soon as the agent detects the threat during a scan. This setting might impact performance. Consider monitoring disk or message processing performance to see if it has changed. Excluding specific folders might improve performance and ensure that certain folders and files do not get scanned or analyzed by the agent.

Option	Description
Set Maximum Archive File Size to Scan	Specify the maximum archive file size that you want to agent to scan. This setting applies to **Background Threat Detection** and **Watch for New Files** settings. If you do not want to scan archive files, set the file size to 0 MB.
Exclude Specific Folders	This setting allows you to specify folders and subfolders that you want to exclude from being scanned through the **Background Threat Detection** and **Watch for New Files** features. For Windows, use an absolute path with a drive letter. For example, `C:\Test`. For macOS , use an absolute path from the root without a drive letter. For example, `/Applications/SampleApplication.app`. For Linux, use an absolute path from the root without a drive letter. For example, `/opt/application`. **Example for Windows**: `C:\Test` **Example for macOS (without spaces)**: `/Applications/SampleApplication.app` **Example for macOS (with spaces)**: `/Applications/Sample\ Application.app` **Example for Linux**: `/opt/application/` The * wildcard is also supported for folder exclusions. See Wildcards in protection settings folder exclusions for more information. Exclusions are not applied retroactively. After the initial installation of the agent, the Background Threat Detection and Watch for New Files feature ignores files according to the exclusion list that it received. Adding an exclusion after the initial detection or conviction will not retroactively exclude the already detected or convicted files. Any files that were previously detected or convicted will remain in this state until locally waived or added to the Global Safe list. For example, if Watch for New Files convicts a file named C:\Windows\ccmcache\test.exe and an exclusion is added later to the Protection Settings tab for C:\Windows\ccmcache\, the convicted file will remain convicted even though the folder was added as an exclusion. In this case, it will remain convicted until you waive the file locally or add it to the Global Safe List.
Allow Execution	Files that are executed from any folder are subject to Execution Control / Auto-Quarantine, even if they are specified in Exclude Specific Folders. You can enable the Allow Execution setting to allow files to be executed from folders specified in the Exclude Specific Folders list. This setting applies to all of the folders in the list, not just the first or last item entered. Files and threats that are dropped into these folders will be allowed to execute and could compromise your device and organization. Take precautions to ensure that rogue files cannot be added to excluded folders.

Option	Description
Copy File Samples (Malware)	Specify a shared network drive to store copies of file samples found through background threat detection, watch for new files, and execution control. This allows you to do your own analysis of files thatCylancePROTECT Desktop considers unsafe or abnormal. • CIFS/SMB network shares are supported. • Specify one network share location. You should use a fully qualified path. Example: `\\server_name\shared_folder`. • All files meeting the criteria are copied to the network share, even if they are duplicates. No uniqueness test is performed. • Files are compressed. • Files are password protected. The password is "infected".

Wildcards in protection settings folder exclusions

You can use the asterisk (*) as a wildcard for all operating systems when specifying folder exclusions in the **Protection settings** tab.

Character	Meaning
*	Use the asterisk to exclude folders and to represent a prefix or suffix for a folder name. • The asterisk matches one or more characters, except platform-specific path separator ('\'). • Multiple wildcards are allowed in an exclusion path. • At this time, "*" escaping is not supported. For example, you cannot exclude a folder that contains an asterisk "*" in the folder name. Note: • At this time, a wildcard cannot be used to represent a drive letter. This functionality will be added at a later time. This section will be updated once that functionality is in place. • Previous folder exclusion functionality still applies. This means that exclusions will also apply to any child folders.

Character	Meaning
Examples of folder exclusions	The following are examples of excluding `C:\Application\TestFolder1\MyApp\program.exe`. **Examples of correct use of wildcards in folder exclusions** • An exclusion without any wildcards. `C:\Application\TestFolder1\MyApp\` • A wildcard is used to specify a parent folder of the "MyApp" folder C:\Application\*\MyApp\ • A wildcard is used to specify that there is a prefix (i.e. "Test") in the folder name for the agent to compare against. C:\Application\*Folder1\MyApp\ • A wildcard is used to specify that there is a suffix (i.e. "1") in the folder name for the agent to compare against. C:\Application\TestFolder*\MyApp\ • A wildcard is used to specify that there is a prefix (i.e. "Test") and a suffix (i.e. "1") in the folder name for the agent to compare against. C:\Application\*Folder*\MyApp\ • A wild card is used to exclude all folders under "Application" in the C: drive. C:\Application\*\ • A wild card is used to exclude all folders under "Application" for all drives. *\Application*\ **Example of incorrect use of wildcards in folder exclusions** • `C:\Application\TestFolder1\MyApp\*.exe` A wild card cannot be used in the file name of an executable. Use wildcards for folder or directory names only. • C:\Application\** Double asterisks (**) are not supported in folder exclusions. Use a single asterisk (*) instead. **Folder exclusions that are not recommended** • `C:\*` Although this exclusion is a valid entry, it would effectively exclude anything in any directory (including child directories) in the entire C: drive.

Application control

Application control is an optional setting for Windows and Linux devices that allows users to restrict any changes to executables on the device. Only applications that are on the device before application control is enabled are allowed to execute. Typically, application control is used for fixed function devices that are not changed after it's set up (for example, point-of-sale devices).

When application control is enabled, attempts to add applications and make changes to applications on the device are denied. This means that applications cannot be downloaded from web browsers or copied from another device or computer (such as an external or shared drive).

The main objectives of application control are:

- Deny the execution of executable files from remote or external drives.
- Deny the creation of new executables on the local drive.
- Deny changes to existing files on the local drive.

Consider the following when using application control:

- The CylancePROTECT Desktop and CylanceOPTICS agent update process is disabled when application control is enabled.
- You cannot remove the CylancePROTECT Desktop and CylanceOPTICS agents when application control is enabled.
- It is not recommended to run CylanceOPTICS on systems that use application control. When application control is enabled, CylanceOPTICS does not function properly due to the restrictive nature of application control.
- All executable files on remote or external drives are denied from executing when application control is enabled. To prevent production outages or excessive network activity, application control does not monitor file transfers to remote or external drives.
- See Considerations for using application control onLinux devices.

Application control settings

Option	Description
Application Control	This setting specifies whether to enable application control. When you enable application control, the following recommended settings will be automatically applied: • In the **File Actions** tab, the **Auto-Quarantine with Execution Control** settings will be selected for both unsafe and abnormal files. • In the **Memory Actions** tab, the **Memory Protection** setting will be selected. All memory protection violation types will be set to **Terminate**. • In the**Protection Settings** tab, the **Watch For New Files** setting will be selected . If you want to change any of these settings, clear the selection from the specified tabs.
Change Window	When enabled, this setting temporarily disables application control to allow editing and running new applications or to perform updates, including updating the agent. After performing the necessary changes, clear this check box to close the change window and re-enable application control. When you use this setting to temporarily disable application control, changes such as folder exclusions are retained. If you disable the **Application Control** setting, the settings are reset to default.
Folder Exclusions (includes subfolders)	This setting specifies an absolute path of folders that are allowed to make application changes and additions when application control is enabled. This setting applies to devices running Windows agent 1410 or later. Example: `C:\Program Files\Microsoft SQL Server` Folder exclusions are only available for local internal drives. Exclusions for removable or remote drives are not supported.

Viewing application control activity

You can find the application control activity of a device from its **Device Details** page in the **Threats & Activities** section.

Considerations for using application control onLinux devices

Consider the following before you enable application control in a device policy for Linux devices:

- Folder exclusions in the application control policy are not supported by the Linux agent.
- When application control is enabled, an inventory of all executable files on the local file system is generated. File execution is restricted to the files in the inventory.
- Executable files can be added to the device after application control is enabled, but these cannot run. Only applications that are in the inventory when application control is enabled are allowed to run.
- Allowing an update on a Linux device with application control enabled may cause issues.

Agent settings

Use agent settings to display desktop notifications when a file is quarantined, etc. on devices. You can also upload agent log files to the console from this page.

Option	Description
Enable auto-upload of log files	Enable agent logs in the console to upload log files and view them in the console. Uploaded log files are stored for 30 days. After enabling this option, an Agent Logs tab displays when you select a device assigned to this policy from the Devices tab. The log file name is the date of the log.
Enable desktop notifications	Agent notification popups can be configured on each device or set at the policy-level in the console. Enabling or disabling the agent notification popups at the device-level takes precedence over the console settings. Make sure the device you want to log files for is assigned to this policy. **Note:** In the agent UI, the Events tab is cleared when the CylanceUI is restarted or when the device is rebooted.

Script control

Script control protects Windows devices by blocking scripts from executing. If you want to allow scripts to execute, you can add exclusions in several ways using wildcards. For example, you can set the policy to block scripts from executing and only allow scripts that are added to the exclusion list to run.

Item	Description
Action	For each type of script, you can select one of the following actions: • **Alert**: This action allows all scripts to run. Use this setting when you want to monitor and observe all scripts that are running in your environment. This setting is recommended for initial deployment while you determine which scripts you want to allow or block. • **Block**: This action blocks all scripts from running. Only files that are added to the exclusion list are allowed to run. Use this setting after testing and monitoring for threats in alert mode. You can find script control alert and block events in the **Protection > Script Control** screen.
Active Script	This setting controls whether you want to allow Active Scripts to run, or block them from running. Active Scripts include VBScript and JScript. For agent version 1.2.1370 and earlier, there is one action setting for both Active Script and PowerShell. For agent 1.2.1380 and later, you need to set them individually.
PowerShell Script	This setting controls whether you want to allow scripts to run, or block them from running. For agent version 1.2.1370 and earlier, there is one action setting for both Active Script and PowerShell. For agent version 1.2.1380 and later, you need to set them individually.
Block PowerShell console usage	This setting controls whether you want to block the PowerShell console from launching for devices running agent version 1.2.1380 or later. Blocking the PowerShell console provides additional security by protecting against the use of PowerShell one-liners. This setting is valid when the action for PowerShell scripts is set to **Block**. When the action for PowerShell scripts is set to Alert, the agent does not send alerts for PowerShell console usage. If you use a script that launches the PowerShell console, and Block PowerShell console usage is enabled, the script fails. If possible, it is recommended that users change their scripts to invoke the PowerShell scripts, not the PowerShell console. You can do this using the `-file` switch. A basic command to run a PowerShell script without invoking the console would be: `Powershell.exe -file [script name]`

Item	Description
Macros (2.1.1578 and earlier)	This setting controls whether to alert or block Microsoft Office macros. Macros use Visual Basic for Applications (VBA) which allows embedding code inside a Microsoft Office document (typically Microsoft Office, Excel, and PowerPoint). The main purpose for macros is to simplify routine actions, like manipulating data in a spreadsheet or formatting text in a document. However, malware creators can use macros to run commands and attack the system. It is assumed that a macro is performing a malicious action when it tries to manipulate the system. The agent looks for malicious actions originating from a macro that affects anything outside the Microsoft Office products. Consider the following: • The script control macros feature works with agent version 2.1.1578 and earlier. For newer agents, use the **Dangerous VBA Macros** violation type in the memory protection policy. • Any macro exclusions created for script control must be added to the memory protection exclusions for the **Dangerous VBA Macros** violation type. • Starting with Microsoft Office 2013, macros are disabled by default. Most of the time, you do not need to enable macros to view the content of an Microsoft Office document. You should only enable macros for documents you receive from users you trust, and you have a good reason to enable it. Otherwise, macros should always be disabled.
Python	This setting controls whether to allow Python scripts (version 2.7 and 3.0 to 3.8), or block them from running. This setting is valid for agent 1580 or later.
.NET DLR	This setting controls whether to allow .NET DLR scripts to run, or block them from running. This setting is valid for agent 1580 or later.
XLM Macros (Preview)	**Note:** The XLM Macros feature is currently available in Preview mode where it might behave unexpectedly. This setting controls whether CylancePROTECT Desktop allows Excel 4.0 (XLM) macros to run, or blocks them from running. When macros are enabled and executed, the Microsoft AMSI interface communicates with the agent to determine whether to allow the macro to run or to block it according to the device policy. This feature requires the following: • Microsoft Windows 10 or later • CylancePROTECT Desktop agent version 3.1 • VBA macros must be disabled in the Excel **File > Trust Center > Excel Trust Center > Macro Settings** menu.
Disable Script Control	You can specify whether to disable script control for certain script types. When you disable script control, scripts are allowed to run and you do not receive alerts.

Item	Description
Exclude Files, Script or Processes	You can specify folders to allow any script in that folder (and sub-folders) to execute without generating an alert, even when script controls are set to block. You can also add exclusions for processes to allow scripts from certain applications to run properly that would otherwise be blocked. For example, if the IT department uses specific tools to run scripts all the time, you can add the process for that tool as an exclusion so that scripts can be run through that tool. You specify the relative path of the folder or sub-folder. The folder paths can be to a local drive, a mapped network drive, or a universal naming convention (UNC) path. **Excluding folders and scripts** • Folder exclusions cannot contain the script or macro file name. These entries are not valid and the agent ignores them. • If you want to exclude a specific script, you must use a wildcard. For more information about how to use wildcards to exclude specific scripts, see Wildcards in script control exclusions. • If the "Everyone" group in your organization has write permissions to a folder, anyone inside or outside of the organization can drop a script in the folder and write to it. CylancePROTECT Desktop will continue to send alerts on scripts and block them. The write permissions apply not only to the direct parent folder, but also to all parent folders, all the way to the root. **Excluding processes** • Process exclusions require agent version 2.1.1580 or later. • The executable in the process exclusion may be quarantined by execution control and therefore blocked from running. If the executable is quarantined, you need to add it to the **Policy Safe List** in the **File Actions** tab. • Process exclusions continue to allow scripts to run and does not restrict them from running from the specified folder.

Wildcards in script control exclusions

You can use the asterisk (*) as a wildcard when specifying exclusions in the **Script Control** tab.

Using wildcards in script control exclusions reduces the number of alerts displayed in your console while allowing users to run certain scripts that match the exclusion path and filename. For example, you can exclude a specific script by using its full name when you use a wildcard in the directory path, or you can use the wildcard to match a group of scripts that share a similar name by using it as part of the file name itself.

Although the use of wildcards in exclusions provides flexibility, it can also lower your security stance if your exclusions are too broad. For example, avoid excluding entire folders such as `/windows/temp`. Instead, use a wildcard while specifying the full or partial filename of the script that you want to exclude (for example, `/windows/temp/myscript*.vbs`).

The following table describes the rules of script control exclusions:

Item	Description
Supported wildcard characters	Only the asterisk (*) is supported as a wildcard for script control exclusions. The wildcard represents one or more characters.
Unix-style slashes	If you are using wildcards, exclusions must use Unix-style slashes (even for Windows systems). Example: `/windows/system*/*`
Folder exclusions	When you want to exclude a folder, the exclusion must have a wildcard at the end of the path to distinguish the exclusion as a folder (and not a file). For example: • `/windows/system32/*` • `/windows/*/test/*` • `/windows/system32/test*/*`
File exclusions	When you want to exclude a file, the exclusion must end with a file extension to distinguish the exclusion as a file (and not a folder). For example: • `/windows/system32/*.vbs` • `/windows/system32/script*.vbs` • `/windows/system32/*/script.vbs` • Each wildcard represents one folder level only. The number of folder levels represented in the exclusion must match the level of the file that you are trying to exclude. ◦ For example, /folder/*/script.vbs matches \folder\test\script.vbs, but does not match \folder\test\001\script.vbs. This would require either /folder/*/001/script.vbs or /folder/*/*/script.vbs. ◦ The wildcard would need to persist down per level to where the script resides. ◦ Two or more wildcards per level are not allowed. For example, /folder/*file*.ext is not allowed.
Process exclusions	Process exclusions with a wildcard must have a file extension to distinguish it as a process exclusion (and not a folder). To specify a process regardless of the directory that it's in, refer to the following examples: • `/my*.exe` (local drive) • `//my*.exe` (network drive) To specify a process that's in a specific directory, refer to the following examples: • `/directory/child/my*.exe` (local drive) • `//directory/child/my*.exe` (network drive)
Examples of full and partial matches in exclusions	Wildcards support full and partial exclusions. • `/folder/*/script.vbs` • `/folder/test*/script.vbs`

Item	Description
Absolute paths	Absolute paths are not supported in script control exclusions.
Relative paths	If you can identify a common relative path, you can exclude Universal Naming Convention (UNC) paths with a wildcard. For example, if you use device names in a path such as "DC01" to "DC24": `/dc*/path/to/script/*`
Network paths	Network paths can be excluded. For example: • `//hostname/application/*` • `//host*/application/*` • `//*name/*/application/*` • `//hostname/*`

Examples of script control exclusions

Adding exclusions for dynamic scripts that are run from a specific directory location or for a script that is run from multiple different user folders is possible by using wildcards in script control exclusions. As an example, you can use the token “*” in the exception path to ensure it covers your variants.

The following table includes some example exclusions with matches that would be successfully excluded, and non-matches that won't be excluded.

Exclusion example	Matches	Non-matches
`/users/*/temp/*`	• `\users\john\temp` • `\users\jane\temp`	• `\users\folder\john\temp` • `\users\folder\jane\temp` These folders won't be excluded because the number of folder levels don't match.
`/program files*/app/script*.vbs`	• `\program files(x86)\app\script1.vbs` • `\program files(x64)\app\script2.vbs` • `\program files(x64)\app\script3.vbs`	• `\program files(x86)\app\script.vbs` • `\program files\app\script1.vbs` These folders won't be excluded because wildcards represent one or more characters.
`//*example.local/sysvol/script*.vbs`	`\\ad.example.local\sysvol\script1.vbs`	`\\ad.example.local\sysvol\script.vbs` This script won't be excluded because wildcards represent one or more characters.

Exclusion example	Matches	Non-matches
`/users/*/*/*.vbs`	• `/users/john/temp/script.vbs` • `/users/john/temp/anotherscript.vbs`	• `/users/john/temp1/temp2/script.vbs` This script won't be excluded because the number of folder levels don't match.

Process Exclusion

You can add processes to the list of script control exclusions. This feature can be useful if you want to exclude specific processes that may be calling scripts. For example, you can exclude SCCM to allow it to launch PowerShell scripts in a temporary directory. A process is any process that calls a script interpreter to run a script.

- The following example allows the myfile.exe process to call an interpreter (such as PowerShell.exe) to run a script.
  - /windows/*/myfile.exe
- The following examples add myprocess.exe to the exclusion list so that it is allowed to run regardless of its folder path:
  - `\myprocess.exe` (on a local Windows drive)
  - `\\myprocess.exe` (on a network Windows drive)
- The following example adds myprocess.exe to the exclusion list so that it is only allowed to run from a specific folder path:
  - `\directory\child\myprocess.exe` (on a local Windows drive)
  - `\\directory\child\myprocess.exe` (on a network Windows drive)

Note:

- Absolute paths are not supported for exclusions.
- Ancestors are not supported.
- When an executable file (exe) is added to an exclusion, /[CySc_process]/ is automatically added to the exclusion. If you added the above example exclusion, the result would be: /[CySc_process]/ /windows/*/myfile.exe.

Alternative options for exclusions for script control

You can use the global safelist or add a certificate as an alternative method to excluding scripts.

- Add a file to the CylancePROTECT Desktop global quarantine or global safe list
  - This method requires a SHA256 hash value and assumes that this value won't change. Updates to the script or changes made by the script by design causes the hash value to change. Therefore, this method requires more administrative work to maintain if the script or macro is frequently updated or changes programmatically (for example, appends a new date or time, or makes system requests, pulls data). Each time the CylancePROTECT Desktop agent reports a script to the management console, it must report a SHA256 hash value. Each time the hash value changes, the agent reports the new value and you need to add the new value to the global safe list. If a hash value cannot be generated (for example, if the script doesn't execute properly, the file doesn't exist, or there are permission issues), then a generic hash is used when the script is reported to the console.
  - The following SHA256 hash value is a generic hash that the CylancePROTECT Desktop agent uses when a hash cannot be generated for a script. If you try to add this value to the global safe list, an error message displays due to the agent functionality.
    - `FE9B64DEFD8BF214C7490AA7F35B495A79A95E81F8943EE279DC99998D3D3440`

  - The following SHA256 hash value is a generic hash that the CylancePROTECT Desktop agent uses when a PowerShell one-liner is used and a hash cannot be generated for a script. If you try to add this value to the global safe list, an error message displays due to the agent functionality.
    - `FE9B64DEFD8BF214C7490BB7F35B495A79A95E81F8943EE279DC99998D3D3440`
- Add a certificate to the CylancePROTECT Desktop global safe list
  - This method requires you to submit a valid code signing certificate to the console and is only available for PowerShell and Active scripts (not macros).

Device control

Device control protects devices by controlling USB mass storage devices connecting to devices in the organization. When you enable device control, you can allow full access, read-only, or block USB mass storage devices, such as USB flash drives, external hard drives, and smartphones. As part of the policy, you can also use exclusions to define the access level for specific mass storage devices using the vendor ID, product ID, and serial number. For example, you can block all USB mass storage devices, but create exclusions to allow full access to some authorized devices only.

Device control does not affect USB peripherals such as a mouse or keyboard. For example, when you create a policy to block all USB mass storage device types, a user can still use a USB keyboard.

Device control is available for Windows devices that are running agent version 2.1.1410 and later only.

When device control is enabled, all USB mass storage devices that are inserted are logged, along with the policy action that was applied (full access, read-only, or block). If the policy action is set to read-only or block, and desktop notifications are enabled on the device, a pop-up notification appears on the device when a USB mass storage device is connected. You can find the log of device control events on the **Protection > External Devices** screen in the console.

Device control policy action	Description
Block	This setting blocks the device from accessing external USB storage devices.
Read Only	This setting allows read-only access to external USB storage devices. Read-only access allows devices to view the contents of an external USB device but does not allow write or delete access to the USB device. The following USB device types can be configured for read-only access: • Still image • USB CD/DVD RW • USB drive • VMWare USB passthrough • Windows portable device
Full Access	This setting allows read, write, and delete access to the external USB storage devices.

Supported device types	Description
Android	This is a portable device running Android OS, such as a smartphone or a tablet. When an Android device is connected, its device type might be identified as Android, Still Image, or Windows Portable Device. If you want to block Android devices, consider blocking Still Image and Windows Portable Device as well.
iOS	This is an portable Apple device running iOS, such as an iPhone or iPad. **Note:** Some iOS devices will not charge when device control is enabled and set to block unless the device is powered off. Apple includes their charging capability within functions of the device that are required for our iOS device blocking capability. Non-Apple devices do not bundle their charging capability in this manner and are not impacted.
Still Image	This device class includes scanners, digital cameras, multi-mode video cameras with frame capture, and frame grabbers. **Note:** The agent sees Canon cameras as a Windows Portable Device, not as a Still Image device.
USB CD DVD RW	This is a USB optical drive.
USB Drive	This is a USB hard drive or USB flash drive.
VMware USB Passthrough	This is a VMware virtual machine client that has USB devices connected to the host.
Windows Portable Device	These are portable devices that use the Microsoft Windows Portable Device (WPD) driver technology, such as mobile phones, digital cameras, and portable media players.

Note: Device control is not supported for SD cards at this time. However, if utilized with a USB card reader device, device control might detect the USB device.

Add an external storage exclusion

You can add exclusions for external USB mass storage devices when you want to specify the access permissions for specific storage devices. When you add exclusions to the device control policy, you need the device's vendor ID. The product ID and serial number are optional and can also be used if you want to make the exclusion more specific. To ensure that you are using the correct information for each exclusion, you can enable device control then insert a device and look for its log entry in the console (**Protection > External devices**).

Consider the following when you are adding external storage exclusions:

- Not all manufacturers use a serial number with their products. Some manufacturers use the same serial number for multiple products.
- External storage exclusions are not editable. Add new exclusions as necessary and delete any exclusions that are no longer needed.
- There is a limit of 5000 exclusions for each device control policy. The **Add device** button is disabled when this limit is reached.

1. In the console, navigate to **Settings > Device Policy**.
2. Create a new policy or edit an existing policy.

3. Click the **Device Control** tab and make sure that **Device Control** is enabled.
4. In the **External Storage Exclusion List** section, click **Add device**.
5. Enter the **Vendor ID**.
6. Optionally, include the **Product ID** and **Serial Number** to refine the exclusion. You can also add a comment to describe the exclusion.
7. In the **Access** field, select the access level that you want to assign:
    - **Full Access**
    - **Read Only**
    - **Block**
8. Click **Submit**.
9. Save (or create) the policy.

Bulk import of device control exclusions

Administrators can use a .csv file to import device control exclusions in bulk (up to 500 exclusions per file). For details about the formatting requirements and to download a sample template, visit support.blackberry.com to read KB 65484.

Download the device control exclusion .csv template

1. In the **Device Control** tab of a device policy, enable Device Control.
2. Click **Import Exclusions**.
3. Click **download our template** and save the file.
4. Modify the template according to the formatting requirements.

Import a .csv file with the device control exclusions

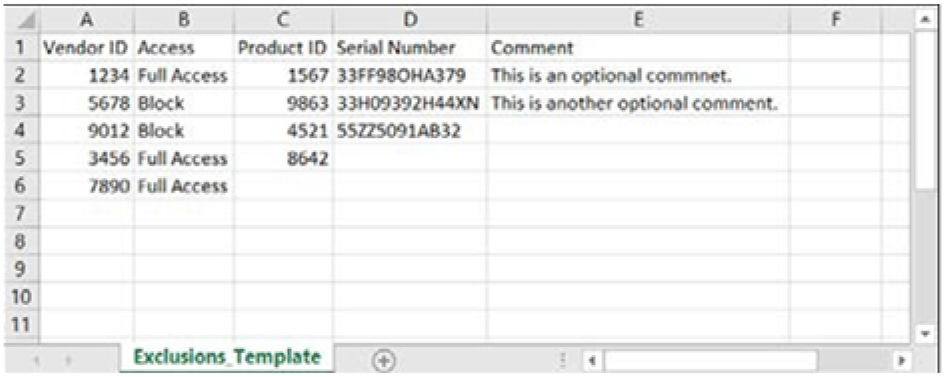
1. In the **Device Control** tab of a device policy, enable Device Control.
2. Click **Import Exclusions**.
3. Click **Browse for CSV files to import** and select the .csv file that you want to import.
4. Click **Upload**.

Formatting requirements of the .csv file

- Only .csv files are accepted.
- The column header information is required in the .csv file. The import function ignores the first line of the .csv file. If the first line in the import file is an exclusion, it will not be imported. The column headers must be in the following order:
    - Vendor ID
    - Access
    - Product ID
    - Serial Number
    - Comment
- Vendor ID and Access fields are required for each exclusion.
- Product ID, Serial Number, and Comment fields are optional for each exclusion.
- The Access column requires either `Full Access`, `Read Only`, or `Block` as the value, and only accepts the values in English.

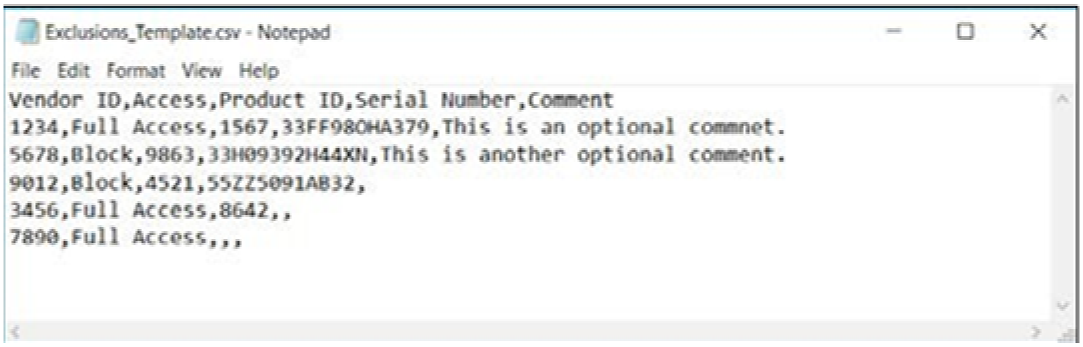
- The Comments column does not support commas (,).

Example: Bulk import using a spreadsheet



	A	B	C	D	E	F
1	Vendor ID	Access	Product ID	Serial Number	Comment	
2	1234	Full Access	1567	33FF98OHA379	This is an optional commnet.	
3	5678	Block	9863	33H09392H44XN	This is another optional comment.	
4	9012	Block	4521	55ZZ5091AB32		
5	3456	Full Access	8642			
6	7890	Full Access				
7						
8						
9						
10						
11						

Example: Bulk import using a text editor



```
Vendor ID,Access,Product ID,Serial Number,Comment
1234,Full Access,1567,33FF98OHA379,This is an optional commnet.
5678,Block,9863,33H09392H44XN,This is another optional comment.
9012,Block,4521,55ZZ5091AB32,
3456,Full Access,8642,,
7890,Full Access,,,
```

Limitations

- The maximum number of exclusions per .csv file is 500. If you try to import a file that contains more than 500 exclusions, an error message displays.
- The maximum number of device control exclusions per policy is 5000. A warning message should display if this number is exceeded.
- f you are using a device that doesn't have its language set to English, you might need to set the options to UTF-8 and comma separated when you import and edit the template with Microsoft Excel. If you open the file without changing the options, it may show unrecognizable characters.

Installing the CylancePROTECT Desktop agent for Windows

CylancePROTECT Desktop detects and blocks malware before it can affect a device. BlackBerry uses a mathematical approach to malware identification, using machine learning techniques instead of reactive signatures, trust-based systems, or sandboxes. This approach renders new malware, viruses, bots, and future variants useless. CylancePROTECT Desktop analyzes potential file executions for malware in the OS and memory layers to prevent the delivery of malicious payloads.

You can install the agent onto individual devices or can use the installation parameters to deploy it across your environment using a deployment tool.

Install the Windows agent

Before you begin:

- Download the CylancePROTECT Desktop installation files from the management console. Click **Settings > Deployments**. From the **Product** drop-down list, select **CylancePROTECT**, and set the target operating system, the agent version, and the file type. Click **Download**.
- In the management console, copy the installation token from **Settings > Application**.

1. Double-click the CylancePROTECT Desktop installer.
2. On the CylancePROTECT Desktop setup window, click **Install**.
3. Type the installation token and click **Next**.
4. Optionally, change the destination folder.
5. Click **OK** to begin the installation.
6. Click **Finish** to complete the installation. Ensure that the check box to launch CylancePROTECT Desktop is selected.

Windows installation parameters

The agent can be installed interactively or non-interactively through GPO, Microsoft System Center Configuration Manager (SCCM), MSIEXEC, and other third-party tools. The MSIs can be customized with the parameters below or the parameters can be supplied from the command line.

Parameter	Value	Description
`PIDKEY`	*<Installation Token>*	This parameter automatically enters the installation token.
`LAUNCHAPP`	0 or 1	0: This value hides the system tray icon the start menu folder at run-time. 1: This value displays the system tray icon and start menu folder at run-time. If no value is entered, the default value is 1.
`SELFPROTECTIONLEVEL`	1 or 2	1: This value allows local administrators to make changes to the registry and services. 2: This value only allows the system administrator to make changes to the registry and services. If no value is entered, the default value is 2.
`APPFOLDER`	*<Target Installation Folder>*	This parameter specifies the agent installation directory. The default location is C:\Program Files \Cylance\Desktop

Parameter	Value	Description

`REGWSC`	0 or 1	0: This value indicates that CylancePROTECT Desktop is not registered with Windowsas an anti-virus program. It allows CylancePROTECT Desktop and Windows Defender to run at the same time on the device.
		1: This value indicates that CylancePROTECT Desktop is registered with Windows as an antivirus program.
		If no value is entered, the default value is 1.
		The above commands won't have an effect on Windows Server 2016 and 2019. To disable Windows Defender after installing CylancePROTECT Desktop on Windows Server 2016 and 2019, the set the following registry value:
		`HKLM\SOFTWARE\Policies\Microsoft \Windows Defender\DisableAntiSpyware`
		`REG_DWORD`
		`Value = 1`
		If the Windows Defender sub-key does not exist, you will need to manually create it,
		For more information about using group policy settings to manage Windows Defender, see Use Group Policy settings to configure and manage Windows Defender AV.

`VENUEZONE`	*“<Zone_Name>”*	Use this parameter to specify the name of a zone that you want to add devices to. If it can't find a zone with that name, it creates a zone with the name you provide. Zone names cannot contains whitespaces, tabs, carriage returns, equal signs, newlines, or other invisible characters.

Parameter	Value	Description
`VDI`	<X>	When you install CylancePROTECT Desktop on a master Image, use the install parameter `VDI=<`*X*`>` where <*X*> is a "counter" for the total number of machines or images not connected to the domain (including the Master image) before creating a pool of workstations. The value for <*X*> determines when the agent should start identifying the virtual machine utilizing VDI fingerprinting instead of the default agent fingerprinting mechanism. The VDI parameter uses a counter "X" and has a delayed effect, whereas the AD parameter is immediate upon installation. For more information, see Requirements and considerations for using CylancePROTECT Desktop on virtual machines.
AD	1	This parameter requires agent version 1520 or later. Use the Active Directory (AD) parameter on a domain-connected master image during the initial installation. When it's installed on a domain connected master image, it immediately uses VDI fingerprinting on the master image and subsequently created pool of workstations. AD fingerprinting will take precedence over the `VDI=<`*X*`>` installation parameter. For more information, see Requirements and considerations for using CylancePROTECT Desktop on virtual machines.
`PROXY_SERVER`	<*ip_address*>: <*port_ number*>	This parameter specifies the IP address of the proxy server through that the agent must communicate with. Proxy server settings are added to the device’s registry, and you can find proxy server information in the agent log file.
AWS	1	This parameter requires agent version 1500 or later. Use this parameter to capture and include the Amazon EC2 Instance ID to the device's name to help identify Amazon Cloud hosts. The device name is modified to include the hostname and the Instance ID. For example, if the device name is ABC-DE-12345678 and the AWS EC2 ID is i-0a1b2cd34efg56789, the complete device name is ABC-DE-123456789_i-0a1b2cd34efg56789. This feature is only available for the Amazon EC2 Instance ID.

Parameter	Value	Description
PROTECTTEMPPATH	1	This parameter requires agent version 1480 or later. Use this parameter to change the location of the CylanceDesktopArchive and CylanceDesktopRemoteFile folder to the Cylance ProgramData folder. For more information, see the KB 66457 Changing the location of the CylanceDesktopArchive and CylanceDesktopRemoteFile folders.

Example: PIDKEY, APPFOLDER, and LAUNCHAPP parameters

```
msiexec /i CylancePROTECT_x64.msi /qn PIDKEY=<INSTALLATION TOKEN> LAUNCHAPP=0 /L*v
 C:\temp\install.log
```

In this example, the installation is silent and the installation log is saved to the `C:\temp` folder. You may need to create this folder. When the agent runs, the system tray icon and the start menu Cylance folder are hidden. For more information about allowed command line options, see https://docs.microsoft.com/en-us/windows/win32/msi/command-line-options.

Example: PIDKEY, VDI, and LAUNCHAPP parameters

```
msiexec /i CylancePROTECT_x64.msi /qn PIDKEY=<INSTALLATION TOKEN> VDI=2
 LAUNCHAPP=1
```

In this example, the "2" for VDI is the total number of machines or images that are not connected to the domain (the master image plus the additional or parent image) before the pool of workstations is created.

Example: PIDKEY, AD, and LAUNCHAPP parameters

```
msiexec /i CylancePROTECT_x64.msi /qn PIDKEY=<INSTALLATION TOKEN> AD=1 LAUNCHAPP=1
```

In this example, the AD parameter immediately uses VDI fingerprinting on the master image and the pool of workstations that is created. For information about editing the MSI installation file for deployment through a group policy, see KB 66391, Editing the MSI Installer using Orca.

Installing the CylancePROTECT Desktop agent for macOS

CylancePROTECT Desktop detects and blocks malware before it can affect a device. BlackBerry uses a mathematical approach to malware identification, using machine learning techniques instead of reactive signatures, trust-based systems, or sandboxes. This approach renders new malware, viruses, bots, and future variants useless. CylancePROTECT Desktop analyzes potential file executions for malware in the OS and memory layers to prevent the delivery of malicious payloads.

You can install the agent onto individual devices or can use the installation parameters to deploy it across your environment using a deployment tool.

Install the macOS agent

Before you begin:

- Download the CylancePROTECT Desktop installation files from the management console. Click **Settings > Deployments**. From the **Product** drop-down list, select **CylancePROTECT**, and set the target operating system, the agent version, and the file type. Click **Download**.
- In the management console, copy the installation token from **Settings > Application**.

1. Double-click the CylancePROTECT Desktop installation file (.dmg or .pkg) to mount the installer.
2. Double-click from the CylancePROTECT Desktop user interface to begin the installation.
3. Click **Continue** to verify that the OS and hardware meet the requirements.
4. Click **Continue**.
5. Type the installation token.
6. Click **Continue**.
7. Optionally, change the installation location.
8. Click **Install**.
9. Type your credentials.
10. Click **Install Software**.
11. On the summary screen, click **Close**.
12. Click **OK > Finish**.
13. If you are installing CylancePROTECT Desktop on macOS Catalina, a notification prompts you to allow CylanceUI to display notifications. Click **Allow**.

CylancePROTECT Desktop configuration requirements for macOS and later

When installing CylancePROTECT Desktop agent version 2.1 or later on devices running macOS, note the following configuration requirements. The requirements depend on whether devices are managed by an MDM solution (for example, Jamf Pro).

MDM managed devices

The information below uses Jamf Pro as the MDM solution, but it is applicable to other MDM solutions.

Requirement	Steps
General settings	Create a configuration profile and specify the following settings in the General tab: • Specify a name and description for the profile. • Level: Computer Level • Distribution Method: Install Automatically
Enable the CylancePROTECT kernel extension. (macOS 10 only)	Configure the following settings from the Approved Kernel Extensions option: • Display Name: Cylance • Team ID: 6ENJ69K633 • In the **Scope** tab, verify that the configuration profile is scoped to apply to macOS 10 devices running CylancePROTECT Desktop and CylanceOPTICS.

Requirement	Steps
Enable the CylancePROTECT system extension. (macOS 11+)	Configure the following settings from the System Extensions option: • Display Name: CylanceSystemExtension • System Extension Types: Allowed System Extensions • Team Identifier: 6ENJ69K633 • Allowed System Extensions: com.cylance.CylanceEndpointSecurity.extension
Enable full disk access for the CylancePROTECT agent and system extensions.	Configure the following settings from the Privacy Preferences Policy Control option. Add an App Access configuration and specify the following settings: • Identifier: com.cylance.Agent • Identifier Type: Bundle ID • Code Requirement: Copy the code requirement from the HTML version of this topic. The code requirement should be on one line and include no additional spaces or line breaks. • Add the **SystemPolicyAllFiles** service and set to **Allow**. Add another App Access configuration and specify the following settings: • Identifier: com.cylance.CylanceEndpointSecurity.extension • Identifier Type: Bundle ID • Code Requirement: Copy the code requirement from the HTML version of this topic. The code requirement should be on one line and include no additional spaces or line breaks. • Add the **SystemPolicyAllFiles** service and set to **Allow**.
Notifications	In the Notifications tab of the configuration profile, the following settings are recommended: • Critical Alerts: Enabled • Notifications: Enabled • Banner alert type: Persistent • Notifications on Lock screen: Displayed • Notifications in Notification Center: Displayed • Badge app icon: Displayed • Play sound for notifications: Enabled
Scope	Configure the following settings in the Scope tab: • Verify that the configuration profile is scoped to apply to macOS devices that will be running CylancePROTECT Desktop.
Restart after installation.	After you complete the configuration steps above and install the CylancePROTECT Desktop agent, restart the device.

Devices that are not MDM managed

On devices that are not MDM managed, the user receives a prompt to approve the "CylanceES System Extension" after installing the macOS agent on the device. Follow these instructions from the prompt to enable the system extension and allow full disk access. Users can also tap the notification from "CylanceUI" to configure its notification settings.

1. Click **Open Security Preferences**. This opens the **System Preferences** > **Security & Privacy** > **General** tab.
2. If necessary, click the lock to authenticate the changes and click **Allow**.
3. Beside the **System software from application 'CylanceES' was blocked from loading** message, click **Allow** to approve the extension.
4. To enable full disk access, on the device, navigate to **System Preferences** > **Security & Privacy** > **Privacy** tab.
5. If necessary, click the lock to authenticate the changes and click **Allow**.
6. Scroll down and click **Full Disk Access**.
7. Select **CylanceEsExtension**.
8. Allow notifications for the agent from the **System Preferences** > **Notifications** > **CylanceUI** tab.

Commands for installing the macOS agent using the command line

When using the command line to install the macOS agent, you must create a `cyagent_ install_token` file that includes the installation parameters. The file includes the installation token, along with other optional parameters that you can set.

The follow sections include examples on how to create the file from the command line, but you can create the file from a text editor that includes each parameter in their own separate line. The file must be in the same folder as the installation package.

Installing the macOS agent with the installation token only

Use the following example commands in the terminal to create the `cyagent_ install_token` file with the installation token and install the agent. If you are using the .dmg installer, change the file extension in the command accordingly.

```
echo YOURINSTALLTOKEN > cyagent_install_token
sudo installer -pkg CylancePROTECT.pkg -target /
```

The following is the installation command without the installation token:

```
sudo installer -pkg CylancePROTECT.pkg -target /
```

Installing the macOS agent with specified parameters

Use the following example commands in the terminal to create the `cyagent_ install_token` file with the specified parameters and install the agent. If you are using the .dmg installer, change the file extension in the command accordingly.

```
echo YOURINSTALLTOKEN > cyagent_install_token
echo SelfProtectionLevel=2 >> cyagent_install_token
echo VenueZone=zone_name >> cyagent_install_token
echo LogLevel=2 >> cyagent_install_token
sudo installer -pkg CylancePROTECT.pkg -target /
```

Installation parameters

The CylancePROTECT Desktop agent can be installed using command line options in the terminal.

Parameter	Value	Description
`InstallToken`	*<installation_token>*	The installation token is required when you install the agent. You can find it in the management console by clicking **Settings > Application**.
`NoCylanceUI`		This parameter hides the system tray at startup.
`SelfProtectionLevel`	1 or 2	1: This value only allows local administrators to make changes to the registry and services. 2: This value only allows the system administrator to make changes to the registry and services. If no value is specified, the default value is 2.
`LogLevel`	0, 1, 2, or 3	0: This value indicates that only error messages are logged. 1:This value indicates that error and warning messages are logged. 2: This value indicates that error, warning, and information messages are logged. 3: This value enables verbose logging, where all messages are logged. Note that verbose log file sizes can grow very large. BlackBerry recommends turning on verbose logging during troubleshooting and then changing it back to 2 when troubleshooting is complete. If no value is specified, the default value is 2.
`VenueZone`	*<zone_name>*	Use this parameter to add devices to an existing zone, or to a zone that you want to create. If the zone does not exist, the zone is created using the name you type. You cannot use tabs, carriage returns, newlines, equal signs, whitespace or other invisible characters in the zone name. This parameter requires agent version 1380 or later.
`ProxyServer`	*<ip_address>*:*<port_number>*	This adds proxy server settings to the device’s registry. You can find the proxy server information in the agent log file. This parameter requires agent version 1470 or later.

Troubleshooting macOS installations

The table below outlines the actions you can take to troubleshoot the macOS installation.

Issue	Action

Troubleshooting with the installation token and verbose installer logging	Type the following commands and replace "YOURINSTALLTOKEN" with the installation token found in the **Settings > Application** tab of the management console:
	`echo YOURINSTALLTOKEN >cyagent_install_token`
	`sudo installer -verboseR -dumplog -pkg CylancePROTECT.pkg -target /`
	The echo command outputs a `cyagent_install_token` file, which is a text file with one installation option per line. This file must be in the same folder as the `CylancePROTECT.pkg` installation package.
	If you install the CylancePROTECT Desktop agent using Terminal on macOS Catalina, a DYLD warning sometimes displays. This warning does not impact the installation because it is generated by the operating system, not by the CylancePROTECT Desktop.

Start or stop the macOS agent service	To start the agent service, run the following command: `sudo launchctl load /Library/launchdaemons/com.cylance.agent_service.plist` To stop the agent service, run the following command: `sudo launchctl load /Library/launchdaemons/com.cylance.agent_service.plist`

Issue	Action
Supporting the Endpoint Security system extension on macOS Big Sur	BlackBerry recommends using MDM to deploy a configuration profile that contains approval and full disk access for the CylancePROTECT Desktop system extension. By default, macOS Big Sur does not support remote silent installations of an MDM profile onto a system with a new installation of the Big Sur operating system. To install configuration profiles on remote macOS systems without user interaction (silent install), Apple Mobile Device Management (MDM) is required. Before upgrading to macOS Big Sur, the devices should be enrolled with an MDM vendor. Devices that are not enrolled prior to the upgrade require user interaction with administrative privileges. To support remote silent installations, do the following: **1.** Install macOS Catalina. **2.** Apply the MDM profile. **3.** Download the configuration profiles onto the device. **4.** Upgrade the device to macOS Big Sur. The CylancePROTECT Desktop agent versions and the extension types that they support are the following: • The CylancePROTECT Desktop agent version 1570 or earlier includes the kernel extension which is supported on macOS Catalina or earlier. • The CylancePROTECT Desktop agent version 1580 and later includes the kernel extension which is supported on macOS Catalina or earlier, and the Endpoint Security system extension, which is supported onmacOS Big Sur and later.

Installing the CylancePROTECT Desktop agent for Linux

The agent can be installed directly on each system or through system management software, such as Ansible, SCCM, or cloud-init. When installing the agent, installation parameters are provided to configure some installation settings.

Ensure the target devices meet system requirements and that you have the proper permissions for installing software.

- Review the CylancePROTECT Desktop requirements.
- Root permission is required to install the Linux agent.
- Create a configuration file for the Linux agent installation

After installing the CylancePROTECT Desktop agent on Linux devices, make sure to keep the Linux drivers updated to support the latest kernels on the systems. Updated driver packages are released regularly and independently from the agent releases. For more information, see Updating the Linux driver.

Linux agent installation package

Starting with agent version 2.1.1590, the CylancePROTECT Desktop agent, agent UI, and driver packages are included in one compressed .tgz file.

Debian package	Component
cylance-protect-driver	Proprietary driver
cylance-protect-open-driver	Open driver
cylance-protect	CylancePROTECT Desktop agent/service
cylance-protect-ui	CylancePROTECT Desktop UI

RPM package	Component
CylancePROTECTDriver	Proprietary driver
CylancePROTECTOpenDriver	Open driver
CylancePROTECT	CylancePROTECT Desktop agent/service
CylancePROTECTUI	CylancePROTECT Desktop UI

Linux installation prerequisites

The agent can be installed directly on each system or through system management software, such as Ansible, SCCM, or cloud-init. When installing the agent, installation parameters are provided to configure some installation settings.

Ensure the target devices meet system requirements and that you have the proper credentials for installing software.

- CylancePROTECT Desktop requirements
- Root permission is required to install the Linux agent.

Create a configuration file for the Linux agent installation

Before you install the CylancePROTECT Desktop agent on Linux devices, you must create configuration file which is used to register the device with your Cylance Endpoint Security tenant and define local agent settings. After the installation of the agent, the configuration file is removed from the device.

CylancePROTECT Desktop requires `config_defaults.txt` to only contain line feed as a line ending. If you are creating the file from a DOS/Windows computer, the line ending includes carriage return and line feed. For instructions on how to convert the config_defaults.txt file to a proper format, visit support.blackberry.com/community to read article 65749.

1. In the `/opt/cylance/` directory, create the `config_defaults.txt` file.
2. Edit the file with the following information.

```
InstallToken=YOUR_INSTALL_TOKEN
SelfProtectionLevel=2
LogLevel=2
VenueZone=ZONE_NAME
UiMode=2
AWS=1
```

- Replace *YOUR_INSTALL_TOKEN* with the installation token from the management console.

- Replace *ZONE_NAME* with the name of the zone that you want to add the device to. If the specified zone doesn't exist in the console, it will be automatically created.

Table 1: Linux installation parameters

Parameter	Description
InstallToken	This field is required and specifies the Cylance Endpoint Security tenant that you want the device to register with. Use the installation token from the **Settings > Application** menu in the management console.
SelfProtectionLevel	This setting restricts the level of access to the Cylance Service and folders. • `1`: Only Local Administrators can make changes to the registry and services. • `2`: Only the System Administrator can make changes to the registry and services. The default setting is "2".
LogLevel	This setting specifies the level of information gathered in the debug logs. • `0`: Error • `1`: Warning • `2`: Information • `3`: Verbose The default setting is "2". If verbose logging is selected, the file size of the log grows quickly.
VenueZone	This setting specifies the zone that you want to add the device to. • If the specified zone name does not exist in the console, the zone is created using the name provided. • If the zone name or device name leads or ends with whitespace (for example, " Hello" or "Hello "), it is removed during device registration. Tabs, carriage returns, newlines, or other invisible characters are not permitted. • Zone names cannot contain an equal sign (=). For example, "Hello=World" is not permitted.
UiMode	This setting specifies the agent user interface mode when the system starts. • `1`: Minimal user-interface • `2`: Full user-interface The default setting is "2".

Parameter	Description
AWS	This setting specifies that the agent is running on an Amazon Web Services host. By default, the device's hostname is used as the Device Name in the management console. Enable this setting to allow the agent to capture the Instance ID from the host and store it with the hostname to the Device Name field in the console. This setting makes sure that each agent on a Amazon Web Services host reports a unique device name to the management console. • `1`: Enable the agent to capture the Instance ID. The Device Name is modified to include Hostname + Instance ID. The instance ID is denoted with the "i-" prefix. ABC-DE-123456789_i-0a1b2cd34efg56789 where the device name is ABCDE-12345678 and the AWS EC2 ID is i-0a1b2cd34efg56789.

Install the Linux agent automatically

Before you begin:

- Review the CylancePROTECT Desktop requirements.
- Download the CylancePROTECT Desktop installation files from the management console. Click **Settings > Deployments**. From the **Product** drop-down list, select **CylancePROTECT**, and set the target operating system, the agent version, and the file type. Click **Download**.
- In the management console, copy the installation token from **Settings > Application**.
- Verify that you have root permissions.

1. Create a configuration file for the Linux agent installation.
2. Run the following commands in the specified order to install the driver and the agent. Use the files extracted from the .tgz file to determine the value of *<version>*.

Linux distribution	Commands
• Red Hat Enterprise Linux • CentOS • Amazon Linux • Oracle	Run the following commands to install the driver and the agent: **a.** `yum install CylancePROTECTOpenDriver-<version>.rpm CylancePROTECTDriver-<version>.rpm` **b.** `yum install CylancePROTECT.<version>.rpm CylancePROTECTUI.<version>.rpm`
SUSE Linux Enterprise Server	Run the following commands to install the driver and the agent: **a.** `zypper install CylancePROTECTOpenDriver-<version>.rpm CylancePROTECTDriver-<version>.rpm` **b.** `zypper install CylancePROTECT.<version>.rpm CylancePROTECTUI.<version>.rpm`

After you finish:

- If the agent UI does not launch automatically after installation (for example, on CentOS, SUSE, or Ubuntu devices), you need to restart the GNOME shell to view the CylancePROTECT UI. See Start the UI manually.

Install the Linux agent manually

Before you begin:

- Review the CylancePROTECT Desktop requirements.
- Download the CylancePROTECT Desktop installation files from the management console. Click **Settings > Deployments**. From the **Product** drop-down list, select **CylancePROTECT**, and set the target operating system, the agent version, and the file type. Click **Download**.
- In the management console, copy the installation token from **Settings > Application**.
- Verify that you have root permissions.

1. Create a configuration file for the Linux agent installation.
2. Run the following commands in the specified order to install the driver and the agent. Use the files extracted from the .tgz file to determine the value of *<version>*.

Linux distribution	Commands

- Red Hat Enterprise Linux or CentOS
- Amazon Linux
- Oracle
- SUSE Linux Enterprise Server
	a. Install the dependencies:
	`rpm -ivh CylancePROTECTOpenDriver-<version>.rpm`
	b. Install the open driver:
	`rpm -ivh CylancePROTECTDriver-<version>.rpm`
	c. Install the agent driver:
	`rpm -ivh CylancePROTECT.<version>.rpm`
	d. Install the agent UI*:
	`rpm -ivh CylancePROTECTUI.<version>.rpm`
	* For devices running SUSE Linux Enterprise Server, you might need to install the Gnome 3 library (libgtk-3-0) prior to the agent UI installation. If necessary, use the following command: `zypper install libgtk-3-0`

- Ubuntu
- Debian
	a. Install the open driver:
	`dpkg -i cylance-protect-open-driver_<version>.deb`
	b. Install the agent driver:
	`dpkg -i cylance-protect-driver_<version>.deb`
	c. Install the agent:
	`dpkg -i cylance-protect.version.deb`
	d. Install the agent UI:
	`dpkg -i cylance-protect-ui.version.deb`

After you finish:

- If the agent UI does not launch automatically after installation (for example, on CentOS, SUSE, or Ubuntu devices), you need to restart the GNOME shell to view the CylancePROTECT UI. See Start the UI manually.

Updating the Linux driver

Each supported Linux kernel requires a supported driver so that the CylancePROTECT Desktop agent can run on the device. When you upgrade the Linux kernel on a device, you must make sure that the device is running a driver that supports it. Upgrading to the latest kernel ensures that your device receives the latest OS security updates, while using the latest agent and driver ensures that CylancePROTECT keeps it protected.

You have the following options to keep the Linux driver updated:

Scenario	Actions
Automatically update the driver as soon as an update is available when you upgrade the Linux kernel	• Make sure that the devices are running agent version 3.1 or later and driver 3.1 or later. • Enable the Auto-Update Linux Driver feature in the update rule.
Manually update the driver when you upgrade the Linux kernel	• Each time you upgrade the Linux kernel, you need to manually download the driver package when it becomes available in the management console. To determine the minimum driver version that you need for the Linux kernel that you are using, see the Supported Linux drivers and kernels spreadsheet. • You can use a package manager or similar tools and methods to update the agent and driver. • If you choose to update the agent manually, BlackBerry recommends that you change the zone-based update Agent setting to Do Not Update for these devices. **Tip:** The 3.1.1100 driver is compatible with agent 2.1.1590 and later. You can install the driver on devices that are running agent version 2.1.1590 and later so that you can benefit from the Auto-Update Linux Driver feature when you upgrade to agent 3.1.

Automatically update the Linux driver

When you upgrade the Linux kernel on a device, you must make sure that the device is running a driver that supports it. For devices running CylancePROTECT Desktop agent 3.1 and later, you can enable the Auto-Update Linux Driver feature, which allows the agent to automatically update the driver when an updated kernel is detected on the system, as soon as it becomes available. Upgrading to the latest kernel ensures that your device receives the latest OS security updates, while using the latest agent and driver ensures that CylancePROTECT keeps it protected.

1. In the management console, on the menu bar, go to **Settings > Update**.
2. Click an update rule that you use to manage updates for Linux devices. If you need to create one, see Manage updates for the CylancePROTECT Desktop and CylanceOPTICS agents.
3. Expand the **Agent** section.
4. Select the **Auto-Update Linux Driver** option.
5. Click **Save**.

Manually update the Linux driver

When you upgrade the kernel on your Linux device, you must make sure that the device is running a driver that supports it. When a Linux distribution releases a kernel update, BlackBerry creates an updated Linux driver package and makes it available from the management console. A driver update package is only available if there is a more up-to-date version than the one included in the agent release.

BlackBerry recommends that you upgrade to agent version 3.1 or later, which enables a feature that allows the agent to automatically update the Linux driver after an updated kernel is detected, as soon as it becomes available. If you are running agent versions 3.0 or 2.1.1590, or you choose not to use the Auto-Update Linux Driver feature, you must manually install a supported driver for the Linux kernel. You can use tools and methods from your organization to deploy the compatible drivers to your devices.

Before you begin: Determine the minimum driver version that is required to support the Linux kernel on your device.

1. In the management console, on the menu bar, click **Settings > Deployments**.
2. In the **Product** list, select **CylancePROTECT Driver**.
3. In the **OS** list, select the operating system that you want to download the driver for.
4. In the **Version** list, select the version of the driver.
5. In the **Format** list, select the format of the driver.
6. Click **Download**.
7. To upgrade the RPM package, use one of the following commands :

   Paste both drivers in the same command line and replace "xx" with the package version number:

Distribution	Commands

Oracle 6, Oracle UEK 6	`rpm -Uvh CylancePROTECTOpenDriver-xx.el6.noarch.rpm`
	`CylancePROTECTDriver-xx.el6.noarch.rpm`

CentOS 7, RHEL 7, Oracle 7, Oracle UEK 7	`rpm -Uvh CylancePROTECTOpenDriver-xx.el7.x86_64.rpm`
	`CylancePROTECTDriver-xx.el7.x86_64.rpm`

Amazon Linux 2	`rpm -Uvh CylancePROTECTOpenDriver-xx.amzn2.x86_64.rpm`
	`CylancePROTECTDriver-xx.amzn2.x86_64.rpm`

SUSE Linux Enterprise Server	`rpm -Uvh CylancePROTECTOpenDriver-xx.x86_64.rpm`
	`CylancePROTECTDriver-xx.x86_64.rpm`

Supported 32-bit Ubuntu and Xubuntu distros	• Install the dependencies with the following command:
	`sudo apt-get update -y && sudo apt-get install`
	• Install the CylancePROTECT Desktop driver DEB packages with the following commands:
	`dpkg -i cylance-protect-open-driver_xx_i386_32.deb`
	`dpkg -i cylance-protect-driver_xx_i386_32.deb`

Distribution	Commands

Supported 64-bit Ubuntu, Xubuntu, and Debian distros	• Install the dependencies with the following command:
	`sudo apt-get update -y && sudo apt-get install`
	• Install the CylancePROTECT Desktop driver DEB packages with the following commands:
	`dpkg -i cylance-protect-open-driver_xx_amd64.deb`
	`dpkg -i cylance-protect-driver_xx_amd64.deb`

8. Restart the service with the following command: `systemctl start cylancesvc`.

Linux commands for the agent

To display list of Linux commands for the CylancePROTECT Desktop agent, use the following:

```
/opt/cylance/desktop/cylance -h
```

Example usage of commands: `cylance <option>`

Option	Description
-r, --register=*<token>*	Register the agent with the console using the provided token
-s, --status	Check for agent updates
-b, --start-bg-scan	Start the background threat detection scan
-B, --stop-bg-scan	Stop the background threat detection scan
-d, --scan-dir=*<dir>*	Scan a directory
-l, --getloglevel	Retrieve the current logging level
-L, --setloglevel=*<level>*	Set the logging level to specify the level of information gathered in debug logs
-P, --getpolicytime	Retrieve the policy update time
-p, --checkpolicy	Check for policy updates
-t, --threats	Display a list of threats
-q, --quarantine=*<id>*	Quarantine a file by specifying a hash ID
-w, --waive=*<id>*	Waive a file by specifying a hash ID
-v, --version	Display the version of this tool
-h, --help	Display a list of commands

Troubleshooting Linux agent installations

The table below outlines the actions you can take to troubleshoot Linux agent installations.

Task or error	Action

Start or stop the agent service	Use the following commands to start or stop the Cylance service on a Linux device:
	• To start the Cylance service:
	`systemctl start cylancesvc`
	• To stop the Cylance service:
	`systemctl stop cylancesvc`

Verify whether kernel drivers are loaded	To verify whether the kernel drivers are loaded, enter the following command:
	`lsmod | grep CyProtectDrv`
	If the kernel modules are loaded, the command should output something similar to the following:
	`CyProtectDrv 210706  0CyProtectDrvOpen 16384 1 CyProtectDrv`
	If the kernel modules are not loaded, no output is returned.

Load and unload the kernel drivers	On CylancePROTECT Desktop Linux agent 2.1.1590 and later, there are two drivers that are loaded and unloaded together: `CyProtectDrv` and `CyProtectDrvOpen`. On earlier versions of the agent, only the `CyProtectDrv` driver is loaded.
	To load the kernel drivers, enter one of the following commands:
	• For SUSE Linux distributions:
	`modprobe --allow-unsupported cyprotect`
	If you don't want to keep using the `--allow-unsupported` flag, edit `/etc/modprobe.d/10-unsupported-modules.conf` and change 'allow_unsupported_modules' to '1'.
	• For all other Linux distributions:
	`modprobe cyprotect`

Start the Linux UI manually	If the agent UI did not launch automatically after installation, see Start the UI manually for more information.
Error: Multilib version problems found	If the "Error: Multilib version problems found" occurs when installing a package on a device, see Error: Multilib version problems found for more information.

Start the UI manually

The agent UI might not launch automatically after the installation (for example, on CentOS, Ubuntu and SUSE devices. To launch it manually, you can restart the GNOME Shell Extension, or log out and then log back in.

The GNOME Tweak Tool must be installed before you restart the GNOME Shell Extension. Ubuntu may not include the GNOME Tweak Tool by default.

1. If you need to install the GNOME Tweak Tool, run the following commands:

   ```
   add-apt-repository universe
   apt install gnome-tweak-tool
   ```
2. To restart the GNOME Shell Extension, press `Alt+F2`, type '`r`' in the dialog box, then press the `ENTER` key. If the CylanceUI icon does not appear, manually enable the GNOME Shell Extension from the Tweak Tool. To launch the GNOME Tweak Tool, type '`gnome-tweaks`' in a terminal. In the GNOME Tweak Tool, go to the **Extensions** tab and enable the CylanceUI.

Error: Multilib version problems found

If the "Error: Multilib version problems found" occurs when installing a package on a device running Red Hat Enterprise Linux or CentOS, it typically means that the corresponding 64-bit library must be installed or upgraded, along with the 32-bit library. The `multilib` version checking is simply pointing out that there is a problem.

For example, if the error is related to the `sqlite` library:

- You have an upgrade for `sqlite` that is missing a dependency that another package requires. `Yum` tries to resolve this by installing an older version of `sqlite` of the different architecture. If you exclude the the other architecture, `yum` displays the root cause of the problem, such as any missing package dependencies. To display an error message with the root cause of the problem, you can try attempting the upgrade again with `--exclude sqlite.otherarch`.
- You have multiple architectures of `sqlite` installed, but `yum` can only see an upgrade for one of those architectures. If you don't need both architectures, you can remove the `sqlite` that is missing the architecture update and see if the error is resolved.
- You have duplicate versions of `sqlite` installed already. You can use "yum check" to show these errors.
- To install or upgrade the matching `sqlite` library, use the following command:

  ```
  yum install sqlite.i686 sqlite
  ```

  If the error is related to the `dbus-libs`, `openssl`, or `libgcc` libraries, replace the `sqlite` with the appropriate library in the command.

Require users to provide a password to remove the CylancePROTECT Desktop agent

You can require users to provide a password to uninstall the CylancePROTECT Desktop agent for Windows and macOS and the CylanceOPTICS agent for Windows version 3.1 or later.

1. In the management console, on the menu bar, click **Settings > Application**.
2. Select the **Require Password to Uninstall Agent** check box.
3. Specify a password.
4. Click **Save**.

Setting up CylancePROTECT Mobile

Step	Action
1	Review the software requirements for the CylancePROTECT Mobile app and the network requirements for the CylancePROTECT Mobile app.
2	If you want to add users to Cylance Endpoint Security from your company directory, link to your company directory.
3	Add CylancePROTECT Mobile app users. Optionally, add groups to manage users.
4	Create a CylancePROTECT Mobile policy.
5	Create an enrollment policy.
6	Device users install and activate the CylancePROTECT Mobile app. For instructions, see the Cylance Endpoint Security User Guide.
7	Optionally, create a risk assessment policy to map alerts to device risk levels. A default risk assessment policy is applied to users in your tenant.
8	Optionally, integrate Cylance Endpoint Security with Microsoft Intune to report device risk levels to Intune for mitigation actions.

Note: The November 2021 release of CylancePROTECT Mobile is a significant redesign of the service and how it is configured. If you are an existing CylancePROTECT Mobile customer who configured and used the service prior to the November 2021 release, note that you must follow the setup instructions in this section to reconfigure the service. For more information, see KB 85674.

Create a CylancePROTECT Mobile policy

You create and assign a CylancePROTECT Mobile policy to users and groups to enable the service and control which features you want to use.

Before you begin: Add CylancePROTECT Mobile app and CylanceGATEWAY users.

1. In the management console, on the menu bar, click **Policies > User Policy**.
2. On the **Protect Mobile** tab, click **Add Policy**.
3. Type a name and description for the policy.
4. In the **Notifications** section, you can specify the count and interval of the notifications that the CylancePROTECT Mobile app provides to the user when it detects a threat. You specify the type of notification (device, email, or no notification) in the **Device Settings** section (step 6).

5. In the **Data privacy** section, if you want to obfuscate certain pieces of information when the CylancePROTECT Mobile app reports a threat so that the information cannot be stored and displayed in the management console in plain text, turn on **Data privacy**, then select the fields that you want to obfuscate.
6. In the **Device Settings** section, click **Android** or **iOS** and turn on the features that you want to use. For more information about the CylancePROTECT Mobile features, see Key features of CylancePROTECT Mobile.
   a) For each feature that you enable, select the appropriate check box to enable or disable device notifications and email notifications. If you turn off device and email notifications, the user must open the CylancePROTECT Mobile app to view alerts.
   b) If you enable any of the following features, complete these additional steps:

Feature	Platform	Additional steps
Malicious apps	Android	**a.** To exempt apps on the safe list from malware scanning, turn on **Always allow apps in the safe app list**. **b.** To automatically block apps on the unsafe list, turn on **Always block apps in the restricted app list**. **c.** If you want to scan system apps that are preinstalled in the system partition on the device, turn on **Scan system apps**. **d.** If you want to enable the upload of apps to the CylancePROTECT Mobile services over a Wi-Fi connection, turn on **Upload app packages for safety check over a Wi-Fi connection**. Specify, in MB, the maximum size of an app that can be uploaded over Wi-Fi, and the maximum size of all apps that can be uploaded in a month (30 days). If either maximum is exceeded, the upload does not occur and an error is added to the device log. **e.** If you want to enable the upload of apps to the CylancePROTECT Mobile services over a mobile network, turn on **Upload app packages for safety check over a mobile network connection**. Specify, in MB, the maximum size of an app that can be uploaded over a mobile network, and the maximum size of all apps that can be uploaded in a month (30 days). If either maximum is exceeded, the upload does not occur and an error is added to the device log.
Unsupported device model	Android iOS	Click **Edit** and select the device models that you want to restrict.
Unsupported OS	Android iOS	Add the available OS versions to the supported and unsupported lists based on your organization's security standards.
SafetyNet or Play Integrity attestation failure	Android	If you want to enable Compatibility Test Suite matching for the CylancePROTECT Mobile app, turn on **Enable CTS profile matching**.

Feature	Platform	Additional steps
Hardware attestation failure	Android	**a.** In the **Minimum security level required** drop-down list, click the appropriate level. For more information, see SecurityLevel on the Android Developers site. **b.** If you want to enforce a minimum security patch level on devices, turn on **Security patch level**. Add the appropriate device models and specify the security patch date.
Insecure Wi-Fi	Android	Add the available Wi-Fi access algorithms to the safe and unsafe lists based on your organization's security standards.
Unsafe message	Android iOS	**a.** In the **Scanning option** drop-down list, select one of the following: • If you want to send messages to the CylancePROTECT Mobile services to determine if they are safe, click **Cloud scanning**. • If you want to use only the local machine learning models of the CylancePROTECT Mobile app to identify unsafe URLs, click **On-device scanning**. • If you want to disable URL scanning, click **No scanning**. **b.** For Android devices, in the **Start scanning offset** field, specify, in hours, the age of text messages that are eligible for scanning. If you specify 0, only new messages are eligible for scanning.

7. Click **Add**.

After you finish:

- Assign the policy to users and groups.
- If necessary, rank policies.
- Create and assign an enrollment policy to users. After users are assigned an enrollment policy, they receive an email with instructions to download and activate the CylancePROTECT Mobile app. For more information, see the Cylance Endpoint Security User Guide.
  - Instruct users to enable JavaScript in their default mobile browser (the CylancePROTECT Mobile app supports Google Chrome, Samsung Internet, and Safari). This is required to activate the CylancePROTECT Mobile app.
  - Instruct Android users to allow background activity for the CylancePROTECT Mobile app after it is installed.
- Optionally, create a risk assessment policy. A default risk assessment policy is applied to users in your tenant.

Create a risk assessment policy

A risk assessment policy maps the alerts that are detected by the CylancePROTECT Mobile app to risk levels (for example, you can specify that compromised devices should be treated as high risk). The risk levels of the alerts are used to determine a mobile device's overall risk level. You can view the device risk level in the management console (Assets > Mobile Devices and in the device details).

If you don't create a risk assessment policy, a default policy is applied to users in your tenant. You can edit the default policy, but you cannot delete it.

Risk assessment policies can be used for the following Cylance Endpoint Security features:

- If you integrate Cylance Endpoint Security with Microsoft Intune, Cylance Endpoint Security will periodically send the overall risk level of a mobile device to Intune. You can use Intune to configure mitigation actions for device risk levels.
- You can factor the mobile device risk level into CylanceGATEWAY network access rules.

Before you begin: Set up CylancePROTECT Mobile.

1. In the management console, on the menu bar, click **Policies > User Policy**.
2. Click the **Risk Assessment** tab.
3. Click **Add Policy**.
4. Type a name and description for the policy.
5. In the **Risk Assessment** section, click **Add Detections > Detections**.
6. Drag and drop the detections to the risk level that you want to apply to them.

   For information about the detections, see Key features of CylancePROTECT Mobile.
7. Click **Add**.

After you finish:

- Assign the policy to users and groups.
- If necessary, rank policies.
- If you want to report the risk level of Intune managed mobile devices to Intune for mitigation actions, Connect Cylance Endpoint Security to Intune.

Integrating Cylance Endpoint Security with Microsoft Intune to respond to mobile threats

You can connect Cylance Endpoint Security to Microsoft Intune so that Cylance Endpoint Security can report the risk level of devices to Intune. The device risk level is calculated based on the detection of mobile threats by the CylancePROTECT Mobile app on Intune managed devices. Intune can execute mitigation actions based on the device risk level.

When you connect Cylance Endpoint Security to Intune, you create app configuration policies that define the device types and Intune groups that the integration applies to. You create and assign risk assessment policies that map events detected by the CylancePROTECT Mobile app to the risk level of your choosing (high, medium, or low). When the CylancePROTECT Mobile app on an Intune managed device detects a threat (for example, a malicious app or sideloaded app), the risk level that is mapped to that threat is factored into an overall risk level that Cylance Endpoint Security calculates for the device. Cylance Endpoint Security reports the device risk level to Intune, and Intune carries out the mitigation actions that have been configured for that risk level.

Note that all Intune managed devices that you want to use this feature must be included in an app configuration policy in the Cylance console. This feature requires the CylancePROTECT Mobile app version 2.0.1.1099 or later.

Connect Cylance Endpoint Security to Intune

Before you begin: The Cylance Endpoint Security administrator account that you use to connect to Intune must have an Intune license.

1. In the management console, on the menu bar, click **Settings > Connectors**.
2. Click **Add Connection > Microsoft Intune**.
3. Specify your Azure tenant ID. Click **Next**.
4. Specify your administrator credentials for Azure AD.

Follow the prompts for administrator consent. If required, coordinate with your organization's Intune administrator to grant consent for the BlackBerry Protect Mobile MTD connector in Microsoft Endpoint Manager.

5. On the **App Configuration Policies** screen, turn on the OS platforms that you want the Intune integration to apply to and complete the following steps for each platform. Note that all Intune managed devices that you want to use this feature must be included in an app configuration policy. If you want to create app configuration policies later, click **Cancel**.
   a) Optionally, change the name of the policy. Do not change the target app.
   b) If you want the policy to apply to all groups from the Intune instance, turn on **All groups**.
   c) If you want the policy to apply to specific groups from the Intune instance, click ⊕. Search for and select groups and click **Add**.
6. Click **Save**. If you added an app configuration policy for Android, follow any administrator consent prompts that display.

The app configuration policies that you create are visible in Microsoft Endpoint Manager.

After you finish:

- Instruct your organization's Intune administrator to edit the BlackBerry Protect Mobile MTD connector in Microsoft Endpoint Manager and turn on the following options:
  - **Connect Android devices to BlackBerry Protect Mobile**
  - **Connect iOS devices to BlackBerry Protect Mobile**
- If you want to add app configuration policies at a later time, or if you want to add additional policies, in **Settings > Connectors**, click **Generate App Configuration** for the Intune connection.
- Create a risk assessment policy.

Setting up CylanceOPTICS

Step	Action
1	Review the software requirements.
2	Install the CylanceOPTICS agent on devices.
3	Enable and configure CylanceOPTICS.
4	Manage updates for the CylancePROTECT Desktop and CylanceOPTICS agents.

Install the CylanceOPTICS agent on devices

To enable a device for CylanceOPTICS, you must install the CylanceOPTICS agent on the device. You download the CylanceOPTICS agent installer from the management console, then run it on devices using your organization’s preferred method. For example, you can have IT administrators pre-install the agent on devices before providing them to users, or you can push the installation using a trusted software distribution process.

Before you begin:

- Review the CylanceOPTICS software requirements.
- You must install the CylancePROTECT Desktop agent on devices before you install the CylanceOPTICS agent.
- If you want to install the CylanceOPTICS agent on macOS Big Sur (11.x) or later devices, see Configuration requirements for macOS 11.x and later.

1. In the management console, on the menu bar, click **Settings > Deployments**.
2. In the **Product** drop-down list, click **CylanceOPTICS**.
3. Select the OS, version, and format.

   Note:

   - For macOS devices, it is a best practice to use the .pkg file. The .dmg file is a disk image of the .pkg file that can be used when a disk image must be mounted for installation.
   - Before you deploy the agent to macOS devices, see KB article 66578: Allowing Cylance kernel extensions to address "Driver Failed To Connect".
   - For Oracle Linux Server UEK 8 and Oracle Linux Server 8 devices, use the Oracle 8 installation file (requires CylanceOPTICS agent 3.2 or later).
4. Click **Download**.
5. Using your organization’s preferred software distribution method, deploy and run the installation file on devices.

   If you want to install the CylanceOPTICS agent on Windows or macOS devices using OS commands, or if you are installing on Linux, see OS commands for the CylanceOPTICS agent.

After you finish:

- Enable and configure CylanceOPTICS in a device policy and assign the policy to one or more zones.
- For more information about managing upgrades of the CylanceOPTICS agent, see Manage updates for the CylancePROTECT Desktop and CylanceOPTICS agents.

Configuration requirements for macOS 11.x and later

To install CylanceOPTICS agent version 3.0 or later on devices with macOS Big Sur (11.x) or later, note the following configuration requirements. The requirements depend on whether devices are managed by an MDM solution (for example, Jamf Pro).

MDM managed devices

The information below uses Jamf Pro as the MDM solution, but it is applicable to other MDM solutions.

Requirement	Steps
Enable full disk access for CylanceOPTICS.	Create a configuration profile and configure the following privacy preferences: • Identifier: com.cylance.Optics • Identifier Type: Bundle ID • Code Requirement: `identifier "com.cylance.Optics" and anchor apple generic and certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = "6ENJ69K633"` • SystemPolicyAllFiles service: Allow
Enable the CylanceOPTICS system extension.	Create a configuration profile and configure the following privacy preferences: • Display Name: Cylance Endpoint Security Optics System Extension • System Extension Types: Allowed System Extensions • Team Identifier: 6ENJ69K633 • Allowed System Extensions: com.cylance.CyOpticsESF.extension
Enable the CylanceOPTICS system extension full disk access.	Create a configuration profile and configure the following privacy preferences: • Identifier: com.cylance.CyOpticsESF.extension • Identifier Type: Bundle ID • Code Requirement: `anchor apple generic and identifier "com.cylance.CyOpticsESF.extension" and (certificate leaf[field.1.2.840.113635.100.6.1.9] /* exists */ or certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = "6ENJ69K633")` • SystemPolicyAllFiles service: Allow

Requirement	Steps
Enable the CylanceOPTICS network extension.	Create a configuration profile and configure the following content filter settings: • Filter Name: com.cylance.CyOpticsESF.extension • Identifier: com.cylance.CyOpticsESF.extension • Socket Filter Bundle Identifier: com.cylance.CyOpticsESF.extension • Socket Filter Designated Requirement: `anchor apple generic and identifier "com.cylance.CyOpticsESF.extension" and (certificate leaf[field.1.2.840.113635.100.6.1.9] /* exists */ or certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = "6ENJ69K633")` • Network Filter Bundle Identifier: com.cylance.CyOpticsESF.extension • Network Filter Designated Requirement: `anchor apple generic and identifier "com.cylance.CyOpticsESF.extension" and (certificate leaf[field.1.2.840.113635.100.6.1.9] /* exists */ or certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = "6ENJ69K633")`
Restart after installation.	After you complete the configuration steps above and install the CylanceOPTICS agent, restart the device.

Devices that are not MDM managed

After you install the CylanceOPTICS agent:

1. Restart the device.
2. Go to the Security & Privacy settings and approve CyOpticsESFLoader.
3. When you are prompted, allow the CylanceOPTICS network filter.
4. If System Integrity Protection (SIP) is enabled on the device, on the Privacy tab, click Full Disk Access and verify that CyOpticsESFLoader is selected. If CyOpticsESFLoader is not in the list, click +, navigate to /Library/Application Support/Cylance/Optics, and select CyOptics.
5. Restart the device again.

To verify that the system extension is loaded:

1. Run `$ systemextensionsctl list` and confirm that the output includes `com.cylance.CyOpticsESF.extension`.
2. Run `$ ps aux | grep -i extension | grep -i Cylance` and confirm that the output includes `com.cylance.CyOpticsESF.extension.systemextension`.

OS commands for the CylanceOPTICS agent

The CylanceOPTICS agent installer supports the following OS commands.

Windows

Actions	Commands
Specify the installation directory.	`INSTALLFOLDER=<path>`
Specify the directory for the local CylanceOPTICS data store.	`OPTICSROOTDATAFOLDER=<path>`
Perform a silent installation with no user action required.	For the .exe package, use any of the following: • `-q` • `-quiet` • `-s` • `-silent` For the .msi package, use either of the following: • `/q` • `/quiet`
Create an installation log file.	For the .exe package, use either of the following: • `-l <path_for_log>` • `-log <path_for_log>` For the .msi package, use either of the following: • `/l <path_for_log>` • `/log <path_for_log>`
Disable proxy bypass for the CylanceOPTICS agent (.msi package only).	Use this option if you want the CylanceOPTICS agent to always use a specified proxy connection to the CylanceOPTICS cloud services. This is optional in most environments but required if you are using CylanceHYBRID. Before you execute the installer with the command below, create the ProxyServer registry key on the device. See Configuring a proxy for the CylancePROTECT Desktop and Cylance OPTICS agents. If you are using CylanceHYBRID, see the Windows setup instructions in the CylanceHYBRID Administration Guide and create the ProxyServer registry key with the required value for CylanceHYBRID. After you create the ProxyServer registry key on the device, use the following command when installing the agent: `HYBRID=True` The installer creates the DisableProxyBypass registry key on the device with the value set to True. For more information, see Proxy options for the CylanceOPTICS agent. If the command is set to `False`, the installer does not create the registry key.

Actions	Commands
Uninstall the CylanceOPTICS agent.	`"<CylanceOPTICS_program_directory>\CyOpticsUninstaller.exe"` For example: `"C:\Program Files\Cylance\Optics\CyOpticsUninstaller.exe"` To perform a silent uninstall that doesn't require user interaction, add the following commands: `--use_cli -t v20` If you configured the CylanceOPTICS agent to require an uninstall password, add the following command: `--password <password>` For example: `"C:\Program Files\Cylance\Optics\CyOpticsUninstaller.exe" --use_cli -t v20 --password samplepass`

macOS

Action	Commands
Install the CylanceOPTICS agent.	`sudo installer -pkg CylanceOPTICS.pkg -target /`
Install the CylanceOPTICS agent and create an installation log file.	`sudo installer -verboseR -dumplog -pkg CylanceOPTICS.pkg -target /`
Start the CylanceOPTICS service.	`sudo launchctl load /Library/LaunchDaemons/com.cylance.cyoptics_service.plist`
Stop the CylanceOPTICS service.	`sudo launchctl unload /Library/LaunchDaemons/com.cylance.cyoptics_service.plist`
Uninstall the CylanceOPTICS agent.	`sudo /Applications/Cylance/Optics/Uninstall\ CylanceOPTICS.app/Contents/MacOS/Uninstall\ CylanceOPTICS`
Uninstall the CylanceOPTICS agent with no UI.	`sudo /Applications/Cylance/Optics/Uninstall\ CylanceOPTICS.app/Contents/MacOS/Uninstall\ CylanceOPTICS --noui` If you want to use this command, additional actions are required on macOS 11.x devices. For more information, see the troubleshooting section in the Cylance Endpoint Security Administration content.

Linux

Action	Commands
Install the CylanceOPTICS agent on RHEL/CentOS, SUSE, or Amazon Linux 2.	`yum install CylanceOPTICS-<version>.rpm`, where *<version>* is the version of the .rpm file.
Install the CylanceOPTICS agent on Ubuntu.	`dpkg -i cylance-optics_<version>_amd64.deb`, where *<version>* is the version of the .deb file.
Start the CylanceOPTICS service.	`systemctl start cyoptics.service`
Stop the CylanceOPTICS service.	`systemctl stop cyoptics.service`
Uninstall the CylanceOPTICS agent on RHEL/CentOS, SUSE, or Amazon Linux 2.	`rpm -e CylanceOPTICS`
Uninstall the CylanceOPTICS agent on Ubuntu.	`dpkg -P cylance-optics`

Enable and configure CylanceOPTICS

When you enable CylanceOPTICS in a device policy and assign that policy to devices and zones, the CylanceOPTICS agent on each device collects events and stores data in the CylanceOPTICS database. The agent does not collect data until you enable CylanceOPTICS.

Before you begin: Verify that the CylancePROTECT Desktop application control feature is not enabled. Application control is designed for fixed function devices that do not change after setup (for example, point-of-sales machines). If application control is enabled, the CylanceOPTICS agent will not function as expected.

1. In the management console, on the menu bar, click **Policies > Device Policy**.
2. Create a new policy or click an existing policy.
3. On the **CylanceOPTICS Settings** tab, select the **CylanceOPTICS** check box.
4. If you want to enable the automatic upload of threat-related focus data from the CylanceOPTICS database to the console, in the **Threats** section, select the **Auto Upload** check box.

   If you do not select this option, you must use the console to request focus data for devices.
5. If you want to enable the automatic upload of memory-related focus data from the CylanceOPTICS database to the console, in the **Memory Protection** section, select the **Auto Upload** check box.

   If you do not select this option, you must use the console to request focus data for devices.
6. In the **Configurable Sensors** section, select the optional CylanceOPTICS sensors that you want to enable. Note that the optional sensors are supported for 64-bit operating systems only.

7. In the **Set maximum device storage** field, specify the maximum amount of storage, in MB, that the CylanceOPTICS agent can access on each device. The default value is 1000 MB.
8. If you want to allow the CylanceOPTICS agent to provide OS notifications to the user on Windows or macOS devices, select the **Enable CylanceOPTICS Desktop Notifications** check box.
9. If you want to associate a detection rule set with the device policy, in the **Select Detection Set** drop-down list, click a rule set.
10. Click **Create** or **Save**.

    If you are changing an existing policy and want to save the current settings as a new device policy, click **Save As** instead.

After you finish:

- Assign the policy to devices or zones.
- If you want to prevent users from being able to stop the services for the CylanceOPTICS agent for Windows version 3.1 or later, in the device policy, under **Protection Settings**, turn on **Prevent service shutdown from device**. This feature requires the device to have CylancePROTECT Desktop version 3.0 or later.
- If you want users to have to provide a password to uninstall the CylancePROTECT Desktop agent or the CylanceOPTICS agent for Windows version 3.1 or later, in **Settings > Application**, turn on **Require Password to Uninstall Agent**.

CylanceOPTICS sensors

You can enable any of the following CylanceOPTICS sensors to collect additional data beyond standard process, file, network, and registry events. Enabling optional sensors can impact performance and resource usage on devices, as well as the amount of data stored in the CylanceOPTICS database. BlackBerry recommends enabling optional sensors on a small number of devices initially to assess the impact.

The optional sensors are supported for 64-bit operating systems only, unless otherwise noted.

Sensor	Description	Best practices	Notes
Advanced Scripting Visibility	The CylanceOPTICS agent records commands, arguments, scripts, and content from JScript, PowerShell (console and integrated scripting environment), VBScript, and VBA macro script execution. Signal to noise ratio: High Potential data retention and performance impact: Low to moderate	Recommended for: • Desktops • Laptops • Servers Not recommended for: • Exchange and email servers	• Tools provided by Microsoft or other third-party solutions may rely heavily on PowerShell to conduct operations. • To allow for increased data retention, BlackBerry recommends that you configure detection exceptions for trusted tools that make heavy use of PowerShell.

Sensor	Description	Best practices	Notes
Advanced WMI Visibility	The CylanceOPTICS agent records additional WMI attributes and parameters. Signal to noise ratio: High Potential data retention and performance impact: Low	Recommended for: • Desktops • Laptops • Servers	• Some Windows background and maintenance processes use WMI to schedule tasks or execute commands, which can result in bursts of high WMI activity. • BlackBerry recommends analyzing your environment's WMI usage before you enable this sensor.
API Sensor	The CylanceOPTICS agent monitors an identified set of Windows API calls. Signal to noise ratio: Moderate Potential data retention and performance impact: Enabling this sensor may impact a device's CPU performance	Recommended for: • Desktops • Laptops • Servers	• Supported on x86 or x64 Windows operating systems. • Requires the CylancePROTECT Desktop agent version 3.0.1003 or later. • Requires the CylanceOPTICS agent version 3.2 or later.
Cryptojacking Detection	The CylanceOPTICS agent processes Intel CPU activity using hardware registers for potential cryptomining and cryptohacking activity. Signal to noise ratio: Moderate Potential data retention and performance impact: Low	Supported for: • Windows 10 x64 • Intel Gen 6 and newer CPUs	Not supported for virtual machines.
DNS Visibility	The CylanceOPTICS agent records DNS requests, responses, and associated data fields such as Domain Name, Resolved Addresses, and Record Type. Signal to noise ratio: Moderate Potential data retention and performance impact: Moderate	Recommended for: • Desktops • Laptops Not recommended for: • DNS servers	• Note that this sensor can gather a significant amount of data, but can also provide visibility into data that other tools have difficulty recording. • To allow for increased data retention, BlackBerry recommends that you configure detection exceptions for trusted tools that make heavy use of cloud-based services.

Sensor	Description	Best practices	Notes
Enhanced File Read Visibility	The CylanceOPTICS agent monitors file reads within an identified set of directories. Signal to noise ratio: Moderate Potential data retention and performance impact: Low	Recommended for: • Desktops • Laptops • Servers	• Some third-party security tools may use the Windows APIs that this sensor collects data from. In some cases, CylanceOPTICS might record irrelevant or trusted data. • To allow for increased data retention and a higher signal to noise ratio, BlackBerry recommends that you configure detection exceptions for trusted security tools.
Enhanced Portable Executable Parsing	The CylanceOPTICS agent records data fields associated with portable executable files, such as file version, import functions, and packer types. Signal to noise ratio: Moderate Potential data retention and performance impact: Low	Recommended for: • Desktops • Laptops • Servers	• The data gathered by this sensor is passed into the Context Analysis Engine to aid with advanced executable file analysis and is not stored in the CylanceOPTICS database. • Enabling this sensor will have little to no impact on CylanceOPTICS data retention. • If you add and enable a detection rule that analyzes string resources, the CylanceOPTICS agent might consume significant CPU and memory resources
Enhanced Process and Hooking Visibility	The CylanceOPTICS agent records process information from the Win32 API and Kernel Audit messages to detect forms of process hooking and injection. Signal to noise ratio: Moderate Potential data retention and performance impact: Low	Recommended for: • Desktops • Laptops • Servers	• Some third-party security tools may use the Windows APIs that this sensor collects data from. In some cases, CylanceOPTICS might record irrelevant or trusted data. • To allow for increased data retention and a higher signal to noise ratio, BlackBerry recommends that you configure detection exceptions for trusted security tools.

Sensor	Description	Best practices	Notes
Private Network Address Visibility	The CylanceOPTICS agent records network connections within the RFC 1918 and RFC 4193 address spaces. Signal to noise ratio: Low Potential data retention and performance impact: Low	Recommended for: • Desktops Not recommended for: • DNS servers • Low or under resourced systems • Systems that use RDP or other remote access software	• This sensor gathers a significant amount of data and can impact the length of time that data is stored in the CylanceOPTICS database. • BlackBerry recommends that you enable this sensor only in environments where full visibility into private network address communication is a requirement.
Windows Advanced Audit Visibility	The CylanceOPTICS agent monitors additional Windows event types and categories. Signal to noise ratio: Moderate Potential data retention and performance impact: Low	—	• This sensor enables monitoring of the following event IDs: • 4769 kerberos ticket request • 4662 operation on active directory object • 4624 successful logon • 4702 scheduled task creation
Windows Event Log Visibility	The CylanceOPTICS agent records Windows security events and their associated attributes. Signal to noise ratio: Moderate Potential data retention and performance impact: Moderate	Recommended for: • Desktops • Laptops • Servers Not recommended for: • Domain controllers • Exchange and email servers	• The Windows event logs that this sensor collects data from will be generated frequently during normal system usage. • To reduce duplicate data and to allow for increased data retention, determine if your organization already has tools in place that collect data from Windows event logs.

Data structures that CylanceOPTICS uses to identify threats

Events, artifacts, and facets are the three primary data structures that CylanceOPTICS uses to analyze, record, and investigate activities that occur on devices. CylanceOPTICS features rely on these data structures, including InstaQuery, focus data, and the Context Analysis Engine (CAE).

This section provides more information about how CylanceOPTICS interprets and interacts with activities on devices, to help you better understand and make use of detections, queries, and focus data.

Data sources by OS

The CylanceOPTICS agent uses the following data sources:

OS	Data sources
Windows	• CyOpticsDrv kernel driver • Event tracking • Security audit log
macOS	CyOpticsDrvOSX kernel driver
Linux	ZeroMQ

For information on types of network traffic CylanceOPTICS is configured by default to exclude, see KB65604.

Events

Events are the components that result in an observable change or action on a device. Events consist of two primary artifacts: the instigating artifact that initiates an action, and the target artifact that is acted on.

The following tables provide details about the types of events that CylanceOPTICS can detect and interact with.

Event: Any

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: Process, User
- Platform: Windows, macOS, Linux

Event type	Description
Any	All events record the process that generated them and the user that is associated with the action.

Event: Application

- Device policy option to enable: Advanced WMI Visibility
- Artifact type: WMI trace
- Platform: Windows

Event type	Description
Create filter – consumer binding	A process used WMI persistence.
Create temporary consumer	A process subscribed to WMI events.
Execute operation	A process performed a WMI operation.

- Device policy option to enable: Enhanced Process and Hooking Visibility
- Artifact type: Windows event

- Platform: Windows

Event type	Description
CBT	The SetWindowsHookEx API installed a hook to receive notifications that are useful to a CBT application.
DebugProc	The SetWindowsHookEx API installed a hook to debug other hook procedures.
Get async key state	A process called the Win32 GetAsyncKeyState API.
JournalPlayback	The SetWindowsHookEx API installed a hook to monitor messages previously recorded by a WH_JOURNALRECORD hook procedure.
JournalRecord	The SetWindowsHookEx API installed a hook to monitor input messages posted to the system message queue.
Keyboard	The SetWindowsHookEx API installed a hook to monitor keystroke messages.
LowLevel keyboard	The SetWindowsHookEx API installed a hook to monitor low-level keyboard input events.
LowLevel mouse	The SetWindowsHookEx API installed a hook to monitor low-level mouse input events.
Message	The SetWindowsHookEx API installed a hook to monitor messages posted to a message queue.
Mouse	The SetWindowsHookEx API installed a hook to monitor mouse messages.
Register raw input devices	A process called the Win32 RegisterRawInputDevices API.
Set Windows event hook	A process called the Win32 SetWinEventHook API.
Set Windows hook	The SetWindowsHookEx API installed an unlisted hook type value.
ShellProc	The SetWindowsHookEx API installed a hook to receive notifications that are useful to shell applications.
SysMsg	The SetWindowsHookEx API installed a hook to monitor messages that are generated as a result of an input event in a dialog box, message box, or scroll bar.
WindowProc	The SetWindowsHookEx API installed a hook to monitor Windows procedure messages.

- Device policy option to enable: API Sensor
- Artifact type: API Call
- Platform: Windows

Event type	Description
Function	A noteworthy function call has been made.

Event: Device

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: File
- Platform: macOS, Linux

Event type	Description
Mount	The device is connected to a machine or folders are mounted to specific network locations.

Event: File

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: File
- Platform: Windows, macOS, Linux

Event type	Description
Create	A file was created.
Delete	A file was deleted.
Overwrite	A file was overwritten.
Rename	A file was renamed.
Write	A file was modified.

- Device policy option to enable: Enhanced File Read Visibility
- Artifact type: File
- Platform: Windows

Event type	Description
Open	A file was opened.

Event: Memory

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: Process
- Platform: macOS, Linux

Event type	Description
Mmap	A region of memory was mapped for a specific purpose, typically allocated for a process.
MProtect	The metadata was changed for a region of memory, typically to change its status (for example, to make it executable).

Event: Network

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: Network
- Platform: Windows, macOS

Event type	Description
Connect	A network connection was opened. By default, local traffic is not collected.

- Device policy option to enable: Private Network Address Visibility
- Artifact type: Network
- Platform: Windows

Event type	Description
Connect	Connect events include local traffic.

- Device policy option to enable: DNS Visibility
- Artifact type: DNS request
- Platform: Windows

Event type	Description
Request	A process made a network DNS request that was not cached.
Response	A process received a DNS response.

Event: Process

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: Process

Event type	Platform	Description
Abnormal exit	macOS Linux	Monitored by the preselect sensor, a process exited without completing (for example, an exception caused a process to exit).
Exit	Windows macOS Linux	A process exited.
Forced exit	macOS Linux	Monitored by the preselect sensor, a process was forced to exit by another process.
PTrace	macOS Linux	This is a Unix system tool that allows one process to monitor and control another process.

Event type	Platform	Description
Start	Windows macOS Linux	A process started.
Suspend	Linux	Monitored by the preselect sensor, a process was suspended.
Unknown Linux process event	macOS Linux	Monitored by the preselect sensor, an unknown event occurred with the process as a target. This can be a sign of malicious software masking its activity.

- Device policy option to enable: Enhanced Process and Hooking Visibility
- Artifact type: Process
- Platform: Windows

Event type	Description
SetThreadContext	A process called the SetThreadContext API.
Terminate	An instigating process terminated another target process.

Event: Registry

- Device policy option to enable: CylanceOPTICS check box
- Artifact type: Registry, File (if the registry key references a specific file)
- Platform: Windows

Event type	Description
Key created	A registry key was created.
Key deleted	A registry key was deleted.
Value created	A registry key value was created.
Value deleted	A registry key value was deleted.
Value modified	A registry key value was changed.

Event: Scripting

- Device policy option to enable: Advanced Scripting Visibility
- Artifact type: File, Powershell Trace (Prevent script is Powershell trace only)
- Platform: Windows

Event type	Description
Execute command	Windows PowerShell executed a command. The parameters are unknown.

Event type	Description
Execute script	An AMSI ScanBuffer result indicated that a script was executed.
Execute ScriptBlock	Windows PowerShell executed a script block.
Invoke command	Windows PowerShell invoked a command with bound parameters.
Prevent script	An AMSI ScanBuffer result indicated that a script was detected or blocked by an administrator.

Event: User

- Device policy option to enable: Advanced Scripting Visibility
- Artifact type: Windows event
- Platform: Windows

Event type	Description
Batch logoff	The following Windows event ID occurred: 4634 (type 4).
Batch logon	The following Windows event ID occurred: 4624 (type 4).
CacheInteractive logoff	The following Windows event ID occurred: 4634 (type 11).
CacheInteractive logon	The following Windows event ID occurred: 4624 (type 11).
Interactive logoff	The following Windows event ID occurred: 4634 (type 2).
Interactive logon	The following Windows event ID occurred: 4624 (type 2).
Network logoff	The following Windows event ID occurred: 4634 (type 3).
Network logon	The following Windows event ID occurred: 4624 (type 3).
NetworkClearText logoff	The following Windows event ID occurred: 4634 (type 8).
NetworkClearText logon	The following Windows event ID occurred: 4624 (type 8).
NewCredentials logoff	The following Windows event ID occurred: 4634 (type 9).
NewCredentials logon	The following Windows event ID occurred: 4624 (type 9).
RemoteInteraction logoff	The following Windows event ID occurred: 4634 (type 10).

Event type	Description
RemoteInteraction logon	The following Windows event ID occurred: 4624 (type 10).
Service logoff	The following Windows event ID occurred: 4634 (type 5).
Service logon	The following Windows event ID occurred: 4624 (type 5).
Unlock logoff	The following Windows event ID occurred: 4634 (type 7).
Unlock logon	The following Windows event ID occurred: 4624 (type 7).
User logoff	The following Windows event ID occurred: 4634 (unlisted type value).
User logon	The following Windows event ID occurred: 4624 (unlisted type value).

Artifacts and facets

Artifacts are complex pieces of information that CylanceOPTICS can use. The Context Analysis Engine (CAE) can identify artifacts on devices and use them to trigger automatic incident response and remediation actions. InstaQueries use artifacts as the foundation of a query.

Facets are the attributes of an artifact that can be used to identify the traits of an artifact that is associated with an event. Facets are correlated and combined during analysis to identify potentially malicious activity. For example, a file named "explorer.exe" may not be inherently suspicious, but if the file is not signed by Microsoft, and resides in a temporary directory, it may be identified as suspicious in some environments.

CylanceOPTICS uses the following artifacts and facets:

Artifact	Facets
API Call	• Function • DLL • Parameters
DNS	• Connection • IsRecursionDesired • IsUnsolicitedResponse • Opcode • RequestId • Resolution • ResponseOriginatedFromThisDevice • Questions
Event	• Occurrence time • Registration time

Artifact	Facets
File	• Executable file record (binaries only) • File creation time (reported by OS) • File path • File signature (binaries only) • File size • Last modified time (reported by OS) • md5 hash (binaries only) • Recent write location • sha256 hash (binaries only) • Suspected file type • User
Network	• Local address • Local port • Protocol • Remote address • Remote port
PowerShell trace	• EventId • Payload • PayloadAnalysis • ScriptBlockText • ScriptBlockTextAnalysis
Process	• Command line • File the executable was run from • Parent process • Process ID • Start time • User
Registry	• If the value references a file on the system • Registry path • Value

Artifact	Facets
Users	• Domain • OS-specific identifier (for example, SID) • Username User artifacts can contain any of the following values; however, the data is not available on most devices: • AccountType • BadPasswordCount • Comment • CountryCode • FullName • HasPasswordExpired • HomeDirectory • IsAccountDisabled • IsLocalAccount • IsLockedOut • IsPasswordRequired • LanguageCodePage • LogonServer • PasswordAge • PasswordDoesNotExpire • ProfilePath • ScriptPath • UserPrivilege • Workstations
Windows event	• Class • Event ID • Provider
WMI trace	• ConsumerText • ConsumerTextAnalysis • EventId • Namespace • Operation • OperationAnalysis • OriginatingMachineName

Registry keys and values

CylanceOPTICS monitors common persistence, process startup, and privilege escalation keys and values as well as the values shown in KB66266.

To learn more about how CylanceOPTICS monitors persistence points in the registry, see KB66357.

Setting up CylanceGATEWAY

Note: If CylanceGATEWAY is not enabled for your tenant the menu options to configure it are not displayed in the management console. If a user with insufficient permissions logs in to the management console a no permissions error message is displayed when selecting a menu option. For more information about the error message, see support.blackberry.com/ community to read article 98223.

DNS resolution of IPv6 addresses is not supported. IPv6 addresses will not be returned to the CylanceGATEWAY agent.

Step	Action
1	Install and set up the BlackBerry Connectivity Node and at least one CylanceGATEWAY Connector.
2	Specify the addresses that are part of your private network.
3	Specify your private DNS settings and suffixes.
4	Review the existing CylanceGATEWAY network services or define your own to make creating access control list (ACL) rules on tenants easier (optional).
5	Configure ACL rules on tenants to manage which Internet and private network destinations CylanceGATEWAY allows and blocks access to.
6	Configuring network protection to specify the threats that CylanceGATEWAY detects and how it responds.
7	Add users for CylanceGATEWAY.
8	Configure Gateway service options to specify OS-specific options.
9	Configure enrollment policies to allow users to activate the CylancePROTECT Mobile app or CylanceGATEWAY agent on their devices.
10	Assign policies to administrators, users, and groups. Users must be assigned an enrollment policy and Gateway Service policy before they can activate the CylanceGATEWAY agent.

Step	Action
11	Device users install and activate the CylancePROTECT Mobile app on iOS, Android, and Chromebook devices and the CylanceGATEWAY agent on Windows and macOS devices. Optionally, you can perform a silent installation or upgrade of the CylanceGATEWAY agent. You can download the agents from the BlackBerry web site. For more information on the CylancePROTECT Mobile app and CylanceGATEWAY agent, see the Cylance Endpoint Security User Guide. Optionally, you can integrate Cylance Endpoint Security with BlackBerry UEM or Microsoft Intune to verify whether iOS and Android devices are managed by UEM or Intune before they can use CylanceGATEWAY. For more information, see Connecting Cylance Endpoint Security to MDM solutions to verify whether devices are managed.
12	Bring your own IP addresses (BYOIP) to provide larger dedicated IP addresses to control traffic in ways, such as using your organization's own IP address for sourcing IP pinning and allowing a single IP address range or CIDR address instead of several non-continuous IP addresses. (Optional)

Defining your private network

To use CylanceGATEWAY to control access to your private networks, you need to define your private networks. When you define your private networks, you can configure CylanceGATEWAY to apply the most restrictive privilege and micro-segmentation when users access your network resources. CylanceGATEWAY supports access to more than one private network (for example, segments, data centers, and VPCs) both in on-premises and cloud environments. CylanceGATEWAY blocks users from connecting to any location in your private network unless the user is assigned an access control list (ACL) rule that allows the connection.

You define your private networks by adding a connector group for each private network that you want users to be able to access resources on. Each tenant supports a maximum of eight connector groups. By default, a connector group is created for you and named "Default Connector Group". Connector groups consist of the following:

- The IP addresses, IP address ranges, and CIDR notation that you specify for each group. CylanceGATEWAY Connectors recognize these addresses as a part of one of your private networks.
- The health check URL. This is unique to the group and is used by each CylanceGATEWAY Connector in the group to confirm connectivity to your private network.
- The IP restrictions that you may specify to have Gateway accept connections only from connectors at the specified IP addresses.

To establish a secure tunnel between users' devices and your private networks, you must install one or more CylanceGATEWAY Connectors and assign them to a group. Each connector group supports a maximum of eight CylanceGATEWAY Connectors.

You can also specify the addresses of your private DNS servers and the private DNS suffixes used for searches. The DNS settings apply to all group connectors in your environment and must be added to one group.

In environments that contain multiple groups with similar destination IP addresses or address ranges, data flow is directed, in order, to the connector groups listed until the IP address is matched to a connector group. The connector group that includes the matching IP address is then used to route the connection to the destination to access resources.

In existing tenants that have support for multiple private networks enabled, all of the existing CylanceGATEWAY Connectors will be moved to the "Default Connector Group". You can then rename the default connector group or add additional groups and assign the connectors as required.

Setting up the CylanceGATEWAY Connector

The CylanceGATEWAY Connector is a virtual appliance that you must install if you want to use CylanceGATEWAY to establish a secure tunnel between users' devices and your private networks. The CylanceGATEWAY Connector must be deployed and enrolled in part of network that has full access to addresses that you define when you Specify your private network. If you don't install a CylanceGATEWAY Connector, you can use CylanceGATEWAY only to block access to public Internet destinations and secure access to cloud applications using source IP pinning.

It is a best practice to install more than one CylanceGATEWAY Connector. Installing multiple instances provides load balancing to access separate segments or private clouds within your Defining your private network. When your network has multiple instances of the CylanceGATEWAY Connector installed and configured, client connections are distributed evenly across all healthy CylanceGATEWAY Connectors that are assigned to the same connector group, providing redundancy in the event that one instance may become unavailable or when troubleshooting issues.

Note: If an existing CylanceGATEWAY Connector (for example, an OVA file in a vSphere environment) is deployed on a single tenant, installing a second CylanceGATEWAY Connector instance using a different connector (for example, a VMDK file in an AWS environment) on the same tenant is not supported.

BlackBerry recommends that you specify a health check URL in each connector group to regularly monitor the status of each CylanceGATEWAY Connector. If you do not specify a health check URL, CylanceGATEWAY cannot confirm whether you have connectivity to your private network, and the Health check status column (Private Network > Gateway Connectors) for a connector will not display the DNS and HTTP information. For more information, see Manage CylanceGATEWAY Connectors.

Contact your BlackBerry sales representative, if you plan to install CylanceGATEWAY in an environment that requires different packaging (for example, a CylanceGATEWAY Connector DEB file).

To set up a CylanceGATEWAY Connector, perform the following actions.

Step	Action
1	Review the Requirements: CylanceGATEWAY Connector.
2	Install the CylanceGATEWAY Connector to your environment. The CylanceGATEWAY Connector is supported in the following environments. To see a walkthrough on installing the CylanceGATEWAY Connector in your environment, see the Install the CylanceGATEWAY Connector workflow for your environment. • vSphere environment • ESXi environment • Microsoft Azure environment • Hyper-V environment • AWS environment
3	Configure the CylanceGATEWAY Connector in the VM environment (optional).
4	Access the CylanceGATEWAY Connector using OpenSSH (optional).

Step	Action
5	Configure your firewall.
6	Enroll the CylanceGATEWAY Connector with the BlackBerry Infrastructure.
7	Configure the CylanceGATEWAY Connector (optional).
8	Managing CylanceGATEWAY Connectors to set options and check connector status.

Install the CylanceGATEWAY Connector to a vSphere environment

You can configure the CylanceGATEWAY Connector with a static IP. If you want to make changes to the CylanceGATEWAY Connector network configuration after it is installed, you can edit the VM's vApp options and restart the CylanceGATEWAY Connector for the changes to take affect. For instructions on how to edit the OVF details, see the VMWare documentation to read 'Edit OVF Details for a Virtual Machine'.

Before you begin: Make sure you have permissions to deploy an OVF template into a vSphere environment.

1. Download the CylanceGATEWAY Connector OVA file (cylance-gateway-connector-<*version*>.ova) from *my*Account.
2. Log in to the vSphere environment.
3. Right-click on the cluster where you want to install the CylanceGATEWAY Connector and select **Deploy OVF template**.
4. On the **Select an OVF template** screen, click **Local file**.
5. Click **Upload Files** and navigate to the cylance-gateway-connector.ova file.
6. Click **Next**.
7. On the **Select a name and folder** screen, type a name for the virtual machine and click **Next**.

   The default name is cylance-gateway-connector.
8. On the **Select a computer resource** screen, select a location for the virtual machine and click **Next**.
9. After the compatibility checks are complete, click **Next**.
10. On the **Review details** screen, review the setup information and click **Next**.
11. On the **Select storage** screen, for **Virtual disk format**, select **Thin Provision** and click **Next**.
12. On the **Select networks** screen, configure the **Destination Network** for this CylanceGATEWAY Connector.

    Set the **Source Network** to NAT.
13. Click **Next**.
14. On the **Customize template** screen, specify additional virtual machine properties (optional).

    Note: IP addresses must be entered as IPv4 addresses in dot-decimal notation.

    - By default, the **Use DHCP** option is enabled and the connector uses automatically assigned IP addresses. If you want to configure the connector with a static IP address, you must clear the Use DHCP check box and provide the IP addresses for the following settings:

- In the **IP address / Prefix Length** field, enter the IP address and prefix that can be assigned to devices (for example, 192.0.2.100/24). If you add multiple IP addresses, separate each IP address and prefix with a comma (,).
- In the **Gateway** field, enter the IP address for the network gateway (for example, 192.0.2.1).
- In the **DNS** field, specify the IP address for the DNS servers that you want to use (for example, 192.0.2.120). If you add multiple DNS servers, separate the addresses with a comma (,).

15. On the **Ready to complete** screen, review the configuration settings and click **Finish**.

After you finish: After you install the connector, you can verify that the OVA file is installed correctly in the virtual environment. For instructions, see Configure the CylanceGATEWAY Connector in the VM environment.

Install the CylanceGATEWAY Connector to an ESXi environment

You can configure the CylanceGATEWAY Connector's network interface to use DHCP or configure a static IP only when you install the CylanceGATEWAY Connector. If you want to make changes to the configuration, you must uninstall and then install the CylanceGATEWAY Connector with the new network interface configuration.

Before you begin: Make sure you have permissions to deploy an OVF template into an ESXi environment.

1. Download the CylanceGATEWAY Connector OVA file (cylance-gateway-connector-<*version*>.ova) from *my*Account.
2. Log in to the ESXi environment.
3. In the **Navigator** panel, select **Virtual Machines**.
4. Click the **Create/Register VM** button
5. On the **New Virtual Machine** screen, select **Deploy a virtual machine from an OVF or OVA file** and click **Next**.
6. Type a name for the virtual machine
7. Navigate to the cylance-gateway-connector-<*version*>.ova file. Drag and drop the file in the dialog box.
8. Click **Next**.
9. On the **Select storage** screen, select **Standard** and a datastore, then click **Next**.
10. On the **Deployment options** screen, for **Disk provisioning**, select **Thin**.
11. On the **Additional settings** screen, expand Options to specify additional VMWare properties (optional).

    Note: IP addresses must be entered as IPv4 addresses in dot-decimal notation.

    - By default, the **Use DHCP** is enabled and the connector uses automatically assigned IP addresses. If you want to configure the connector with a static IP address, you must clear the Use DHCP check box and provide the IP addresses for the following settings:
    - In the **IP address / Prefix Length** field, specify the IP address and prefix that can be assigned to devices (for example, 192.0.2.100/24). To use multiple IP addresses, separate the IP addresses with a comma (,).
    - In the **Gateway** field, enter the address for the network gateway (for example, 192.0.2.1)
    - In the **DNS** field, specify the IP address for the DNS servers that you want to use (for example, 192.0.2.120). To use multiple DNS servers, separate the addresses with a comma (,).
12. Click **Next**.
13. On the **Ready to complete** screen, review the configuration settings and click **Finish**.

After you finish: After you install the connector, you can verify that the OVA file is installed correctly in the virtual environment. For instructions, see Configure the CylanceGATEWAY Connector in the VM environment.

Prerequisites to install CylanceGATEWAY Connector to a Microsoft Azure environment

- Make sure the DNS is enabled in your Azure private network and can be accessed by your connector VM.

- Optionally, make sure that your private network environment has a proxy server for outbound HTTP and HTTPs traffic.
- Make sure that the services you want to make available through CylanceGATEWAY can be accessed by the CylanceGATEWAY Connector on your private network.
- Make sure you can deploy a VHD template into a Azure environment.

Install the CylanceGATEWAY Connector to a Microsoft Azure environment

When you install the connector, you upload the VHD file as a blob in the Microsoft Azure portal. You use the blob to create an image that is used by the connector VM. For information on configuring your Azure environment, visit Azure portal documentation - Azure portal | Microsoft Docs.

Before you begin: Review Prerequisites to install CylanceGATEWAY Connector to a Microsoft Azure environment.

1. Download the CylanceGATEWAY Connector VHD file (cylance-gateway-connector-fixed-<*build number*>.vhd) from *my*Account.
2. Log in to the Microsoft Azure management portal at https://portal.azure.com.
3. Upload the VHD file as a blob.
   a) In the **Azure services** section, click **Storage accounts**. If you do not have a storage account, create one.
   b) Click your storage account.
   c) In the left column, in the **Data storage** section, click **Containers**. If you do not have a container, create one.
   d) Click your container.
   e) Click **Upload**.
   f) In the **Upload blob** screen, navigate to the downloaded cylance-gateway-connector-fixed-<*build number*>.vhd file.
   g) Expand **Advanced** and set the **Blob type** drop-down list to **Page blob**.
   h) Click **Upload**.
4. Create an image from the uploaded blob.
   a) In the management portal, in the left column, click the portal menu **> All Services**.
   b) In the **Filter services** field, type `images`.
   c) Click **Images**, make sure the image uses the resource type **Microsoft.Compute/images**.
   d) Click **Create**.
   e) Complete the required fields for your environment. In the **OS disk** section, specify the following settings:
      - OS Type: Linux
      - VM Generation: Gen 1
      - Storage blob: Navigate to the blob that you created in step 3.
   f) Click the **Tags** tab and add tags are required (optional).
   g) Click **Review + create**.
   h) Click **Create**.
   i) Click **Go to resource**. The Create a virtual machine screen opens.
5. Create a connector VM.
   a) On the **Basics** tab, complete the required fields for your environment. Specify the following settings:
      - Image: Select the image that you created in step 4.
      - Size: Select a size with that includes 2 vCPUs and a minimum of 4.5 GB memory.
      - Authentication type: Select **Password**.
      - Username: Enter any value. The connector VM image disregards this field.
      - Password and Confirm password: Enter any value. The connector VM image disregards these fields.
   b) Click the **Disks** tab.

c) On the **Disks** page, in the **OS disk type** drop-down list, select **Standard HDD**. The connector VM does not require low latency disk access.
d) Click the **Networking** tab. Complete the required fields for your environment. Make sure that the connector image uses your private network. The connector does not support Azure's Accelerated Networking feature. If you enable this setting, the connector VM might not function as expected.
e) Click the **Management** tab. The image doesn't support "Login with Azure AD". If you enable this setting, the connector VM might not function as expected.
f) Click the **Advanced** tab. Configure as required for your environment. The connector doesn't support setting "Custom data" or "User data". The "Custom data" or "User data" settings can be configured as required by your environment, but they are disregarded by the connector VM. BlackBerry does not recommend installing additional VM applications on the VM that is running the connector VM.
g) Click the **Tags** tab. Configure tags as required for your environment.
h) Click the **Review + create** tab. Review your configuration.
i) Click **Create**.

Note: A timeout error message might display when the VM resource is created. If necessary, refresh the screen.

Install the CylanceGATEWAY Connector to a Hyper-V environment

Before you begin: Make sure you have permissions to deploy the VHD file and create a connector image.

1. Download the CylanceGATEWAY Connector VHD file (cylance-gateway-connector-dynamic<*version*>.vhd) from *my*Account.
2. Run the Hyper-V Manager as an administrator.
3. In the Hyper-V Manager menu, click **Action > New > Virtual Machine**. Click **Next**.
4. On the **Specify Name and Location** screen, specify a name for the VM. Click **Next**.
5. On the **Specify Generation** screen, select **Generation 1**. Click **Next**.
6. On the **Assign Memory** screen, click **Next**.
7. On the **Configure Networking** screen, select the appropriate connection. Click **Next**.
8. On the **Connect Virtual Hard Disk** screen, select **Use an existing virtual hard disk**.
9. Navigate to the cylance-gateway-connector-dynamics-<*version*>.vhd file that you downloaded in step 1.
10. On the **Assign memory** screen, make sure that the connector has a minimum of 5 GB of memory. Click **Next**.
11. On the **Completing the New Virtual Machine Wizard** screen, review the configuration settings and click **Finish**.
12. Start the connector.

After you finish: After you install the connector, you can verify that the VHD file is installed correctly in the virtual environment. For instructions, see Configure the CylanceGATEWAY Connector in the VM environment.

Install the CylanceGATEWAY Connector to an AWS environment

When you install the CylanceGATEWAY Connector, you upload the CylanceGATEWAY Connector VMDK image file to an Amazon S3 bucket in your private network. You use the Amazon EC2 Image Builder service to import the uploaded VMDK image file and create an Amazon Machine Image (AMI). The CylanceGATEWAY Connector instance is created from the imported AMI. The CylanceGATEWAY Connector instance is configured for DHCP. Configuring the instance to use a static IP is not supported.

Before you begin:

- Verify that your account has appropriate permissions to access an existing Amazon S3 bucket or to create a new S3 bucket. For instructions on how to create an S3 bucket, visit docs.aws.amazon.com to read “Creating a bucket.”

- Verify that your environment has an AWS Identity and Access Management (IAM) service role. For instructions on how to create an IAM service role, visit docs.aws.amazon.com to read “Required service role.” If you do not specify a name for the service role, AWS names it "vmimport."

Optionally, you can use the AWS Command Line Interface (CLI) to automate the import of the CylanceGATEWAY Connector AMI image file. For more information, visit docs.aws.amazon.com to read "Importing a VM as an image using VM Import/Export."

1. Download the CylanceGATEWAY Connector VMDK file (cylance-gateway-connector-aws<*version*>.vmdk) from *my*Account.
2. Sign in to the AWS management console at https://aws.amazon.com/console.
3. Upload the cylance-gateway-connector-aws<*version*>.vmdk image file to an S3 bucket using the AWS console. For instructions, visit docs.aws.amazon.com to read “Upload objects." If necessary, create an S3 bucket.
4. To import the AMI using the AWS console, complete the following steps:
   a) Open the **EC2 Image Builder** service.
   b) In the left column, click **Images**.
   c) Click the **Import image** button.
   d) On the **Import image** screen complete the following fields:
      - Type a name and version for the CylanceGATEWAY Connector.
      - In the **Base image operating system** section, select **Ubuntu** and set the **OS version** to **Ubuntu 20**.
      - In the **VM import configuration**, **Disk container 1** section, set the **Source** to **S3 bucket**. Browse to the S3 bucket where you uploaded the CylanceGATEWAY Connector VMDK image file in step 3.
      - Select the appropriate IAM service role that will be used during the import process. By default, the IAM service is named "vmimport."

   e) Click **Import image**. Note: This step can take up to 30 minutes to complete.
   f) Record the **image ID** of the imported image file. The image ID is used to launch the CylanceGATEWAY Connector instance. Perform the following actions:
      1. On the **Images** screen, click the version of the imported AMI.
      2. On the **Image build versions** screen, click the version.
      3. In the **Output resources** section, in the **Image** column, record the **AMI image ID**.
5. Create the CylanceGATEWAY Connector instance from the imported AMI. Perform the following actions:
   a. Open the **EC2** service.
   b. In the left column, under **Instances**, click **Instances**.
   c. Click **Launch instances**.
   d. On the **Launch an instance** screen, type a name for the CylanceGATEWAY Connector instance.
   e. In the **Application and OS images (Amazon Machine Image)** section, click the **My AMIs** tab. Make sure that **Owned by me** is selected.
   f. In the **Amazon Machine Image** (AMI) drop-down list, paste the AMI ID that you recorded in step 4f. Click the AMI that is returned.
   g. Select an instance type according to your organization's requirements.

   Important: The instance type must be an AWS Nitro System instance type. If you do not select a Nitro System instance type, you will not be able to use the EC2 serial console to connect to the CylanceGATEWAY Connector. For more information, visit docs.aws.amazon.com to read “Instances built on the Nitro System.”

   h. Select a key pair. The key pair is required by the AWS instance creation form; however, it is disregarded by the CylanceGATEWAY Connector.
   i. In the **Network settings** section, click **Edit** and specify the following settings:
      1. Click the **VPC** drop-down and select your private network.

2. Optionally, click the **Auto-assign public IP** and select **Enable**. You must assign a public IP address to the CylanceGATEWAY Connector only if you do not have a way to access the connector's web interface using the private network that it is installed on.
3. Select or create a security group according to your organization's requirements. The security group must have HTTP (port 80) and HTTPS (port 443) access to the CylanceGATEWAY Connector from the network that the enrollment is being completed from.

j. Click **Launch instance**.

After you finish:

- Enroll the CylanceGATEWAY Connector with the BlackBerry Infrastructure.
- Optionally, enable SSH for the CylanceGATEWAY Connector instance. For instructions, see Access the CylanceGATEWAY Connector using OpenSSH.

Configure the CylanceGATEWAY Connector in the VM environment

Note: The CylanceGATEWAY Connector is a minimal installation of the Ubuntu operating system, which can operate without a user logging in. You need to log in only if you want to update the default settings or verify that the OVA or VHD deployed correctly.

1. Do one of the following to open the console in your environment.

Environment	Steps
vSphere	**a.** Log in to your environment. **b.** Click the host name of the CylanceGATEWAY Connector. **c.** Click **Launch Remote** or **Launch Web Console**.
ESXi	**a.** Log in to your environment. **b.** Click the host name of the CylanceGATEWAY Connector. **c.** Click **Console**.
Microsoft Azure	**a.** Sign in to the Microsoft Azure management portal at https://portal.azure.com. **b.** Click **Virtual machines**. **c.** In the left column, in the **Support + troubleshooting** section, click **Serial console**.
Hyper-V	**a.** Open the Hyper-V Manager. **b.** Right-click the connector that you want to access **> Connect**.
AWS	**a.** Sign in to the AWS Management Console at https://aws.amazon.com/console. **b.** Open the EC2 service. **c.** In the left column, expand **Instances**. Click **Instances**. **d.** Search for and select the instance that you want to launch. **e.** From the **Actions** dropdown menu, click **Monitor and Troubleshoot > EC2 serial console**. **f.** Click **EC2 serial console**. **g.** Click **Connect**.

2. At the UNIX prompt, type the administrator username and press **Enter**.

   The default username is **admin**.

3. Type the administrator password.

   The default password is **admin**.

4. Complete any of the following actions:

Task	Steps
Verify the network interface configuration.	Type `sudo /var/lib/cylance-gateway/scripts/configure-network --ovfenv --check`. Press **Enter**. If you are prompted, enter the administrator password.
Change the keyboard layout in the connector.	By default, Ubuntu only supports US keyboard layouts. **a.** To select a new keyboard layout, type `sudo dpkg-reconfigure keyboard-configuration`. Press **Enter**. **b.** If you are prompted, enter the administrator password. **c.** Follow the onscreen prompts.

Access the CylanceGATEWAY Connector using OpenSSH

OpenSSH is preinstalled on the connector image and allows you to access the CylanceGATEWAY Connector and perform system operations and maintenance using the SSH protocol. By default, the OpenSSH service is disabled. You must enable the OpenSSH service and generate the host keys each time that you access a CylanceGATEWAY Connector instance using OpenSSH. In Microsoft Azure environments, incoming TCP traffic must be allowed.

1. Do one of the following to open the console in your environment.

Environment	Description
vSphere	**a.** Log in to your environment. **b.** Click the host name of the CylanceGATEWAY Connector. **c.** Click **Launch Remote Console** or **Launch Web Console**.
ESXi	**a.** Log in to your environment. **b.** Click the host name of the CylanceGATEWAY Connector. **c.** Click **Console**.

Environment	Description
Microsoft Azure	**a.** Sign in to the Microsoft Azure management portal at https://portal.azure.com. **b.** Click **Virtual machines**. **c.** Click the connector that you created in Install the CylanceGATEWAY Connector to a Microsoft Azure environment, step 5. **d.** In the left menu, in the **Support + troubleshooting** section, click **Serial console**. **e.** In the left column, click **Boot diagnostics**. **f.** Click the **Settings** tab. **g.** Select **Enable with custom storage account**. **h.** In the **Diagnostics storage account**, drop-down list, select the storage account that you created in Install the CylanceGATEWAY Connector to a Microsoft Azure environment, step 3. **i.** Click **Save**. **j.** On the connector screen, in the left menu, in the **Support + troubleshooting** section, click **Serial console**.
Hyper-V	**a.** Open the Hyper-V Manager. **b.** Right-click the connector that you want to access **> Connect**.
AWS	**a.** Sign in to the AWS management Console at https://aws.amazon.com/console. **b.** Open the EC2 service. **c.** In the left column, under **Instances**, click **Instances**. **d.** Select the CylanceGATEWAY Connector instance that you want to enable SSH on. **e.** Click the **Actions** drop-down menu, click **Monitoring and troubleshoot > EC2 serial console**. **f.** Click **Connect**.

2. At the UNIX prompt, type the administrator username and press **Enter**. The default username is admin.
3. Type the administrator password. The default password is admin.
4. Generate the host keys for the OpenSSH service. Type `sudo dpkg-reconfigure openssh-server`. Press **Enter**.
5. If you are prompted, enter the administrator password.
6. Enable the OpenSSH service. Type `sudo systemctl --system enable ssh`. Press **Enter**.

   Note: This command does not start the service.
7. Start the OpenSSH service. Type `sudo systemctl --system start ssh`. Press **Enter**.
8. You can complete any of the following actions (optional):

Task	Steps
Disable the OpenSSH service from starting during the system startup.	Type `sudo systemctl --system disable ssh`. This command does not stop the service.

Task	Steps
Stop the OpenSSH service.	Type `sudo systemctl --system stop ssh`. Press **Enter**.
Verify if the OpenSSH service is enabled.	Type `sudo systemctl --system is-enabled ssh`.
Verify if the OpenSSH service is running.	Type `sudo systemctl --system is-active ssh`.
Obtain the status of the OpenSSH service	Type `sudo systemctl --system status ssh`.

9. Exit the console.
10. Optionally, in a Microsoft Azure environment, you can disable the Boot diagnostics settings for the connector VM that you configured in step 1.

Configure your firewall

The CylanceGATEWAY Connector runs inside your private network, behind your firewall, and has a private IP address. It connects to the CylanceGATEWAY cloud service with HTTPS and UDP. The CylanceGATEWAY Connector must be able to connect to CylanceGATEWAY through your firewall (via NAT).

The CylanceGATEWAY Connector must be able to use DNS to resolve public CylanceGATEWAY FQDNs to Internet IP addresses. The CylanceGATEWAY Connector uses your private DNS servers to do this.

The CylanceGATEWAY agent communicates over secure websockets (WSS) with the management console and must be able to establish this connection directly. To allow the CylanceGATEWAY agent to activate and periodically authenticate, you must allow access to the appropriate domains (for example, idp.blackberry.com and the domain for your region). If your environment uses an authentication proxy, you must allow the traffic on the proxy server.

For more information about FQDNs, ports, IP address ranges and other firewall requirements, visit support.blackberry.com/community to read article 79017. For more information on network requirements for Cylance Endpoint Security, see Cylance Endpoint Security network requirements.

Enroll the CylanceGATEWAY Connector with the BlackBerry Infrastructure

After you install the CylanceGATEWAY Connector and configure its firewall, you must connect it to the BlackBerry Infrastructure.

1. In a web browser, navigate to the IP address of your CylanceGATEWAY Connector.
2. To accept the self-signed certificate and proceed to the HTTPS service, click **Proceed to the HTTPs service**.
3. At the prompt, enter the default administrator username and password and click **Sign In**.

   The default username is admin. The default password is blackberry.
4. The first time that you log in to the CylanceGATEWAY Connector web interface, you must change the default administrator password for the CylanceGATEWAY Connector. This does not change the password for the CylanceGATEWAY Connector in the ESXi, vSphere, the Microsoft Azure portal, the AWS console, or Hyper-V Manager console.
5. Log in again to the CylanceGATEWAY Connector web interface using the new password.
6. On the **BlackBerry Solution License Agreement** screen, review the license agreement and click **I Agree**.

7. To authorize the CylanceGATEWAY Connector to the BlackBerry Infrastructure for your organization, you must enroll the connector.
    a) Review and agree to the privacy notice. Select the **I agree to the BlackBerry Privacy Notice** check box.
    b) In the **URL** field, type the URL for the connector to access the management console.

       To get the URL, in the management console, click **Settings > Network > Private Network** and on the **Gateway Connectors** tab, click **Add Connectors**.
    c) In the **Proxy URL** field, enter the URL for the proxy server. When you enter the proxy URL on this screen, the **Proxy URL** field on the Settings page is populated with the same URL and vice versa.
8. Click **Enroll this Connector**. The management console opens.
9. Log in to the management console as an administrator.
10. In the **Connector name** field, type a name for the connector.
11. In the **Connector group** drop-down list, select a connector group that you want to assign it to.
12. Click **Authorize**.

The connector, its version, and the connector group that it is assigned to appears in the list of CylanceGATEWAY Connectors. The **Status** column shows whether or not the private network, its DNS, and health checks are functioning normally. For information on statuses that might be displayed, see Managing CylanceGATEWAY Connectors.

View details for an enrolled CylanceGATEWAY Connector

You can view the CylanceGATEWAY Connector details after it is enrolled in the CylanceGATEWAY Connector web interface. If your network has multiple instances of the CylanceGATEWAY Connector, you must access the web interface for each instance. You can view the status of all the connectors in your environment in the management console.

- When the connector is enrolled with the BlackBerry Infrastructure, you can view the following information. You can then click the **Manage this connector** to open the Cylance Endpoint Security management console and manage the CylanceGATEWAY Connectors:
    - CylanceGATEWAY Connector identifiers that are used by the BlackBerry Infrastructure to identify the instance
    - Current status and registration information of the instance
    - Number of tunnels that are connected to the BlackBerry Infrastructure by the CylanceGATEWAY Connector
- You can download the log files. The log files are downloaded to your Downloads folder in a zip file and can contain multiple CylanceGATEWAY Connector log files. Click **Download logs**. Extract the logs to review them or send the zip file to BlackBerry Support to help troubleshoot potential issues. The log files for each instance can also be downloaded from the management console from the Connector information pane on the CylanceGATEWAY Connectors page.
- You can configure the CylanceGATEWAY Connector.

Configure the CylanceGATEWAY Connector

You can complete various tasks in the CylanceGATEWAY Connector web interface. If your network has multiple instances of the CylanceGATEWAY Connector installed and configured, the tasks must be completed on each CylanceGATEWAY Connector instance in your environment as necessary. You can view the status of all the connectors in your environment on the Gateway Connectors page in the management console. You can view the status of each CylanceGATEWAY Connector in the web browser. For more information, see View details for an enrolled CylanceGATEWAY Connector

Before you begin: Verify that you have one or more CylanceGATEWAY Connector instances deployed.

1. In a web browser, navigate to the IP address of your CylanceGATEWAY Connector.

2. Enter your credentials and click **Sign in**.
3. Complete any of the following tasks:

Tasks	Steps
Edit settings.	You can specify one or more of the following settings (optional). **a.** Click **Settings**. **b.** Complete one or more of the following settings: • Generate a new self-signed TLS certificate: You can regenerate the TLS certificate at any time. By default, the certificate is valid for one year. The web interface displays the certificate expiry day and time, the serial number, and host that is bound to the certificate. Each time that you generate a new TLS certificate, you are prompted to accept the new certificate. • HTTP/S Proxy configuration: If your environment is configured with an unauthenticated proxy server that is used for Internet-destined HTTP and HTTPS requests, you can enter the URL of the proxy. When the proxy URL is added, HTTPS requests to the BlackBerry Infrastructure made by the CylanceGATEWAY Connector will use the proxy. Tunnel traffic will not use the proxy. • Maximum Transfer Unit (MTU) configuration: By default, the CylanceGATEWAY Connector automatically detects the MTU of your network. In some instances, you might need to specify the MTU value that the CylanceGATEWAY Connector can use. BlackBerry recommends that you use automatic detection. **Note:** If you specify the MTU and want to use automatic detection, you must restart the CylanceGATEWAY Connector from within the vSphere, Hyper-V, Microsoft Azure, AWS, or ESXi environment. • Network Time Protocol (NTP) configuration: By default, the CylanceGATEWAY Connector uses Ubuntu's ntp.ubuntu.com server for time synchronization. You can specify a custom NTP server. • Advanced Package Tool (APT) configuration: By default, the CylanceGATEWAY Connector uses Ubuntu's repository hosts, archive.ubuntu.com and security.ubuntu.com. For more information, visit support.blackberry.com/community and read article 79017. You can specify a custom package repository that the CylanceGATEWAY Connector uses. Note that security updates are applied automatically, and you must restart the CylanceGATEWAY Connector in the management console for updates to take affect. **c.** Complete one of the following: • Click **Update settings** to save the changes on the Settings screen. • Click **Restore default settings** to restore all of the default settings. You must enter your credentials for the changes to take affect. Network connectivity might be interrupted (for example, if you specify an MTU the CylanceGATEWAY Connector must be restarted). • Click **Factory Reset** to erase all CylanceGATEWAY Connector configurations, including the self-signed TLS certificate. The CylanceGATEWAY Connector must be restarted and will result in a network connectivity interruption.

Tasks	Steps
Change administrator password.	You can change the administrator password for the CylanceGATEWAY Connector password at any time. This does not change the administrator password that is used for CylanceGATEWAY Connector access in the vSphere, Hyper-V, Microsoft Azure, AWS, or ESXi environment. Each time that you change the password, you are prompted to log in again using the new password. **a.** Click **Change admin password**. **b.** Enter the current administrator password. **c.** Enter and confirm your new password. **d.** Click **Change password**. **e.** When prompted, click **Log in now**. You will also be automatically redirected to the login prompt after a short wait. **f.** Enter your administrator username and new password and click **Sign in**.

Managing CylanceGATEWAY Connectors

After you've registered CylanceGATEWAY Connectors, you can specify a health check URL and restrict IP addresses for your connectors. If a health check URL is not specified, the DNS and HTTP information is not displayed in the health check status for a connector. For the CylanceGATEWAY Connectors, you can perform the following:

Screen	Actions
On the Gateway Connectors list screen	• View the number of connections that are active. • View the connector group that the CylanceGATEWAY Connector is a part of. • View additional health check metadata for each connector instance. • View the version of each connector instance. • View the status of your connectors. • Reload the CylanceGATEWAY Connectors information. • Download the log files of each connector instance. • Disable a connector to prevent new connections from being routed through the connector. Active network connections are not interrupted.
On the Connector info page	• View the connector group that the CylanceGATEWAY Connector is a part of. • Edit the Private URL field for a connector and open the URL in a separate page. • Assign the connector to a different connector group. • Disable a connector to prevent new connections from being routed through the connector. Active network connections are not interrupted. • View the version of the connector. • View the connection status of the connector. • Download the log files for the connector. • View the Public Key • View the connection history of the connector. The connection history time is in UTC.

Restricting source IP addresses provides additional security to ensure that only CylanceGATEWAY Connectors with the IP addresses you specify can connect to your private network. If you restrict source IP addresses, your CylanceGATEWAY Connectors should have a fixed IP address, either by setting a static IP address for the

CylanceGATEWAY Connector when it is deployed in a vSphere environment or ESXi environment, or creating a DHCP IP reservation on your network.

Depending on the number of active CylanceGATEWAY users in your environment, a component of the BlackBerry Infrastructure that is responsible for managing incoming tunnels from the connector might scale the resources that are allocated to your organization. Each CylanceGATEWAY Connector establishes a tunnel to this component and has a health check performed on it. The health check status and Status columns indicate the state of those tunnels from the connector to the component that is responsible for managing them. For example, if the Health Check column status displays *X*/2, this means that two of the components are allocated to your organization at that time. If the column displays 2/2, the connector has successfully established two tunnels to the component. If you see 0/2 or 1/2 that means the connector has either not established a tunnel or has established 1 out of the 2 tunnels that are required. If the status is ⚠, some but not all of your users are able to access resources on your private network.

The health check URL can be any URL within your private networks that you want CylanceGATEWAY users to be able to connect to. CylanceGATEWAY periodically sends an HTTP or HTTPS GET request, including a DNS lookup, through each CylanceGATEWAY Connector tunnel to this URL. The Health check status expands to display Tunnel, DNS, and HTTP connection status for each connector. A status of 2/2 indicates that everything is working correctly. A status of 0/0 indicates that the status check of a new connection is still pending.

The Status column displays the enrollment status of the CylanceGATEWAY Connector with the BlackBerry Infrastructure. The ✅ indicates that the CylanceGATEWAY Connector has successfully completed the enrollment process and has established a connection to the BlackBerry Infrastructure. The status column displays the connection state and might include a security message (for example, if the connector requires a restart to apply an update).

Column	Description
Health check status	This is the overall status of the CylanceGATEWAY Connector and includes the following information: • **Tunnel**: This is the status of the CylanceGATEWAY Connector connection to the BlackBerry Infrastructure. If the status indicates a connection issue, contact your BlackBerry support representative. • **DNS**: This is the status of the DNS query made from the CylanceGATEWAY Connector to your specified DNS server. If the status indicates an issue, verify that you've correctly specified your private DNS server. • **HTTP**: This is the status of the HTTP query made to the CylanceGATEWAY Connector for the health check URL. If the status indicates an issue, verify that the health check URL can be reached from the CylanceGATEWAY Connector and that you have specified a DNS forward lookup zone.

Column	Description
Status	This is the overall status of the CylanceGATEWAY Connector connection to the BlackBerry Infrastructure, including the health check status. - 🕓: The connector has not completed the enrollment process. This status is displayed only the first-time connector is enrolled. - 🟠: The connector has completed the enrollment process and is establishing a connection to the BlackBerry Infrastructure. - ⚠: The connector has completed the enrollment process, but not all of the connections to the BlackBerry Infrastructure have been established. If this status is displayed, read the associated security message and verify that a health check URL has been specified in the connector group. - ❗: The connector enrollment process has not completed or there is an error in establishing all the connections to the BlackBerry Infrastructure. The following error messages might be displayed: - Failed to register due to storage error: Verify that you have sufficient disk space to register the CylanceGATEWAY Connector. - Failure: View the full health check status for the connector, including the Tunnel, DNS, and HTTP information. For example, if DNS displays "Fail", verify that your DNS settings are accurate.

Manage CylanceGATEWAY Connectors

Complete this task for each connector group.

1. In the management console, on the menu bar, click **Settings > Network**.
2. Click the **Private Network** tab.
3. Click **Connector Groups**. Click a connector group.
4. Click **Health Check**.
5. Specify a URL within your private network that the CylanceGATEWAY Connector can access to verify that CylanceGATEWAY can connect to the URL.

   The health check URL must contain an FQDN that your private DNS server can resolve. The FQDN must resolve to an IP address that is within the IP space defined for your private network.
6. To specify allowed IP addresses for your CylanceGATEWAY Connectors, click **Source IP Restriction**.
7. Click **Add**.
8. Click **Save**.
9. To view additional information about a CylanceGATEWAY Connector and to download the connector log files or enter a custom FQDN or IP address in the private URL, click the name of the CylanceGATEWAY Connector.

   Note: If you enter a custom FQDN or IP address, the FQDN or IP address is not validated.
10. To reload the CylanceGATEWAY Connectors information, click ⟳.

Update a CylanceGATEWAY Connector

You can check whether an update for the CylanceGATEWAY Connector or update for the virtual machine OS is available.

1. Check *my*Account to see whether a new version of the CylanceGATEWAY Connector software is available and perform one of the following actions:
    - If new CylanceGATEWAY Connector software is available, download it and reinstall the virtual machine.
    - If no new CylanceGATEWAY Connector software update is available, check for a Linux OS update.
2. To check for an OS update, click **Settings** > **Network** > **Private Network** > **Gateway Connectors**.
3. For any CylanceGATEWAY Connector showing **Reboot required to apply OS updates and security fixes** in the **Status** column, restart the virtual machine to finish installing the OS update.

Specify your private network

Before you begin:

- Ensure that you have a list of the IP addresses or IP address ranges for all destinations that you want to define as part of your private network. You can get this information from your network administrator.
- You cannot setup private network access if you do not install a CylanceGATEWAY Connector. Ensure that you installed one or more CylanceGATEWAY Connectors in a part of every network that has full access to addresses that you specify here. For instructions on installing a CylanceGATEWAY Connector, see Setting up the CylanceGATEWAY Connector.
- You can create a maximum of eight connector groups.

1. On the menu bar, click **Settings > Network**.
2. Click the **Private Network** tab.
3. Click **Connector Groups**.
4. Click **Add Connector group**.
5. Type a name and description. The connector name can be between 3 and 250 characters. The description can be between 3 and 500 characters.
6. On the **Network Routing** tab, click **Add Address**.
7. Type one or more IP addresses, IP ranges, or CIDRs and click **Add**.

    If your environment requires all network traffic to be redirected to your on-premises infrastructure, type `0.0.0.0/0`. BlackBerry recommends that you redirect only traffic that is destined to resources on your private network and then configure your environment to use CylanceGATEWAY cloud services for traffic to Internet destinations.

    Note: When you specify 0.0.0.0/0 for your network routing, all non-DNS traffic (for example, HTTP traffic) routes through the CylanceGATEWAY Connector. Traffic to resources that are not part of your private network require the DNS query to be sent to public DNS servers, and not your private DNS server, before the connection is established and traffic is routed through the CylanceGATEWAY Connector.
8. To edit an address, click ✎ next to the address.
9. To remove an address, click ✕ next to the address.
10. To change the order of the list, drag ⠿ for the connector group to the appropriate location in the list.
11. To delete a connector group, remove or reassign all of the assigned CylanceGATEWAY Connectors from the connector group. Click 🗑.

Specify your private DNS

You can provide the settings for your private DNS to help CylanceGATEWAY route traffic within your private network. You can specify the IP addresses of your DNS servers, the domain names delegated to your DNS servers for forward lookups, and the CIDRs delegated to your DNS servers for reverse lookups. The DNS Server IP addresses are shared by all of connector groups and must be included in a connector group. You can get this information from your network administrator.

1. On the menu bar, click **Settings > Network**.

2. Click the **Private Network** tab.
3. Click **DNS**.
4. To specify a DNS server, perform the following actions:
   a) Click **DNS Servers**.
   b) Click **Add DNS Server**.
   c) Type the IP address for your DNS server and click **Add**.
5. To specify a domain for forward lookups, perform the following actions. You can specify a maximum of 100 forward lookup zones.
   a) Click **Forward Lookup Zone**.
   b) Click **Add Forward Zone**.
   c) Type a domain name and click **Add**.

   If you do not specify a forward lookup zone, the CylanceGATEWAY Connector health check will fail. If you enable split tunneling and do not specify a forward lookup zone, all DNS queries will go through the tunnel.
6. To specify a CIDR for reverse lookups, perform the following actions:
   a) Click **Reverse Lookup Zone**.
   b) Click **Add Reverse Zone**.
   c) Type a CIDR and click **Add**.
7. To edit an address or domain name, click ✎.
8. To remove an address or domain name, click 🗑.

Specify your DNS suffixes

You can specify up to three suffixes that your private DNS appends to searches for unqualifed names. You can get this information from your network administrator. If you specify more than one suffix, you can rank them.

1. On the menu bar, click **Settings > Network**.
2. Click the **Client DNS** tab.
3. Turn on **DNS search domain (or suffix)**.
4. Click **Add DNS Suffix**.
5. Type the DNS suffix name and click **Add**.
6. Repeat steps 4 and 5 for each suffix that you want to add.
7. To edit a suffix, click ✎.
8. To remove a suffix, click 🗑.
9. To change the order of the list, drag ⠿ for the suffix to the appropriate location in the list.
10. Click **Save**.

Specify private CylanceGATEWAY agent IP ranges

CylanceGATEWAY allocates tunnel private IP addresses to CylanceGATEWAY agents from a private IP range that is configured system-wide and is the same for each tenant. You may want to specify an endpoint tunnel private IP range that does not overlap the tenant's private network range to CylanceGATEWAY agents. Providing a private IP range might prevent potential conflicts such as when an agent attempts to access a private network service that has the same IP address that is assigned to the agent. The agent IP range must be in a IPv4 CIDR format and unique within your private network to prevent issues with routing to other endpoints in your network. By default, the range is 10.10.0.0/16. Suffixes must be less than 17.

⚠ **Warning:** If you change the agent IP range, the associated agents and CylanceGATEWAY Connectors might disconnect and reconnect. If you access the Gateway Connectors screen (Settings >

Network > Private Network) during the disconnect and reconnect, one of the following messages might be displayed. Click ↻.

- Registration could not be completed: 500
- Failure. Reboot required to apply OS updates and security fixes

1. On the menu bar, click **Settings > Network**.
2. Click the **Private Network** tab.
3. Click **Agent IP Range**.
4. Enter the CIDR.
5. Click **Save**.

Bring your own IP addresses (BYOIP)

You can add dedicated IP addresses in an IPv4 CIDR /24 range to CylanceGATEWAY that are used to manage network egress traffic.

You can use the dedicated IP addresses to do the following:

- Use your organization's own IP addresses for source IP pinning.
- Avoid issues where some websites block AWS IP ranges.
- Reflect the GeoIP information for the addresses.
- Allow a single CIDR instead of several non-continuous IPs.

To add dedicated IP addresses to CylanceGATEWAY, you submit a request to BlackBerry Technical Support Services. For instructions, visit https://support.blackberry.com/community to read article 100189.

Define network services

A network service is a group of addresses (FQDNs or IP addresses) that you can use to simplify setting up access control list (ACL) rules. When you create ACL rules, you can specify a network service instead of specifying each individual address. BlackBerry maintains and regularly updates network services for many common SaaS applications to simplify the process for you. You can define additional network services for both public and private applications. You can nest existing network services. When you nest network services, the destinations of each added network service are referenced, and you have access to all of the contained destinations. If a change is made to one of the combined network services, it is automatically reflected immediately. You can perform a search of the network services that you have added. For more information on searching, see Searching ACL rules and Network Services.

1. In the management console, on the menu bar, click **Settings > Network**.
2. Click the **Network Services** tab.
3. Click **Add**.
4. Type a name and description for the network service.
5. Optionally, click **Network Services** and select one or more network services.
6. Optionally, click **Address**. Type an IP address, FQDN, or wildcard domain for the destination. Click + to add additional addresses. The following address formats are supported:
    - IP Address range: 172.16.10.0 - 172.16.10.255
    - Single address: 172.16.10.2
    - IP Address range: 172.16.10.0 - 172.16.10.255
    - CIDR: 172.16.10.0/24
    - FQDN: domain.example.com

- Domain with wildcard: *.example.com

7. Click **Protocol** and select a protocol to use for the connection attempt and specify a single port or range of ports to use. Click + to add addition protocol and ports.
8. Repeat steps 6 and 7 to add additional addresses and ports.
9. Click **Add**.
10. To edit a network service, click the field that you want to edit and make the changes. You cannot edit services that are defined by BlackBerry.
11. To remove a network service, click ✕ beside the service, address or port. To remove an address and port row, click ✕ beside the appropriate destination address and port row. You cannot delete services that are defined by BlackBerry.

After you finish: You can search the network services list to view the information. Click 🔍 and select one or more predefined scopes, a condition, and specify the criteria. Click the network service that you want to view the settings for. Click ✕ to reset the search.

Controlling network access

You define the network resources that devices enrolled with CylanceGATEWAY can connect to using the access control list (ACL). The ACL defines allowed and blocked destinations on private and public networks. The ACL applies only to users that are assigned a Gateway Service policy.

The ACL applies to all CylanceGATEWAY users in the tenant. Each network access attempt by a device is evaluated against the rules, in order, for each connection phase (DNS lookup, connection establishment, and TLS handshake) until a rule that matches the attempt is found. The rule must match on all specified properties including destination or destination categories, specified users or groups, and the risk level determined for the destination. The first matching rule determines whether the access attempt is blocked or allowed to continue to the next phase. An access attempt that is allowed through all of its phases can be fully established. If a network access attempt does not match any rule in the ACL, access is blocked. The ACL supports a maximum of 1000 rules.

Applying ACL rules

ACL rules apply to all CylanceGATEWAY users in the tenant. ACL rules evaluate each network access attempt in the order that they are displayed in the management console, from the top down. The default rule will always be evaluated last, and if none of the previous rules match will block access to all resources. The Default rule cannot be disabled or modified

When you create the ACL rules, BlackBerry recommends that you create your ACL rules and make sure that they are displayed in the in following order:

1. Block access to Internet content that contains CylanceGATEWAY specified categories
2. Block access to non-categorized services based on your organization's requirements
3. Allow access to organization-wide services in the private network
4. Allow access to all public Internet destinations
5. Default

The following table provides examples of rules and their necessary settings:

Rule	Description
Allow users to access public Internet destinations	This rule will allow users to access any destination that your organization considers to be the public internet. Users will not be able to access the specified RFC1918 addresses. To create this rule, you can specify the following settings: • In the **Action** section, • The **Action** drop-down list displays **Allow**. • **Check access attempts against Network Protection** check box is selected. This setting allows the rule to pass the ACL, but also allows for further inspection by Gateway. • In the **Destination** section, • The **Target** dropdown list displays **Does not match**. • In the **Addresses and Ports**, **Address** field, enter the RFC1918 network ranges.
Allow users to access the private network	This rule will allow user to access network services within your private network. For users to access the private network, the following prerequisites must be met: • Ensure that the CylanceGATEWAY Connector is installed in the network to allow traffic to reach your private network. For instructions on how to install the CylanceGATEWAY Connector in your environment, see Setting up the CylanceGATEWAY Connector. • Ensure that you have defined a network service containing the private network resources that you want users to access. For information on how to define network services, see Define network services. You can specify the following settings: • In the **Action** section: • The **Action** drop-down list displays **Allow**. • Optionally, clear the **Check access attempts against Network Protection** check box. No further inspection will be performed by Gateway. • In the **Destination** section: • The **Target** drop-down list displays **Matches any**. • In the **Network services** field, select the network service that you want users to access.

ACL parameters

The ACL is an ordered list of rules that defines what happens when a CylanceGATEWAY user attempts to access a destination on the Internet or your private network. Each rule includes several parameters that can specify destinations, users, and other factors that a rule can match with and the action to take when a rule matches. If a network access attempt does not match any ACL rules, access is blocked.

When you add or edit ACL rules, the updates are added to a list of draft rules until you commit them. Each administrator has their own draft rule list. If an administrator commits a rule update, all other administrators with a draft rule list will be notified to delete or update their draft rule list before continuing.

Each rule can include the following parameters:

Item	Description
General information	
Name	This is a name for the rule.
Description	This is a brief description of the purpose for the rule.
Enabled	This setting specifies that the rule is part of the ACL. You can turn off this option to disable the rule without deleting it.
Action	
Action	This setting specifies whether to allow or block access if the attempt matches the rule. If allowed to continue, the access attempt may be evaluated again during the next phases of the attempt.
Check addresses against network protection	If the rule Action allows access, this setting specifies whether CylanceGATEWAY still blocks the connection if it detects a potential network threat. You should keep this option selected unless specified users need to connect to potentially malicious destinations.
Display a blocked notification message on devices	If the rule Action blocks access, this setting specifies a notification message that displays on the device when an access attempt is blocked.
Traffic Privacy	This setting specifies whether the network access attempts are displayed in the Network Events screen (CylanceGATEWAY > Events). You may want to enable Traffic Privacy for liability or privacy reasons. When this setting is enabled, network access attempts are not displayed in the Network Events screen. If your environment sends events to a SIEM solution or syslog server and the connection attempt matches a rule with traffic privacy, the events are not sent to the SIEM solution or syslog server.
Content logging	This setting specifies whether the Network Events > Events Details page should include originally plain-text, unencrypted HTTP connection data. HTTP flows are not decrypted. When this setting is enabled, a summary of the request and response details of an event are included in the Events Details page. You can view all of the HTTP transactions within an event. The Events Details page includes the first three HTTP events of the total number of events. You can view all the events and the details that are associated with each one. If you create a rule that includes both Traffic Privacy and Content logging, traffic privacy takes precedence.
Ignore port	This setting specifies whether the destination port of the access control attempt should be evaluated or ignored as part of this rule.
Destinations	

Item	Description
Target	Targets can be defined by a network service, a set of addresses, a set of addresses with defined protocols and ports, or only defined protocols and ports. You can select one of the following options: • Not applicable: The rule does not include destinations. For example, the rule specifies only categories, or you may want to create a rule that allows all access attempts for specific users unless the connection is blocked by network protection. • Matches any: The rule applies if the destination matches any target specified in the rule. • Does not match: The rule applies if the destination does not match any target specified in the rule.
Network services	You can select one or more network services.
Address	This setting specifies the IP addresses, FQDNs, or wildcard domains for the destination address. IP addresses can be in IPv4 or IPv6 format and can be represented by a single IP, an IP range, or CIDR notation. For example, the following address formats are supported: • Single IP address: 172.16.10.2 • IP Address range: 172.16.10.0 - 172.16.10.255 • CIDR: 172.16.10.0/24 • FQDN: domain.example.com • Domain with wildcard: *.example.com
Protocol	This setting specifies whether the rule matches connection attempts using TCP, UDP, or both. If you do not select an option, the default is both TCP and UDP on all ports.
Port	This setting specifies the ports used for the destination. You can specify a single port or a range.
Category	A category defines the type of content available on a site. CylanceGATEWAY makes a best effort based on available information to determine the category of destination sites. You can select one of the following options: • Not applicable: The rule does not include categories. • Matches any: The rule applies if the destination matches any category specified in the rule. If you select this option, a list of categories that you select from is displayed. • Does not match: The rule applies if the destination does not match any category specified in the rule. If you select this option, a list of categories that you select from is displayed. For more information on the available categories that can be specified, see Destination content categories
Conditions	

Item	Description
User properties	This setting specifies users, user groups, or operating systems to include in the rule. You can specify any number of users, user groups, and operating systems or a combination of each. When you click the User properties drop-down, select the user property that you want to specify the condition for. You can select one of the following options: • Not applicable: The rule applies to all users, groups, and operating systems. • Matches any: The rule applies only to the users, groups, and operating systems you add to the rule. If you select this option, a field to add user properties is displayed. • Does not match: The rule applies only to users, groups, and operating systems that are not listed in the rule. If you select this option, a field to add user properties is displayed. When you begin typing a name or user group, a list will display a matching list of user names. When you specify the operating system, you must select it from the list. You can select from the following OS options: • Android • iOS • macOS • Windows You can add rows to specify any number of users, groups, and operating systems.
Risk	This setting specifies the acceptable risk level of the device as it is configured in the Risk Assessment policy. For information on creating a risk assessment policy, see Create a risk assessment policy. • Not applicable: The risk level is not a condition for access. • Matches any: The device must be within the range of acceptable risk levels to allow the connection. If you select this option, you can select the acceptable risk levels. The default risk level is Secure (no risk).

Destination content categories

These categories control the type of content that users can access on an available site. You can select an entire category or a subcategory that you want to match.

Adult

Adult themed content. Possible options:

- Adult
- Alcohol and Tobacco
- Dating
- Gambling
- Nudity
- Obscene Language
- Nudity
- Obscene Language
- Personal and Dating
- Porn
- Sex Toys
- Swimsuit and Intimate Apparel
- Weapons

Bandwidth

Sites that may affect the speed of data transfer in your network. Possible options:

- Application Software Download
- Download Sites
- Internet Communications and Telephony
- Media Sharing
- Online Storage and Backup
- Parked Domains
- Parked Domains
- Peer-to-Peer
- Personal Network Storage and Backup
- Photo Galleries
- Shareware and Freeware
- Spam
- Streaming Media
- Surveillance
- Video Hosting
- VVOIP

Computer and Information Technology

Computer and IT themed content. Possible options:

- Computer and Internet Information
- Content Delivery Networks
- Dialer Sites
- DoH
- Email
- Information Technology
- Internet
- Internet Portals
- Online Services
- Remote Access
- Remote Control
- Search Engines
- Technology and Computing
- Update Sites
- URL Redirector
- URL Shortner
- VPN Sites
- Web Applications
- Web Collaboration
- Web Hosting
- Web Infrastructure
- Web-based Email

General Interest - Business

Business themed content. Possible options:

- Banking
- Bitcoin
- Business
- Business and Economy
- Business Applications
- Financial Services
- Non-Profit Organizations
- Online Payment
- Professional Organizations
- Stock Advice and Tools

General Interest - Personal

Personal interest themed content. Possible options:

- Accommodation
- Advice
- Advocacy
- Arts and Culture
- Astrology
- Auctions Blogs and Forums
- Blogs and Wikis
- Cartoons
- Celebrity
- Cooking
- Cult
- Education and Reference
- Educational Institutions
- Entertainment
- Entertainment and Arts
- Fashion and Beauty
- Food and Drink
- Games
- General Organizations
- Health and Medicine
- Home and Garden
- Humor and Satire
- Hunting and Fishing
- Institutions
- Internet Auctions
- Internet Shopping
- Job Search
- Kids
- Lifestyle
- Mobile Communications
- Mobile Phone
- Motor Vehicles
- Music
- News
- Occult
- Opinion
- Pay to Surf
- Personal
- Personal Sites and Blogs
- Pharmacy
- Philosophy and Political Advocacy
- Political
- Press
- Professional Association
- Professional Networking
- Public Information
- Real Estate
- Recreation and Hobbies
- Reference and Research
- Religion and Philosophy
- Restaurants and Food
- Sect
- Shopping
- Social Networking
- Society
- Sports
- Suggested
- Tabloids
- Training and Tools
- Translation
- Travel

Government

Government themed content. Possible options:

- Government
- Government Business
- Legal
- Military

Potentially Liable

Potentially liable themed content. Possible options:

- Cheating Exam
- Copyright Infringement
- Crime
- Cryptojacking
- Dangerous Material
- Drugs
- Extremism
- Fraud
- Hate and Discrimination
- Illegal
- Marijuana
- Narcotics
- Proxy Avoidance and Anonymizers
- Questionable
- Suicide
- Violence

Productivity

Content themed sites that might affect productivity. Possible options:

- Advertisements and Analytics
- Chat and IM
- Insufficient Content
- Marketing and Advertising
- Productivity Application
- Web Advertisements
- Web and Email Marketing

Security Risk

Sites that are not malicious but share information that might be a security risk (for example, content that teaches about spyware). Possible options:

- Bot Networks
- Command and Control
- Compromised Websites
- DDoS
- DNS Tunneling
- Dynamic DNS
- Grey Sites
- Hacking
- Malware
- Mixed Content
- Phishing
- Potentially Harmful
- Potentially Unwanted Software
- Spyware
- Suspicious Website
- Unauthorized Marketplace
- Warez

Unknown

Site content that may or may not be malicious. Possible options:

- Miscellaneous
- New Domain
- Not resolved
- Unknown

Configure the access control list

CylanceGATEWAY evaluates existing connections to a destination every five minutes. On evaluation, CylanceGATEWAY reapplies the ACL rules, and the established connection might be disconnected, if required. This can occur if, for example, the users' risk level has changed, or the destination reputation has been updated since the connection was established.

Before you begin: Ensure that you have defined your private network according to your organization's needs. For instructions, see Define your private network.

1. In the management console, on the menu bar, click **Settings > Network**.
2. Click the **Access Control List** tab.
3. If you see a notification that a draft set of rules is in progress, click the **Draft Rules** tab.

   If you do not have a draft set of rules in progress, any update you make creates a draft set of rules.
4. Perform any of the following actions:

   - To search for a rule or drafted rule, click 🔍 and select one or more predefined scopes, a condition, and specify the criteria. Click the rule that you want to view the settings for. Click ✕ to reset the search. For more information on searching, see Searching ACL rules and Network Services.
   - To add a new rule to the end of the list, click **Add Rule**.
   - To add a new rule above or below an existing rule, click ··· in the row for the existing rule and select **Add rule above** or **Add rule below**.
   - To copy a rule and add it above or below an existing rule, click ··· in the row for the existing rule and select **Copy rule above** or **Copy rule below**.
   - To edit an existing rule, click the name of the rule.
   - To disable a rule, click ● in the row for the rule.
   - To enable a rule, click ○ in the row for the rule.
   - To delete a rule, click ··· in the row for the rule and select **Delete rule** .
   - To change the order of the rules, click **Order** and use the arrows to move rules up or down in the list.
   - To add a rule to allow traffic to a blocked malicious destination in the event that users require access (for example, users that perform threat research), click **Add rule** with the following settings. This rule must be ordered before other rules that allow access to a destination.

     - Action: Allow

    - Check access attempts against Network Protection check box: Clear the check box.
    - Target: Matches any. Add the destination address.
    - Users or groups: Matches any. Add the users or groups that require access to the destination.
5. If you chose to add or edit a rule, specify the ACL rule parameters and click **Save**.
6. Click **Commit rules** to apply your changes to the ACL.

   You can also leave the page and return to the draft rules later. When you commit a draft ACL, all other administrators with a draft rule list are prompted to discard their out-of-date draft.

Configuring network protection

You can configure how CylanceGATEWAY detects and reacts to threats in various ways. When you configure your access control list (ACL) rules to allow access to destinations, CylanceGATEWAY can still block the user from accessing the destination if a potential threat is identified. You can also control the information that can be displayed in the Network Events screen and what is sent to the SIEM solution or syslog server, if configured. To enable the additional network protection, ensure that each ACL rule also has the "Check addresses against Network Protection" parameter selected. This setting is enabled by default.

- Signature detection: You can use signature detection to enable deep network threat detection using the network connection’s signatures. When signature detection is enabled, CylanceGATEWAY automatically blocks connections where threats are detected if the ACL rule matches the destination and checks the network protection. When signature detection is disabled, threats are logged but the connection is not blocked. For more information on a list of detections and their actions, see viewing network activity. Signature detection is enabled by default.
- Destination protection: You can use destination reputation to block potentially malicious IP addresses and FQDNs that match the risk level that you specify (low, medium, or high). When enabled, the default risk level is high. CylanceGATEWAY logs and automatically blocks connections to the destinations that match the set risk level when the destination matches the ACL rule and checks the network protection. When destination protection is disabled, threats are logged but the connection is not blocked. For more information on a list of detections and their actions, see viewing network activity. Destination reputation is enabled by default.

  Risk levels use a combination of machine learning (ML) models and static IP reputation database to determine if a destination might contain potential threats.

  - ML models: The ML models assign a confidence level to destinations that your users might access. ML models continuously learn whether a destination might contain potential threats.
  - IP reputation databases: The IP reputation database provides a confidence level to IP addresses from open and commercial IP reputation feeds. CylanceGATEWAY references the reputation feeds to determine the risk level of an IP address. CylanceGATEWAY considers the number of vendors that have convicted a specific destination and the dependability of the sources before it assigns a risk level (for example, if the majority of sources and IP reputation engines identify a destination to contain potential threats, CylanceGATEWAY will assign the destination a risk level of high. For more information on the risk levels, see Destination reputation risk threshold.

  CylanceGATEWAY automatically applies the Dynamic Risk category and a subcategory to IP Reputation detections that have been identified to possibly contain malicious threats using a combination of ML models and IP Reputation database. The databases continuously change to add or remove destination entries. You can view additional metadata and details for network events categorized as Dynamic Risk on the Network Events screen. The Dynamic Risk category includes the following subcategories:

- Beacon
- Command and control
- DNS Tunneling
- Malware
- Phishing
- Potentially Harmful
- Suspicious Website

Destination reputation risk threshold

You can specify whether CylanceGATEWAY should block network access to potentially malicious destinations based on the minimum threshold that you set.

Item	Description
High	This risk category indicates that there is a greater than 80% confidence that the destination is harmful or malicious.
Medium	This risk category indicates a 60-80% confidence that the destination might be a cyber threat.
Low	This risk category indicates a 50-60% confidence that the destination is suspicious or contain potential threats.

Configure network protection settings

You can specify the detections that you want to enable and display on the Network Events screen, as well as the information that is sent to the SIEM solution or syslog server. You can also configure CylanceGATEWAY to display a message to users whenever CylanceGATEWAY blocks a connection to a potentially malicious destination. For more information on the available risk levels, see Destination reputation risk threshold. When you configure network protection settings, CylanceGATEWAY might generate alerts that are displayed in the Alerts view. For more information, see Managing alerts across Cylance Endpoint Security services.

Before you begin: Verify that "Check access attempts against Network Protection" is selected for each ACL rule.For more information on ACLs, see Controlling network access.

1. On the menu bar, click **Settings > Network**.
2. Click the **Network Protection** tab.
3. Do any of the following:

Task	Steps
Specify the detections that you want to enable and whether to notify users when they are blocked due to detections.	**a.** Click the **Protect** tab. **b.** If you want users to see a message when CylanceGATEWAY blocks a connection, select **Display a blocked notification message on devices**. **c.** In the **Message** field, type the message that you want to display to users. **d.** To turn on signature detection, select **Enable signature detection**. When enabled, alerts are generated for blocked signature detections and display in the Alerts view. When disabled, alerts are not generated. For more information, see Managing alerts across Cylance Endpoint Security services. **e.** To turn on destination reputation, select **Enable destination reputation** and select the minimum risk level of potentially malicious IP addresses and FQDNs to block. When enabled, alerts are generated and displayed in the Alerts view based on the risk level that you have set. For example, if you select the risk level of "Medium and higher", alerts that are medium or high risk will display in the Alerts view. When disabled, alerts that CylanceGATEWAY considers high risk will be generated and displayed in the Alerts view by default.

Task	Steps
Specify and control the detections to display in the Network Events screen. **Note:** If you enable Traffic privacy and the network access attempts match the ACL rule, the network access attempts are not displayed in the Network Events screen.	**a.** Click the **Report** tab. **b.** To display the signature detections for network events that are allowed, enable **Display allowed signature detection events**. By default, signature detections that are blocked automatically are displayed in the Network Events screen. **c.** To display destination reputation detections for network events that are allowed, enable **Display allowed destination reputation events** and select the minimum risk level of potentially malicious IP addresses to display. If this option is disabled, signature events will be captured as normal allowed traffic. **d.** To display DNS tunneling detections, enable **Display DNS tunneling detections** and select the minimum risk level of potential threats based on analysis of the DNS traffic from the client to the DNS server. By default, the risk level is Medium. **e.** To display Zero Day detections, enable **Display Zero Day detections** and select the minimum risk level of newly identified malicious destinations that have not been identified previously. By default, the risk level is Medium.
Specify and control the detections to send to the SIEM solution or syslog server, if configured. **Note:** If you enable Traffic privacy and the network access attempts match the ACL rule, the network access attempts are not sent to the SIEM solution or syslog server, if configured.	**a.** Click the **Share** tab. **b.** To send allowed or blocked network events that have signature detections, enable **Share signature detection events**. When enabled, the blocked signature detections are sent to the SIEM solution or syslog server, by default. Optionally, select **Allowed events** to send allowed events. **c.** To send network events that have destination reputation detections and were allowed based on the minimum risk level that you set or blocked, enable **Share destination reputation events**. When enabled, destination reputation events that are blocked are sent to the SIEM solution or syslog server, by default. Optionally, select **Allowed events** to send allowed events. **d.** To send network events that have DNS tunneling detections based on the minimum risk level that you set, select **Share DNS tunneling detections**. By default, the risk level is Medium. **e.** To send network events that have Zero Day detections based on the minimum risk level that you set, select **Share Zero Day detections**. By default, the risk level is Medium. **f.** To send network events that are blocked by ACL rules, enable **Share blocked ACL events**.

4. Click **Save**.

Searching ACL rules and Network Services

You can search the ACL rules and Network Services that you have added to CylanceGATEWAY. CylanceGATEWAY provides predefined scopes and conditions for your search criteria.

A search looks at the criteria that you specify for a scope and condition in the search field to return the search results. For example, if you search the ACL rules for a rule that includes 'IT' in the name (for example, Scope = Name, Condition = Contains, and the Search criteria = IT), all of the rules that include the specified 'IT' in the rule name are returned.

Note: You can perform a search of the committed ACL rules or perform a search of the drafted ACL rules. A search does not span the committed and draft ACL rules.

In advanced searches, when multiple scopes and search criteria are specified, the search engine uses an AND operator between the search criteria. All search results will contain all of the criteria that is specified. For example, if you perform a search of the network services for a service with the name 'example' and a FQDN of example.com (for example, Scope = Name, Condition = Contains, Search criteria =Example and Scope = FQDN, Condition = Contains, Search criteria = example.com), all of the rules that include both criteria are returned.

The search is not case-sensitive. For example, searching for Example or example, produces the same results.

Using source IP pinning

CylanceGATEWAY allows you to obtain dedicated IP addresses that you can use for source IP pinning. Many SaaS applications allow source IP pinning as a way to limit access only to connections from a specific range of trusted IP addresses. Your organization may already use this method to limit access to a SaaS application tenant to the IP address used by devices connected to your organization's network. For users working remotely, this means you can secure access between your users and cloud-based applications using source IP pinning without requiring them to use your organization's VPN, which can reduce the traffic on your network and improve connections for users.

If you have enabled source IP pinning for CylanceGATEWAY, the Source IP Pinning network settings display the IP addresses that BlackBerry has allocated for use only by your organization.

To obtain dedicated IP addresses, visit support.blackberry.com/community to read article 96499.

To view your allocated IP addresses, on the menu bar, click **Settings > Network**, and then select the **Source IP Pinning** tab.

Configuring the Gateway service options

You configure Gateway Service policies to specify OS-specific options that control how apps can or cannot use the tunnel, specify whether users can access destinations with poor reputations, and have users verify their identity before they can establish a tunnel.

Gateway Service policy parameters

If you are configuring CylanceGATEWAY on devices that are activated with an EMM solution such as BlackBerry UEM, you can also specify options in your EMM solution that control how CylanceGATEWAY works on devices.

Item	Description
General information	
Name	This is a name for the rule.
Description	This is a brief description of the purpose for the rule.
Agent Configuration	
Allow Gateway to run only if the device is managed by BlackBerry UEM or Microsoft Intune	This setting specifies that iOS, Android, or Chromebook devices must be managed by BlackBerry UEM or Microsoft Intune before users can use CylanceGATEWAY. This feature requires one of the following: • BlackBerry UEM: The BlackBerry UEM connector is added to the Cylance Endpoint Security tenant and apps are sent from BlackBerry UEM. • Intune: The Microsoft Intune connector is added to the Cylance Endpoint Security tenant and you create app configuration policies that define the device types and Intune user groups that the integration applies to. For more information, see Connecting Cylance Endpoint Security to MDM solutions to verify whether devices are managed
Allow Gateway to establish tunnels only on MDM managed devices where Gateway is configured as the managed VPN	You can require that a device be enrolled in Mobile Device Management (MDM) for your organization with CylanceGATEWAY configured as a VPN provider before CylanceGATEWAY Work Mode will create a tunnel on that device. This feature is supported on the following devices: • CylanceGATEWAY agent for macOS 2.7 or later • CylancePROTECT Mobile app for iOS 2.14 or later
Allow Gateway to run only if CylancePROTECT Desktop is also activated on the device	This setting requires that users have CylancePROTECT Desktop installed and activated from the same tenant. This feature is supported on the following devices: • Windows devices that are running CylanceGATEWAY for Windows • macOS devices that are running CylancePROTECT Desktop 3.0 or later and CylanceGATEWAY for macOS 2.0.17 or later. If you enable this feature for devices that are running a version of CylancePROTECT Desktop earlier than 3.0, the tunnel may not function as expected.

Item	Description
Safe Mode	You can enable Safe Mode for your users. With Safe Mode, CylanceGATEWAY blocks apps and users from accessing potentially malicious destinations and enforces an acceptable use policy (AUP) by intercepting DNS requests. The CylanceGATEWAY cloud services evaluate each DNS query against the configured ACL rules and network protection settings, and then instructs the agent to allow or block the request in real time. If allowed, the DNS request completes normally over the bearer network. Otherwise, the CylanceGATEWAY agent overrides the normal response to prevent access. When enabled, Safe Mode automatically takes effect when Work Mode is disabled. Enabling Safe Mode does not prevent users from enabling or disabling Work Mode (if the users' policy allows such operations). Safe Mode events appear in the CylanceGATEWAY Events screen and are sent to the SIEM solution or syslog server, if configured. **Note:** When enabled, Safe Mode will protect all DNS traffic that does not use the CylanceGATEWAY tunnel (for example, allow Gateway to establish tunnels only on MDM managed devices where Gateway is configured as the managed VPN, per-app tunnel, split tunneling). This feature is supported on the following devices: • CylanceGATEWAY agent for Windows 2.8 or later. • CylanceGATEWAY agent for macOS 2.7 or later. **Note:** This feature is not supported in environments that use secure DNS with DoT (DNS-over-TLS) and DoH (DNS-over-HTTPS) protocols. DNS queries sent using DoT or DoH cannot be viewed by CylanceGATEWAY. **Safe Mode and CylanceGATEWAY agent for macOS**: On macOS, the CylanceGATEWAY agent uses a system extension to implement Safe Mode. If you add the “P7E3XMAM8G:com.blackberry.big3.gatewayfilter” system extension to an allowed list, it can load automatically without user interaction when the CylanceGATEWAY agent is activated. Otherwise, instruct your users to allow the CylanceGATEWAY system extension when they are prompted during activation. For information on how to add a system extension to an allowed list, see your macOS documentation. For more instructions on how to activate the CylanceGATEWAY agent to use Safe Mode, see Activate Safe Mode in the CylanceGATEWAY agent in the user guide. **Safe Mode and third-party VPNs**: If your environment is configured to use Safe Mode and a third-party VPN, you must review and, if necessary, adjust the VPN DNS settings to ensure that the DNS settings only route the DNS queries for traffic that is defined to use the VPN tunnel. If you enable Safe Mode and the VPN DNS settings are not reviewed, the VPN may not work as expected. By default, the configuration for many VPNs is to route all DNS traffic through the VPN tunnel when active.

Item	Description
Enforce the "Start CylanceGATEWAY when I sign in" setting	This setting specifies whether to force the CylanceGATEWAY agent on macOS or Windows devices to start automatically when users log in. This policy setting overrides the "Start CylanceGATEWAY when I sign in" setting in the agent. BlackBerry recommends that you enable this option in the Gateway Service policy. This feature is supported on the following devices: • CylanceGATEWAY agent for macOS 2.7 or later • CylanceGATEWAY agent for Windows 2.7 or later
Automatically start CylanceGATEWAY when user signs in	This setting starts the CylanceGATEWAY agent automatically when users sign in to the device, but users can still stop the agent manually. This setting is only valid if the "Enforce the Start CylanceGATEWAY when I sign in" setting is enabled.
Enforce the 'Enable Work Mode Automatically' setting	This setting specifies whether to force the CylanceGATEWAY agent on macOS or Windows devices to enable Work Mode automatically when the agent starts. This policy setting overrides the "Enable Work Mode Automatically" setting in the agent. This feature is supported on the following devices: • CylanceGATEWAY agent for macOS 2.7 or later. • CylanceGATEWAY agent for Windows 2.7 or later
Enable Work Mode Automatically	This setting enables Work Mode automatically when the CylanceGATEWAY agent starts, but users can still manually enable and disable Work Mode after the agent starts. This setting is only valid if the "Enforce the Enable Work Mode Automatically setting" is enabled.
Tunnel Use	

Item	Description
Per-app tunnel	This setting specifies which apps can send data through the tunnel to the CylanceGATEWAY cloud services. Possible options: • Select **Allowed apps** to specify the apps that use the tunnel. No other apps can use the tunnel. System apps and Windows DNS always use the tunnel. If you select this option, any set ACL rules or network access control policies are applied. For more information on ACL rules and network access control policies, see Controlling network access. • Select **Restricted apps** to specify the apps that cannot use the tunnel. All other apps can use the tunnel. • Click ⊕ and enter the full path or include a wildcard in the path for desktop apps or add the Windows Package Family Name (PFN) for store apps. You can specify a combined maximum of 200 app paths or PFNs. When you include a wildcard in the path, consider the following: • You can include only one wildcard per path. The supported format is *\ (for example, %ProgramFiles%\*Folder_Name*\\*\\*Application_Name*.exe) • Wildcards are not supported in the following instances: • Used in place of environment variables • Used in place of root directories in the path • Used for partial directory names (for example, "C:\Win*\notepad.exe") • Used in executable names (for example, "C:\Windows\*.exe") Wildcards are supported on Windows devices that are running CylanceGATEWAY agent for Windows 2.7 or later. This feature is supported on the following devices: • CylanceGATEWAY for Windows 2.0.0.13 or later. • Android or Chromebook device users that are running the CylancePROTECT Mobile app.
Force apps to use the tunnel	This setting requires all non-loopback connections to use the tunnel. If you select this option and have split tunneling enabled, all traffic will use the tunnel. On Windows devices, if you select this option and have split tunneling enabled, connections that don't use the tunnel may not function as expected. This feature is supported on the following devices: • Unmanaged macOS devices that are running macOS 10.15 or later and CylanceGATEWAY for macOS 2.0.17 or later. • Unmanaged iOS devices that are running iOS 14.0 or later and CylancePROTECT Mobile app 2.4.0.1731 or later. • Windows devices that are running CylanceGATEWAY for Windows

Item	Description
Allow apps to use the local network	This setting allows the apps that are forced to use the tunnel to reach local network destinations. This feature is supported on the following devices: • Unmanaged macOS devices that are running macOS 10.15 or later and CylanceGATEWAY for macOS 2.0.17 or later. • Unmanaged iOS devices that are running iOS 14.2 or later and CylancePROTECT Mobile app 2.4.0.1731 or later. • Windows devices that are running CylanceGATEWAY for Windows 2.5 or later. This setting is only valid if "Force apps to use the tunnel" is enabled.
Block network traffic from restricted apps	This setting prevents all non-loopback network connections from apps that cannot use the tunnel. If you do not select this setting, the restricted apps can use the default network connection. This feature is supported on devices that are running the CylanceGATEWAY for Windows agent.
Allow other Windows users to use the tunnel	This setting allows all users that use the same Windows device to use the tunnel. If you select this option, any per-app tunnel criteria applies. If you do not select this option, apps run by other Windows users are treated as restricted apps.
Allow incoming connections	This setting allows incoming TCP connections and UDP flows from non-tunnel, non-loopback interfaces. CylanceGATEWAY never routes incoming connections through the tunnel. This feature is supported on devices that are running the CylanceGATEWAY for Windows agent.
Tunnel reauthentication	
Tunnel reauthentication	This setting specifies how frequently users must authenticate before they establish a tunnel. When you enable this feature, BlackBerry recommends that you set the "Allow authentication reuse" option to specify the period after which users need to authenticate again. This feature is supported on the following devices: • CylanceGATEWAY for macOS 2.5 or later. • CylanceGATEWAY for Windows 2.5 or later.
Allow authentication reuse	When enabled, this setting specifies a reuse period after which users who have authenticated and established a tunnel are required to authenticate again. The reuse period can be set between 5 minutes and 365 days from their last authentication. For example, if you set the reset period to 10 days, users must authenticate again 10 days after their first authentication before they can establish a tunnel. By default, this setting is disabled. **Note:** If you do not enable the Allow authentication reuse and specify a reuse period, users must authenticate each time they establish a tunnel. This setting is only valid if "Tunnel reauthentication" is enabled.

Item	Description
Grace period	This setting allows users to reconnect to the tunnel without authenticating if the connection to the tunnel is established within 2 minutes of the connection being disconnected. By default, this option is enabled when you turn on tunnel reauthentication. This setting is only valid if "Tunnel reauthentication" is enabled.
Split tunneling	
Split tunneling	This setting allows traffic to public destinations to bypass CylanceGATEWAY. You can type CIDR addresses or FQDNs for destinations that must route through the tunnel. For enhanced user experience, the management console periodically refreshes the FQDN to IP address resolution. **Note:** FQDN addresses do not support wildcards. If you enable split tunneling, connections to allowed public destinations bypass the tunnel and the CylanceGATEWAY cloud services unless you specify that connections to the destination must use the tunnel. If you enable split tunneling and do not enable split DNS, all DNS queries are evaluated against the configured ACL rules and network access controls are applied before traffic is routed to the public destination. You can type CIDR addresses or FQDNs for destinations that must route through the tunnel. If you are using source IP pinning, all destinations configured for source IP pinning must use the tunnel. If you make changes to tunneling settings or incoming connections, users must disable and then enable Work Mode in the CylanceGATEWAY agent installed on Windows and macOS devices or in the CylancePROTECT Mobile app on iOS, Android, and 64-bit Chromebook devices for the changes to take effect.
Split DNS	When enabled, this setting allows DNS lookups for the domains that are listed in the Private Network > DNS > Forward Lookup Zone configuration to be completed through the tunnel where network access controls are applied. All other DNS lookups are completed using local DNS. If you enabled Safe Mode, DNS traffic that does not use the Gateway tunnel is protected by Safe Mode. Split DNS is disabled by default. Android and 64-bit Chromebook devices do not support split DNS tunneling and will use the tunnel where access controls are applied. This setting is only valid if "Split Tunneling" is enabled.

Configure Gateway service options

1. On the menu bar, click **Policies > User Policy**.
2. Click the **Gateway Service** tab.
3. Click **Add Policy**.
4. Specify the Gateway Service policy parameters.
5. Click **Add**.
6. If you made changes to the tunneling settings or incoming connections, make sure that users disable and then enable work mode in the CylanceGATEWAY agent installed on Windows and macOS devices or in the CylancePROTECT Mobile app on iOS, Android and Chromebook devices for the changes to take effect.

After you finish:

- Assign the policy to users and groups
- If necessary, rank the policies

Specifying how devices activated with an EMM solution use the CylanceGATEWAY tunnel

CylanceGATEWAY is a cloud-native, artificial intelligence (AI) assisted zero trust network access (ZTNA) solution. When CylanceGATEWAY is enabled on a device, the device recognizes CylanceGATEWAY as a VPN provider that establishes a zero trust network access profile. If you have activated devices using BlackBerry UEM or another EMM solution, the VPN options you set in your EMM solution can affect how CylanceGATEWAY works on the device.

For iOS devices, you can use your BlackBerry UEM or another EMM solution to set up per-app VPN to designate which apps send data through the CylanceGATEWAY tunnel. Devices must be activated to allow VPN management and app management. For more information, see the following:

- Specify which apps use CylanceGATEWAY on iOS devices
- Specify which apps use CylanceGATEWAY on iOS devices in a Microsoft Intune environment

For Android devices, you can use BlackBerry UEM or another EMM solution to force CylanceGATEWAY to always be enabled and to prevent users from changing the VPN configuration in the work profile. For more information, see the following:

- Specify CylanceGATEWAY options on Android Enterprise devices
- Specify CylanceGATEWAY options on Android Enterprise devices in your Microsoft Intune environment

Specify which apps use CylanceGATEWAY on iOS devices

For iOS devices, if your organization manages devices using an EMM solution that supports configuring per-app VPN, you can configure devices to recognize CylanceGATEWAY as a VPN provider and configure per-app VPN to specify which apps send data through the CylanceGATEWAY tunnel.

To set up per-app tunnel options, you must have permissions for VPN management and app management on iOS devices activated using your EMM solution. To specify which apps use the CylanceGATEWAY tunnel in BlackBerry UEM perform the following steps:

1. In the UEM management console, add the apps that you want to send data through CylanceGATEWAY to UEM and assign them to users.

   Only apps that are assigned to users use the CylanceGATEWAY tunnel. Do not assign the default browser or the CylancePROTECT Mobile app to users or the device will be unable to establish a tunnel with CylanceGATEWAY.

   For devices with the "User privacy" and "User privacy - User enrollment" activation types, only assigned internal apps and apps licensed through the Apple Volume Purchase Program use the tunnel.
2. Create an activation profile that assigns one of the following activation types:
   - MDM controls
   - User privacy - User enrollment
   - User privacy with VPN management and app management enabled
3. Create a VPN profile and include the following settings:

Setting	Description
Connection type	Custom

Setting	Description
VPN bundle ID	com.blackberry.protect
Server	This setting specifies the FQDN or IP address of a VPN server. The value must be 127.0.0.1.
Authentication type	Password
Password	Leave this field blank
Enable per-app VPN	Selected
Domain settings	Specify the domains that can establish a connection through the CylanceGATEWAY tunnel. If you specify a domain, assigned apps use the tunnel only for connections to the specified domain. You can specify domains for Safari, Calendar, Contacts, Mail, and domains listed in the apple-app-site-association file. You can also specify domains that never use the tunnel. For devices with the "User privacy" and "User privacy - User enrollment" activation types, if you specify a domain that is not a child of the root domain specified in the **Server** field, the device ignores the entire VPN profile, not just the invalid domain.
Allow apps to connect automatically	Select this option to specify that the app can start the connection automatically. **Note:** Connections through the CylanceGATEWAY tunnel can start only if CylanceGATEWAY is enabled in the CylancePROTECT Mobile app on the device.
Traffic tunneling	IP layer

4. Assign profiles to users and instruct them to activate devices.

Specify which apps use CylanceGATEWAY on iOS devices in a Microsoft Intune environment

You can configure iOS devices to recognize CylanceGATEWAY as a VPN provider and configure per-app VPN to specify which apps send data through the CylanceGATEWAY tunnel. In Microsoft Intune, you can configure settings that affect CylanceGATEWAY.

To set up per-app tunnel options, you must have permissions for VPN management and app management on iOS devices that are activated using Intune. To specify which apps use the CylanceGATEWAY tunnel in Intune, perform the following steps:

1. In the Microsoft Intune admin center, add the apps that you want to send through CylanceGATEWAY to Intune and assign them to users.

   Only apps that are assigned to users use the CylanceGATEWAY tunnel. Do not assign the default browser or the CylancePROTECT Mobile app to users or the device will be unable to establish a tunnel with CylanceGATEWAY .
2. Create a VPN profile and include the following settings. For more information on the iOS and iPadOS settings, see Add VPN settings on iOS and iPadOS devices.

Setting	Description
Connection type	Custom VPN

Setting	Description
VPN server address	The value must be 127.0.0.1. This value is not used by CylanceGATEWAY.
Authentication Method	Username & Password
Split tunneling	Disable
VPN identifier	For iOS devices, enter com.blackberry.protect For macOS devices, enter com.blackberry.big
	• Key: *key* • Value: *value* Microsoft Intune requires one custom attribute. CylanceGATEWAY does not use this setting. You can enter any attribute.
Automatic VPN	Per-app VPN
Provider Type	Packet-tunnel
Safari URLs	Specify the domains that can establish a connection through the CylanceGATEWAY tunnel. Intune does not support wildcards in domains, they are implied. For example, if you enter “org”, implies “*.org”. **Note:** Connections through the CylanceGATEWAY tunnel can start only if CylanceGATEWAY is enabled in the CylancePROTECT Mobile app on the device. If you specify blackberry.com as a managed Safari VPN, newly activate CylancePROTECT Mobile apps will be prevented from activating.

3. If necessary, have users activate the CylancePROTECT Mobile app.

Specify CylanceGATEWAY options on Android Enterprise devices

For Android devices, you can specify which apps send data through the CylanceGATEWAY tunnel using the CylanceGATEWAY service policy. If your organization manages Android Enterprise devices using an EMM solution such as BlackBerry UEM, you can configure settings in your EMM provider that affect CylanceGATEWAY.

You can use the IT policy in BlackBerry UEM to specify whether CylanceGATEWAY is always enabled on devices and whether users can change VPN configurations in the work profile on the device. For more information on UEM IT policy rules, download the UEM IT Policy Reference.

1. In the UEM management console, create or edit an IT policy.
2. Perform one of the following actions:
   a) To force CylanceGATEWAY to always be enabled, set the following IT policy rules for the Android work profile.

IT policy rule	Description
Force always-on VPN	Selected

IT policy rule	Description
Use BlackBerry Secure Connect Plus for VPN connection	Not selected
VPN app package ID	com.blackberry.protect
Force work apps to only use VPN	Not selected. If this option is selected, the CylancePROTECT Mobile app can't be activated on the device.
Work apps exempt from VPN	If the "Force work apps to only use VPN" rule is selected, • you must enter `com.android.chrome` to allow the Chrome browser to access the network and activate the CylancePROTECT Mobile app on the device before the VPN is connected. This rule applies to devices running Android OS 10.0.0 or later. • If you enter `com.android.protect`, the CylancePROTECT Mobile app can access the network without using the VPN only when the VPN is not connected.

b) To allow devices to send data through the CylanceGATEWAY tunnel if **Force always-on VPN** is not selected, select **Allow user-configured VPN in workspace**.

If neither **Force always-on VPN** nor **Allow user-configured VPN in workspace** is selected, the device will not allow work apps to send data through the tunnel.

3. Assign the IT policy to users.

Specify CylanceGATEWAY options on Chromebook devices

For 64-bit Chromebook devices, you can specify which apps send data through the CylanceGATEWAY tunnel using the CylanceGATEWAY service policy. If your organization manages Chrome OS Enterprise devices using a Google domain, you can force CylanceGATEWAY to always be enabled and prevent users from changing the VPN configuration in the CylancePROTECT Mobile app. For instructions, visit https://support.google.com/ and read "Set up virtual private networks (Android VPN app)". You can also extend the management of Chromebook Enterprise devices to your EMM provider such as BlackBerry UEM. For more information, see Extending the management of Chrome OS devices to BlackBerry UEM.

Specify CylanceGATEWAY options on Android Enterprise devices in your Microsoft Intune environment

For Android devices, you can specify which apps send data through the CylanceGATEWAY tunnel using the Gateway policy. In Microsoft Intune, you can configure settings that affect CylanceGATEWAY.

You can use the configuration profile to specify whether CylanceGATEWAY is always enabled on devices and whether users can change VPN configurations in the profile on the device. For more information on the configuration profile settings, see Android Enterprise device settings to configure VPN.

1. In the Microsoft Intune admin center, create a configuration profile. Set the following settings:

- Platform: Android Enterprise
- Profile type: Device restrictions

2. Set the following rules for the configuration profile.

Setting	Description
Always-on VPN	Enable

Setting	Description
VPN Client	Custom
Package ID	com.blackberry.protect
LockDown mode	Not configured. If this option is selected, the CylancePROTECT Mobile app might not activate.

3. Assign the configuration profile to users.
4. Assign the CylancePROTECT Mobile app to users.

Connecting Cylance Endpoint Security to MDM solutions to verify whether devices are managed

You can connect Cylance Endpoint Security to BlackBerry UEM or Microsoft Intune so that Cylance Endpoint Security can verify whether iOS and Android devices are managed.

After you establish the connection to UEM, you configure the iOS and Android devices, users, and groups that the integration applies to. For UEM, you ensure users are activated with a supported activation type and manage the distribution of the CylancePROTECT Mobile app using the user and group management features available in the UEM management console.

Note that all BlackBerry UEM managed devices that you want to use this feature must have the CylancePROTECT Mobile app deployed from the BlackBerry UEM instance.

For Intune integration, when you connect Cylance Endpoint Security to Intune, you create app configuration policies that define the device types and Intune user groups that the integration applies to. Note that all Intune managed devices that you want to use this feature must be included in an app configuration policy in the Cylance console through Assests > User Groups.

In the Cylance console, you create and assign the Gateway Service policy that allows Gateway to run only if the device is managed by BlackBerry UEM or Intune. When the user tries to access a network destination on an MDM-managed device, if the destination is allowed the network traffic is sent through the secure tunnel.

To connect Cylance Endpoint Security to BlackBerry UEM, perform the following actions.

Step	Action
1	Review the prerequisites.
2	Link to your company directory. • In Cylance Endpoint Security, see Linking to your company directory. • In BlackBerry UEM, see Connecting to your company directories.
3	Install and configure the BlackBerry Connectivity Node. • In Cylance Endpoint Security, see Installing or upgrading the BlackBerry Connectivity Node. • In BlackBerry UEM, see Install a BlackBerry Connectivity Node instance.

Step	Action
4	Add a BlackBerry UEM connector.
5	Use BlackBerry UEM to install the CylancePROTECT Mobile app on devices.

To connect Cylance Endpoint Security to Intune, perform the following actions:

Step	Action
1	Review the prerequisites.
2	Connect Cylance Endpoint Security to Intune.

Prerequisites: Verifying that devices are MDM managed

- BlackBerry UEM
  - BlackBerry UEM Cloud or UEM on-premises version 12.15 or later is supported.
  - Make sure that you have a valid BlackBerry UEM SRP ID and Authentication key for your BlackBerry UEM Cloud and BlackBerry UEM instances. If your environment uses BlackBerry UEM Cloud, you can view the SRP IDs and authentication keys for your BlackBerry UEM Cloud instances in your myAccount, under Organization > Services > UEM. If your environment uses an on-premises BlackBerry UEM instance, contact BlackBerry Technical Support and reference article 97480.
  - Your organization's Cylance Endpoint Security tenant and UEM domain must have the same organization ID.
  - For BlackBerry UEM on-premises environments, you must allow connections from BlackBerry UEM Connector. If you do not allow connections from the BlackBerry UEM Connector, when you try to save your tenant information, the error message "The UEM connection request is invalid" displays and you cannot save the information. For instructions on how to enable the BlackBerry UEM connector, visit support.blackberry.com/community to read article 97480. By default, this is enabled in BlackBerry UEM Cloud environments.
  - Users' accounts must use the same Active Directory or Azure AD accounts on the Cylance console.
  - Cylance Endpoint Security supports a connection to one UEM domain.
  - You must Use BlackBerry UEM to install the CylancePROTECT Mobile app on devices. The app must be distributed from UEM because it requires app configurations that are not present if users download and install the app from the App Store or Google Play.
  - For iOS devices prerequisites, see Prerequisites: Verifying that iOS devices are managed by UEM.
  - For Android devices prerequisites, see Prerequisites: Verifying that Android devices are managed by UEM
- Microsoft Intune
  - The Cylance Endpoint Security administrator account that you use to connect to Intune must have an Intune license.
  - Cylance Endpoint Security supports a connection to one Intune instance.
  - All Intune-managed devices that you want to use this feature must be included in an app configuration policy in the Cylance console. For more information, see Connect Cylance Endpoint Security to Intune.

Prerequisites: Verifying that iOS devices are managed by UEM

The iOS devices must be activated using one of the following activation types*:

- MDM Controls
- User Privacy
- User Privacy - User enrollment

If your users are activated with the User privacy activation type, complete one of the following tasks:

Task	Steps
Use Cylance Endpoint Security to manage the per-app VPN	1. In the user privacy activation type, clear the **Allow VPN Management** checkbox and select the **Allow app management** checkbox. 2. In the Cylance Endpoint Security console, configure the Gateway Service options.
Use UEM to manage the per-app VPN	1. In the user privacy activation profile, select the **Allow VPN Management** and **Allow app management** checkboxes. 2. Create a custom VPN profile. In the **VPN bundle ID** field, enter the CylancePROTECT Mobile bundle id, `com.blackberry.protect`. 3. In the Cylance Endpoint Security console, configure the Gateway Service options.

* If you want to deactivate a device from the UEM instance, use the "Delete only work data" command to delete work data (for example, the IT policy, profiles, apps, and certificates) that is on the device. If you select the "Remove device" command, the device is removed from your UEM instance, but data and profiles are not removed and the device may continue to receive email and other work data. BlackBerry recommends that you use the "Remove device" command only if a device is irretrievably lost or damaged and is not expected to contact the server again. For more information on commands that you can send to devices, see Commands for iOS devices in the BlackBerry UEM content.

Prerequisites: Verifying that Android devices are managed by UEM

The Android devices must be activated using one of the following activation types:

- Work and personal - user privacy (Android Enterprise with work profile)
- Work space only (Android Enterprise fully managed device)
- Work and personal - full control (Android Enterprise fully managed device with work profile)
- Work space only (Samsung Knox)
- Work and personal - full control (Samsung Knox)
- Work and personal - user privacy (Samsung Knox)

Add a BlackBerry UEM connector

By default, the Connectors page will display the name, connection type, and connection status for the BlackBerry UEM connector that is currently used in your environment. Your Cylance Endpoint Security tenant supports a connection to one UEM domain.

Before you begin: Review the prerequisites for BlackBerry UEM connector.

1. In the management console, on the menu bar, click **Settings > Connectors**.
2. Click **Add Connector** and select **BlackBerry UEM** from the drop-down list.
3. On the **Tenant Information** screen, enter the BlackBerry UEM tenant SRP ID and Authentication key.

4. Click **Save**.

Use BlackBerry UEM to install the CylancePROTECT Mobile app on devices

You can use UEM to install the CylancePROTECT Mobile app on devices. The app must be distributed from UEM because it requires app configurations that are not present if users download and install the app from the BlackBerry web site, App Store, or Google Play.

Note:

Consider the following feature limitations when you use UEM to install the CylancePROTECT Mobile app on devices:

- For devices with the Android Enterprise user privacy or full control activation types, SMS message scanning is not supported.
- For devices with any Android Enterprise activation type, screen lock detection is not supported.

Before you begin: Review the Prerequisites: Verifying that devices are MDM managed.

1. Follow the instructions in the UEM Administration content to add the CylancePROTECT Mobile app to the app list:

    - Add an iOS app to the app list
    - Add an Android app to the app list

    Specify the following app configuration settings:

OS	App configuration settings
iOS	• App configuration name: *name* • Key: uemperimeterid • Value: %perimeterid%
Android	Name: *name* The following settings are prepopulated: • User Id: userid • UEM Perimeter Id: %perimeterid%

2. Assign the CylancePROTECT Mobile app to users or groups.
3. Set the disposition of the CylancePROTECT Mobile app to Required.

After you finish:

- Instruct users to activate the CylancePROTECT Mobile app using the information they received in their activation email. Cylance Endpoint Security will send the activation email after you assign an enrollment policy.
- Follow the instructions for Connecting Cylance Endpoint Security to MDM solutions to verify whether devices are managed.

Connect Cylance Endpoint Security to Intune

Before you begin:

The Cylance Endpoint Security administrator account that you use to connect to Intune must have an Intune license.

1. In the management console, on the menu bar, click **Settings > Connectors**.
2. Click **Add Connector** and select **Microsoft Intune** from the drop-down list.

3. Specify your Azure tenant ID. Click **Next**.
4. Specify your administrator credentials for Azure AD.
5. On the **App Configuration Policies** screen, turn on the OS platforms that you want the Intune integration to apply to and complete the following steps for each platform. Note that all Intune managed devices that you want to use this feature must be included in an app configuration policy. If you want to create app configuration policies later, click **Cancel**.
    a) Optionally, change the name of the policy. Do not change the target app.
    b) If you want the policy to apply to all groups from the Intune instance, turn on **All groups**.
    c) If you want the policy to apply to specific groups from the Intune instance, click ⊕. Search for and select groups and click **Add**.
6. Click **Save**. If you added an app configuration policy for Android, follow any administrator consent prompts that display.

The app configuration policies that you create are visible in Microsoft Endpoint Manager.

After you finish:

- Instruct your organization's Intune administrator to edit the BlackBerry Protect Mobile MTD connector in Microsoft Endpoint Manager and turn on the following options. To enable the BlackBerry Protect Mobile MTD Connector, complete the following steps:
    1. Log in to the Microsoft Endpoint Manager admin center.
    2. Click **Tenant administration > Connectors and tokens**.
    3. In the **Cross platform** section, click **Mobile Threat Defense**.
    4. Click **Add**.
    5. In the **Select the Mobile Threat Defense connector to setup** dropdown, select **BlackBerry Protect Mobile**.
    6. Click **Create**.
- If you want to add app configuration policies at a later time, or if you want to add additional policies, in **Settings > Connectors**, click **Generate App Configuration** for the Intune connection.
- If you also want to connect Cylance Endpoint Security to Intune to manage risk levels of devices, see Integrating Cylance Endpoint Security with Microsoft Intune to respond to mobile threats.

Installing the CylanceGATEWAY agent

The CylanceGATEWAY agent protects users’ Windows 10, Windows 11, and macOS devices by allowing you to block connections to Internet destinations that you don’t want devices to reach, even when the device isn't connected to your network. BlackBerry maintains an ever-growing list of unsafe Internet destinations that it can block endpoints from connecting to. If your organization also wants to block users from visiting specific sites that don't meet your acceptable use standards, you can create policies to specify additional destinations that all users or specific users or groups cannot access.

The CylanceGATEWAY agent is installed on user's devices, allowing them to access network resources safely and protect their device from suspicious and potentially malicious network activity. When the CylanceGATEWAY agent is installed and Work Mode is enabled, CylanceGATEWAY establishes secure connections between the user’s device and your organization's network and the public Internet, analyzes your network activity, and applies network access policies that you manage. When you enable Safe Mode for macOS and Windows devices, CylanceGATEWAY extends the tenant ACL rules and endpoint protection for devices when Work Mode is not enabled to ensure that devices are always protected for network traffic that does not use the tunnel.

When you deploy a new installation of the CylanceGATEWAY agent, users' devices must be restarted, and users must manually complete the installation process and enable Work Mode or activate Safe Mode. When you deploy an upgrade of the CylanceGATEWAY agent, users' devices must be restarted for the upgrade to complete. During the upgrade, the CylanceGATEWAY agent retains all of the configurations. No additional action is required by users.

The CylanceGATEWAY agent can be installed through Microsoft System Center Configuration Manager (SCCM) and other deployment tools across your environment. The parameters can be supplied from the command line. You can also direct users to manually download and install the CylanceGATEWAY agent to enable Work Mode or activate Safe Mode.

Perform a silent installation and upgrade of the CylanceGATEWAY agent

You can deploy the CylanceGATEWAY agent to users. If the deployment is for a new installation, users must restart their device and manually complete the installation process and enable Work Mode or activate Safe Mode (macOS devices only). If the deployment is an upgrade, users must restart their devices for the upgrade to complete. The CylanceGATEWAY agent configurations are retained, and no additional action is required by users.

Before you begin: Download a copy of the CylanceGATEWAY agent for macOS and Windows from the BlackBerry website and save it to a location on your computer.

1. Open a command prompt and run as administrator.
2. Navigate to the location where you saved the CylanceGATEWAY agents. Complete one of the following tasks. In this example, we will use CylanceGATEWAY agent version 2.7.0.19.

Task	Steps
Perform a silent installation or upgrade without restarting the users' devices.	Type the following command: `.\CylanceGATEWAY-2.7.0.19.exe /s /v" REBOOT=Suppress /qn"`
Perform a silent installation or upgrade and immediately restart the users' devices.	Type the following command: `.\CylanceGATEWAY-2.7.0.19.exe /s /v" /qn"`
Perform a silent installation or upgrade and create an installation log file called GWInstall.	Type the following command: `.\CylanceGATEWAY-2.7.0.19.exe /s /v" REBOOT=Suppress /qn /l*v .\GWInstall.log"`.

3. If necessary, direct your users to restart their devices and follow the onscreen prompts.

Setting up CylanceAVERT

Item	Description
1	Review the software requirements
2	Define sensitive content
3	Install CylanceAVERT
4	Create information protection policies
5	Assign policies to administrators, users, and groups

Installing the CylanceAVERT agent

You can download and install CylanceAVERT from the Downloads page in the BlackBerry myAccount portal.

You can install CylanceAVERT in silent mode through SCCM or JAMF for the user. To do so, you will need to include the `IAgreetoBBSLA=true` command line parameter to accept the end-user license agreement (EULA). The EULA will not be displayed to the user. After you install CylanceAVERT in silent mode, you must reboot the system.

Note: Prior to installing CylanceAVERT in silent mode, you must read the Blackberry Solution License Agreement, including the BlackBerry Privacy Notice. You may install the application only if you accept the terms and conditions of the BlackBerry Solution License Agreement in the manner indicated above. **If you do not accept the terms and conditions of the BlackBerry Solution License Agreement, do not install or use CylanceAVERT**.

After the CylanceAVERT agent is installed, the user can get security notifications for potential unauthorized sharing of sensitive company data when sending emails, transferring files through USB, and uploading files to a website.

If a user that is not added to Cylance Endpoint Security logs into a desktop that has CylanceAVERT installed, the user will be automatically added to Cylance Endpoint Security with all policies applied to them. This requires an Active Directory or BlackBerry Connectivity Node directory connection. If you are using a BlackBerry Connectivity Node directory connection for user management, you must use BlackBerry Connectivity Node version 2.12.1 or later. For more information, see Installing the BlackBerry Connectivity Node and Linking to your company directory in the Cylance Endpoint Security Setup Guide.

Note: If a user quits the CylanceAVERT app from the Windows application tray, they will not receive a Windows notification when an exfiltration event occurs.

Install CylanceAVERT

CylanceAVERT requires CylancePROTECT Desktop version 3.1 or later.

Note: CylanceAVERT cannot be installed on a computer with CylancePERSONA.

1. On the device, double-click the CylanceAVERT agent installer.
2. Follow the installation steps.

After you finish:

- To verify that the CylanceAVERT agent is installed, check the following:
    - The CylanceAVERT icon appears in the system tray.
    - The CylanceAVERT user appears in the Users list on the Assets page in the console.
    - In Windows Task Manager, check that the CylanceAVERT process is running.
- To uninstall the agent, use the Windows Settings.

Note: After CylanceAVERT is installed, the browser plugin will prevent uploading any files to unsecured (non-SSL) websites. BlackBerry recommends that you don't attempt to upload files to non-SSL websites.

Define sensitive content using information protection settings

With the information protection settings, you can specify the data types that CylanceAVERT will look for in sensitive files, the evidence that is collected, the email and browser domains that you want to consider as trusted, and the email addresses that you want to send notifications of an exfiltration event to.

Managing evidence collection

Data collection settings allow you to configure the evidence that you want to be collected during a data exfiltration event for auditing purposes. By configuring data collection settings, you can make decisions such as including file snippets of the exfiltration event, saving full copies of the files involved in the exfiltration event, managing uploads to the evidence locker, selecting times for file uploads, and specifying the length of time data evidence should be retained.

Configure data collection settings

You can customize how data exfiltration events are collected in CylanceAVERT.

1. In the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Data Collection** tab.
3. Perform any of the following to configure information protection settings:

Item	Steps
File Snippets	Click the **Generate File Snippets** toggle to turn on or off file snippet collection. When **Generate File Snippets** is turned on, a file snippet of the data exfiltration event will be saved in the events details. By default, **Generate File Snippets** is set to off.

Item	Steps
Evidence File Collection	- Click the **Enable evidence file collection** toggle to turn on or off evidence file collection. By default, **Enable evidence file collection** is set to off. When **Enable evidence file collection** is turned on, a full copy of the files involved in a data exfiltration event will be saved in the event details. See Viewing CylanceAVERT event details for more information. - Click the **Disk space** text field and enter a value to specify the the maximum amount of free disk space that you can allocate to caching evidence files on remote devices or evidence locker. By default, **Disk space** is set to 10%.
File Upload	- Click the **File Upload Method** drop-down menu and select a method. By selecting **Direct**, devices on your network will be able to upload files directly to your evidence locker. If direct access to your evidence locker is blocked (for example, by your firewall), BlackBerry will upload the files through its cloud by selecting **BlackBerry Proxy Service**. By default, **Direct** is selected. - Click the **Allow file uploads on mobile network** to allow files uploads on mobile networks as well as Wi-Fi and wired networks. By default, **Allow file uploads on mobile network** is set to off.
Evidence File Retention	Click the **Data retention** drop-down menu and select the length of time you would like evidence files to be stored in your evidence locker. The values for the length of time that evidence files can be stored is 30, 60, or 90 days. By default, **Data retention** is set to 30 days.

Adding trusted domains

You specify domains so that you can list browser and email addresses that you trust to safely upload files to. After you add domains, you will need to enable them to be used in the information protection policies. When you specify an allowed domain for a policy, that domain will not trigger any policy violations when it is scanned for sensitive file uploads. If you don't specify any domains in the information protection settings or add any domains for use in your policies, all domains will be treated as untrusted.

Note: All USB device domains are considered as untrusted.

Note: After you specify an allowed domain, any subdomains will also be considered as allowed as long as their trusted certificates are added. For more information, see Verifying domains using trusted certificates. Wildcard values are not supported when specifying an allowed domain name.

Add an allowed domain

1. In the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Allowed Domains** tab.
3. To add a new browser domain, click the **Add New Domain** button.

   Note: If you would like to add a new email address domain, type your new email domain in the **Allowed Email Domains** section and use a comma to separate it from the previously entered domains.
4. In the **Add allowed domain** dialog box, type a name and description for the domain in the text fields.

   Note: Wildcard characters are not supported in the domain name field.
5. Optionally, turn on the ability to use this domain in a policy.
6. Click **Verify** to check if this domain uses an existing trusted certificate.

Note: For a domain to be considered as trusted, a trusted certificate must be uploaded. If a trusted certificate is not uploaded and the allowed domain is used in a policy, it will still trigger an exfiltration event. See Verifying domains using trusted certificates for more information

After you finish:

To delete an allowed domain, do the following:

1. In the management console, on the menu bar, click the **Settings > Information Protection**.
2. Click the **Allowed Domains** tab.
3. In the Allowed Domains list, click the check box beside the domain that you want to delete.
4. Click **Delete**.

Using templates to group data types

You can use templates to group sensitive data types for your organization to use in a policy.

Add a template

1. From the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Templates** tab.
3. To add a predefined template, click **Add Predefined**, select the predefined templates from the list and click **Add**.
4. To create a custom template, click **Create Custom**.
5. From the **Add new template** page, in the **General Information** section, enter the Template name and select the region from the drop-down list.
6. In the **Region** drop-down menu, select the region the template will be used for. For example, if you are creating a template with Canadian Health card and Canadian Sin number data types, select Canada as the region.
7. In the **Information type** drop-down menu, select the type of information that matches your template. Values are custom, financial, health, and personal data.
8. In the **Conditions Builder** section, select the data type from the drop-down list and specify the number of minimum occurrences required to trigger the policy violation. To add another data type to the group, click **Add Item**.

    - To add another data type to the group, click **Add Item**.
    - To add another condition group, click **Add Group**.
9. Click **Save**.

After you finish:

After your template is added, you can add it to an information protection policy. See Managing information protection policies for more information.

To remove a template, do the following:

1. From the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Templates** tab.
3. To remove a predefined template, click **X** in the Actions column of the template. At the confirmation dialog, click **Remove**.
4. To remove a custom template, click 🗑 in the Actions column of the template. At the confirmation dialog, click **Remove**.

When a template is removed from your list, it will no longer be available for use in an information protection policy.

To edit a custom template, click on the template in the list, and edit the information in the fields. You can not edit a predefined template. Refer to steps 4-7 for more information.

To copy a template, click ⧉ in the actions column of the template you want to copy, then at the confirmation dialog, click **Copy**.

Specifying sensitive data types

Data types represent the sensitive data that CylanceAVERT will scan for. You can set data types in the information protection settings and customize them to fit your organization's needs. The search methods available for data types are keywords or regular expressions.

Add a data type

1. In the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Data Types** tab.
3. Click **Add Custom Data Type**.

   Note: You can also add predefined data types to your list, which will allow the data type to be used in an information protection policy. To add a predefined data type to a list, click **Add Predefined Data Type**, select the predefined data types that you want to add to your list, and click **Add**.
4. On the **Add custom data type** page, add a name and description for the new data type.
5. In the **Region** drop-down list, select the region the data type will be used for. For example, if you are going to check for a Canadian drivers license number, select Canada as the region.
6. In the **Information type** drop-down menu, select the type of information that matches your data type. Values are custom, financial, health, and personal data.
7. In the **Search method** drop-down menu, select the search method that you want to use. Values are keywords, expression, or keyword dictionary. A keyword dictionary is a text file that specifies multiple keywords. To create a keyword dictionary, you must create a text file with each keyword written on a new line.
8. Do any of the following:

   - If you selected **Keywords** as your search method, enter the keywords that you want to scan for in the **Keywords** field. You can use commas to separate multiple keywords.

     - Select **Exact match** if you want to consider the file as sensitive if the keywords are exact matches. If this is selected, keywords will not be matched if they are part of a larger text string. For example, if you specify "confidential" as a keyword, "confidentiality" will not produce a match.
     - Select **Enforce case sensitivity** if you want to consider the file as sensitive if the case of the keywords are exact matches. If this is selected, text case is enforced. For example, if you specify "confidential" as a keyword, "CONFIDENTIAL" will not produce a match.
   - If you selected **Regular Expression (RegEx)** as your search method, enter the regular expression that you want to scan for in the **Regex** field.

     Note: If you are using a regex, note the following:

     - The regex must conform to the .NET expression language.
     - You can validate the regex using popular tools such as Regex101 or Regex Storm.
   - If you selected **Keyword Dictionary**, do the following:

     - Select **Exact match** if you want to consider the file as sensitive if the keywords are exact matches. If this is selected, keywords will not be matched if they are part of a larger text string. For example, if you specify "confidential" as a keyword in your keyword dictionary, "confidentiality" will not produce a match.
     - Select **Enforce case sensitivity** if you want to consider the file as sensitive if the case of the keywords are exact matches. If this is selected, text case is enforced. For example, if you specify "confidential" as a keyword in your keyword dictionary, "CONFIDENTIAL" will not produce a match.

    - Click **Upload Keyword Dictionary** and select your keyword dictionary. You can only upload one keyword dictionary file per data type.

    Note: The following are limitations for a keyword dictionary:

    - The combined size of all keyword dictionaries on a tenant cannot exceed 1.5 MB.
    - A single keyword in the keyword dictionary cannot exceed 1024 characters.
    - The maximum number of keyword dictionary data entities on a tenant is 1000.

9. Click **Create**.

After you finish:

- A custom data type can be deleted. To delete a custom data type, click 🗑 in the **actions** column. On the confirmation pop-up, click **Delete**.
  Note: You will receive a **Data type in use** pop-up If the data type is used in a policy and you will not be able to delete it until it is removed.
- A predefined data type can be removed from your list but not deleted. To remove a predefined data type from your list click **X** in the **Actions** column. On the confirmation pop-up, click **Remove**. You can re-add a predefined data type to your list by clicking **Add Predefined Data Type** and selecting the data type from the list.
  Note: You will receive a **Data type in use** pop-up If the data type is used in a policy and you will not be able to delete it until it is removed.
- An existing keyword dictionary file can be downloaded. If an updated keyword dictionary is uploaded, the endpoint will be rescanned and the policies will be evaluated. Currently, existing events will remain evaluated from the previous datatype.

Verifying domains using trusted certificates

Trusted certificates allow you to verify the allowed browser domains that were added in the information protection settings.

Add a trusted certificate

1. In the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Trusted Certificates** tab.
3. Click **Add Certificate**.
4. Upload a trusted certificate file (.pem). Click **Browse Files** to search for a local .pem file on your device, then click **Add**.

Sending notifications to specified email addresses

You can specify email addresses to send notifications to when a data exfiltration event occurs or when the evidence locker is reaching storage capacity. Only Cylance Endpoint Security administrators can see events details, but any user can receive notifications.

Enable email notifications

1. In the management console, on the menu bar, click **Settings > Information Protection**.
2. Click the **Notifications** tab.
3. Turn on **Enable Information Protection Event Notifications** to enable sending email notifications for CylanceAVERT events to specified email recipients.
4. In the **Email recipients** text field, type the email addresses that you want to receive CylanceAVERT Event notifications. You can use a comma to separate multiple email address entries.

5. Turn on **Enable Evidence Locker Storage Notifications** to enable sending email notifications for evidence locker storage capacity to specified email recipients.
6. In the **Email recipients** text field, type the email addresses that you want to receive evidence locker storage capacity notifications. You can use a comma to separate multiple email address entries.

Managing information protection policies

Information protection policies allow you to create organizational or regulatory policies that are triggered when specified conditions are met. You can add conditions using a template or through the conditions builder. Information protection policies are cumulative and not ranked like other Cylance Endpoint Security policies. If the user is unknown or had no policies assigned, all policies will be applied to the user.

Information protection policies can either be regulatory or organizational. Depending on the policy type, different reconciliation logic will be applied.

- When a user is assigned multiple regulatory policy types, policies will be consolidated for the user and the most restrictive rules and remediation actions will be applied.
- When a user is assigned multiple organizational policy types, policies will be consolidated for the user and the least restrictive rules and remediation actions will be applied.

Note: At least one information protection policy is required. If you try to delete the information protection policies, you will receive an error stating that one policy is required.

Best practices for policy consolidation

CylanceAVERT has two policy compliance types that can be used in an information protection policy.

Regulatory compliance refers to a finite set of sensitive data that is used to protect sensitive information related to industry or government regulations. Regulatory data is data that does not change over time. The pre-defined data types in the CylanceAVERT settings are all regulatory and are provided to you by BlackBerry to accelerate and simplify product setup. You can create your own regulatory data types and templates for use in a policy that encapsulates all of the regulatory data that your organization requires. For example, instead of using the BlackBerry provided template, you can create a Canada Health regulatory policy, that combines a Canadian SIN number, PHIN, health service number, Driver's license, bank account number, and passport number in a single policy. CylanceAVERT will use regular expression or keyword matching to determine if a file contains relevant regulatory information as stated in the policy.

Organizational compliance refers to a set of infinite data where the content and the people who can access the data changes from organization to organization is constantly changing based on organizational situations. As a result, organizational compliance should be used to protect sensitive data that contains information on company IP or other information relevant to your organization.

There is a possibility that multiple policies can apply to the same sensitive file, where the policies will conflict in their remediation action that they will take when a sensitive file is discovered. In this case, CylanceAVERT will apply remediation reconciliation for these policies.

When policy collisions occur, CylanceAVERT will automatically apply reconciliation. The reconciliation action will differ if the file violates a regulatory policy, an organizational policy, or both. If a file is classified as only organizational, the least restrictive remediation action is taken. If a file is classified as regulatory and/or organizational, the most restrictive action is taken. For example, if a file is subject to an organizational policy that determines the file is sensitive if it contains 2 occurrences of the word “confidential”, and a second organizational policy that determines sensitivity based on 3 occurrences of the word, the file will be determined as sensitive for 3 occurrences (least restrictive). However, if one or both of these policies were regulatory, then the file would be sensitive with 2 occurrences (most restrictive).

Create an information protection policy

1. In the management console, on the menu bar, click **Policies > User Policy**.
2. Click the **Information Protection** tab.
3. Click **Add Policy**.
4. In the **General Information** section, fill in the following:
    - In the **Policy name** field, type in a name for your policy.
    - In the **Description** field, type in a description for your policy.
    - In the **Policy type** drop-down menu, select the type of policy you are creating. Possible values for policy type are regulatory or organizational.
        - A regulatory policy type refers to the finite set of sensitive data defined by a regulation that does not necessarily change over time (for example, PCI, HIPAA, etc.).
        - An organizational policy type refers to company proprietary data where the audience for who can access the data can be constantly changing. As a result, organizational data should be classified data elements (for example, the file type, keywords, the file creator, the file creator's role, etc.).
5. In the **Conditions** section, configure the conditions that will trigger a policy violation by using one of the following:

Condition	Description
Add conditions using a template	**a.** Click **Add From Template**. **b.** Click the checkbox for the templates that you want to add to your policy. **Note:** You can filter the list of templates using the search bar.
Add conditions using the conditions builder	**Note:** The conditions builder is comprised of **And** and **Or** statement groups. You need to use a combination of these statement groups to determine when a policy will be triggered. **a.** In the **And** conditions section, select the conditions from the drop-down list, then specify the minimum number of occurrences required to trigger the condition from the numeric drop-down menu. • If you would like to add another item to your current statement group, click **Add Item**. • If you would like to add another statement group, click **Add Group**. • If you would like to delete a statement group, click **Delete Group**. **b.** In the **Or** conditions section, select the conditions from the drop-down list, then specify the minimum number of occurrences required to trigger the condition from the numeric drop-down menu.

6. In the **Allowed Domains** section, click ⊕ then select the browser domain you want to allow for you policy from the list.
7. In the **Allowed Email Domains** section, select which email recipients specified in the information protection settings should be allowed for your policy.
8. In the **Actions** section, from the drop-down lists, select the action to take for Web browser, USB, and email exfiltration events.
9. Click **Add**.

    Note: If a user has policies assigned to them, and then has all of those policies removed, the user will be deleted from CylanceAVERT.

After you finish:

Do any of the following:

- You can assign a policy to users and user groups. See View CylanceAVERT user details for more information.
- To delete an information protection policy, select the checkbox beside the policy in the list, then click **Delete**.
- To edit an information protection policy, click on the policy in the list, make a change to the policy, then click **Save**.

Managing updates for the CylancePROTECT Desktop and CylanceOPTICS agents

You can use update rules to manage updates of the CylancePROTECT Desktop and CylanceOPTICS agents on devices. Update rules allow you to configure Cylance Endpoint Security to automatically push updates to a specific version or the latest available version, or you can turn off automatic updates so that you can manage the software distribution using your organization’s preferred method. Zones are associated with update rules, so that devices and users that are part of those zones receive updates accordingly (also known as zone-based updating). Any devices that are not in a zone with an update rule associated are assigned the Production update rule. By default, the Test, Pilot, and Production update rules are available but you can also add additional update rules to manage agent updates based on your organization's needs.

The agent version on the device is always updated to the version that is specified in the update rule. You can use update rules to install an earlier version of an agent, even if the device is already using a newer version.

If the Linux driver on a device was previously updated manually on a device, the driver is not automatically updated as part of the agent update. This is to prevent the automated system from overwriting an action taken by an administrator.

When you are testing agent updates, consider the following:

- BlackBerry recommends that you test agent update rules using update rules and zones that were created for testing purposes (for example, using the Test and Pilot update rules) before using other update rules that you added for production deployment. When testing updates, consider using devices that are reserved for testing and evaluation purposes.
- Create zones for testing agent updates and add devices that are reserved for testing to them. Associate the zones that you created with the Test and Pilot update rules. For more information about creating zones, see Setting up zones to manage CylancePROTECT Desktop and CylanceOPTICS.
- Make sure that all test devices are in a zone that you are testing. The Production update rule applies to all devices that are not in a zone with another update rule associated.

How update rules work with zones

- Devices are associated with zones either by zone rules or by manual assignment.
- Devices can be associated with multiple zones.
- Zones are assigned to update rules. Devices that are assigned to those zones will follow the update rules.
- Update rules are not specific to an operating system (OS) platform, but you can create zones to manage the updates of devices with specific OS platforms. If the agent version that is specified in the update rule is not available for a platform, the device receives the update as soon as it becomes available for the platform.
- Update rules are ranked. If a device is associated with multiple zones and update rules, the update rule that is closer to the top of the list takes precedence.

Examples of update rules

The following examples illustrate update rules that are assigned zones that were created specifically for zone-based updates.

Update rule example	Assigned zones
Windows Server - Test	• Windows Server - US Test update zone • Windows Server - Europe Test update zone

Update rule example	Assigned zones
Windows Server - Pilot	• Windows Server - US Pilot update zone • Windows Server - Europe Pilot update zone
Windows Server - Production	• Windows Server - US Production update zone • Windows Server - Europe Production update zone

Manage updates for the CylancePROTECT Desktop and CylanceOPTICS agents

Before you begin: Create zones with devices reserved for testing agent updates. For more information about creating zones, see Setting up zones to manage CylancePROTECT Desktop and CylanceOPTICS. You will associate these zones with the Test and Pilot update rules. The Production update rule applies to all devices that do not belong to other update rules. You can add your own update rules for testing or for production deployment.

1. In the management console, on the menu bar, click **Settings > Update**.
2. If necessary, create an update rule. For example, you can create a rule for testing agent updates.
   a) Click **Add New Rule**.
   b) Type a name for the rule.
   c) Click **Submit**.
3. Click an update rule. For example, click **Test**.
4. Expand **Zones** and select the zones that you want to assign to this update rule.
5. Expand **Agent** and select an update option.
6. Select the **Auto-Update Linux Driver** check box to allow the agent to automatically update to the latest driver to support the latest Linux kernel.
7. Expand **CylanceOPTICS** and select an update option.

   You can select Auto-Update only if you configured the CylancePROTECT Desktop agent to use Auto-Update.
8. Repeat steps 2 to 7 for the **Pilot** update rule, or a rule that you created for pilot testing.
9. Repeat steps 2 to 7 for the **Production** update rule, or a rule that you created for production. You don't assign zones to the default **Production** update rule because it applies to all devices that do not have any update rule assigned.

   If the CylancePROTECT Desktop agent is set to Auto-Update in the Production update rule, the Test and Pilot rules are not available. Update rules that you create are not affected by the configuration of the Production update rule.
10. Click **Save**.

After you finish:

- If you added update rules, click the arrows next to the rules to set the ranking. Rules at the top of the list take priority over rules lower on the list. The Test, Pilot, and Production rules are always at the bottom of the list and you cannot change their ranking.
- To trigger an update of the CylancePROTECT Desktop agent on a device before the hourly interval, on the device, right-click the CylancePROTECT Desktop icon in the system tray and click **Check for Updates**, restart the Cylance service, or run the following command from the Cylance directory:

  ```
  CylanceUI.exe–update
  ```

Appendix: Best practices for deploying CylancePROTECT Desktop on Windows virtual machines

You can use CylancePROTECT Desktop to protect both physical and virtual machines. This section details the best practices for deploying the CylancePROTECT Desktop agent on Windows based virtual desktop infrastructure (VDI) workstations.

CylancePROTECT Desktop works well as a guest OS component because it is not IOPS or memory intensive on a per-guest basis. The preparation and deployment of the CylancePROTECT Desktop agent in a virtual environment is similar to deployment on a physical computer. The deployment steps and best practices in this section will ensure that the agent performs efficiently in a virtual environment with fewer allocated resources and will help you to produce a gold image with no unsafe or abnormal files. After the gold image is thoroughly vetted, you can clone production VDI images from it.

Requirements and considerations for using CylancePROTECT Desktop on virtual machines

Item	Requirements or considerations
Supported enterprise virtualization technologies	• Microsoft Hyper-V • Citrix XenDesktop • VMware Horizon/View • VMware Workstation • VMware Fusion

Item	Requirements or considerations
Non-persistent virtual machines	A non-persistent VM is deleted when the session ends and is replaced with the same gold image. When a new VM is created, the CylancePROTECT Desktop agent registers the VM with the management console, resulting in duplicate devices registered for what should be the same endpoint (older registrations are treated as offline duplicate device records that never come back online). Use one of the following installation parameters when you install the CylancePROTECT Desktop agent on the gold image to prevent the duplicate registration of the same VM device: • `VDI=<X>`: The value of *<X>* is a counter that determines when the agent starts identifying the virtual machine using VDI fingerprinting instead of the default agent fingerprinting mechanism. Duplicate devices are not registered when the agent uses VDI fingerprinting. • For example, you install the agent on a gold image using the parameter `VDI=2`. You use the gold image to create a parent image. You then use the parent image to create a workstation image. The agent will start to use VDI fingerprinting for the workstation image because the counter of 2 has been met by the gold image and the parent image. • `AD=1`: This parameter works the same as `VDI=<X>`, except there is no counter to define when the agent starts to use VDI fingerprinting. The agent will use VDI fingerprinting on the gold image and for any images that you create from the gold image. This parameter is not supported for the .exe format of the unified CylancePROTECT Desktop and CylanceOPTICS installer.
Memory protection and script control features	Consider the following before you enable memory protection and script control features in a VDI environment: • Both features use process injection to identify and block unwanted or unauthorized code. Plug-ins, tools, or DLLs in virtualized environments may cause adverse effects, so you should test memory protection and script control options before you deploy them to production workstations. • It is a best practice to test memory protection options in alert only mode and make more stringent device policy changes from there. If the system becomes unstable, you can turn off memory protection. • If system conflicts or instabilities occur, as a failsafe option, you can enable compatibility mode for memory protection. • See Known incompatibilities for Memory Protection and Script Control v2 in Protect 1580 and later.
Option to disable the agent UI	You have the option to disable the CylancePROTECT Desktop agent UI to conserve overall system resources. For more information, see Windows installation parameters.
Known issues	To review the issues reported when running the CylancePROTECT Desktop agent in a virtual environment, see VDI Trending Issues.

Deploy CylancePROTECT Desktop on virtual machines

Before you begin: Review the Requirements and considerations for using CylancePROTECT Desktop on virtual machines.

1. Create a device policy that you will use to prepare the VDI gold image. Configure the following options in the policy:

Device policy category	Options
File Actions	• Turn on **Auto Quarantine with Execution Control** for unsafe and abnormal file types
Protection Settings	• Turn on **Background Threat Detection** (**Run Once**) • Turn on **Watch for New Files**

2. Prepare the VDI gold image.
3. Install the CylancePROTECT Desktop agent on the gold image.
4. Apply the device policy that you created in step 1 to the gold image.

   Allow the background threat detection scan to complete. This can take several hours, depending on the size of the disk and the activity on the image as it is being scanned.
5. Review the results of the background threat detection scan and, if necessary, add binaries detected on the gold image to the CylancePROTECT Desktop quarantine or safe lists.
6. Create a device policy that is intended for production VDI workstations. BlackBerry recommends the following options in the policy, in addition to the options that you want to enable for your production workstations:

Device policy category	Options
File Actions	• Turn on **Auto Quarantine with Execution Control** for unsafe and abnormal file types • Turn on **Auto Upload**
Protection Settings	• Turn on **Watch for New Files** • Turn off **Background Threat Detection**

7. When the gold image is ready for production, apply the device policy from step 6 to the gold image.
8. Deploy the gold image onto production machines. Deploy each cloned image with a unique UUID or ID that is different than the gold image.

After you finish: For the cloned devices, configure zone-based agent updates to **Do Not Update** or to a specific version of the agent. Updates should be managed on the gold image. See Update CylancePROTECT Desktop on cloned devices.

Update CylancePROTECT Desktop on cloned devices

Before you begin: Deploy CylancePROTECT Desktop on virtual machines.

1. On the gold image, update the CylancePROTECT Desktop agent.
2. If any additional updates or files are applied to the gold image, apply the VDI preparation device policy to the gold image and allow the background threat detection scan to complete.

3. Review the results of the background threat detection scan and, if necessary, add binaries detected on the gold image to the CylancePROTECT Desktop quarantine or safe lists.
4. Apply the production device policy to the gold image.
5. Reseal the gold image.
6. Verify that the agent update is propagated to the cloned devices.

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