CROSSBEAM™ SYSTEMS

Installation and Configuration Guide for IDS Deployments of IBM Proventia Network IPS on Crossbeam X-Series Systems

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About This Guide

IBM Proventia® Network IPS v.2.0 for Crossbeam stops Internet threats before they impact your business network, and delivers complete protection to all three layers of the network: core, perimeter, and remote segments. The Proventia Network IPS employs multiple intrusion prevention technologies which are all highly integrated to work in tandem, providing unprecedented correlation and protection mechanisms. These core technologies enable pre-emptive protection of the network against a wide variety of Internet threats.

The Crossbeam X-Series system's unique, modular architecture lets you:

- Consolidate your security solutions — You can run the Proventia Network IPS application side-by-side with other best-of-breed security applications running on separate Application Processor Modules (APMs) in the same X-series chassis.
- Scale the application's performance — You can scale up the performance of the Proventia Network IPS application by running the application on multiple APMs simultaneously.
- Provide users with hardware and software high availability — When you deploy the Proventia Network IPS application on multiple APMs, each APM provides both hardware and software redundancy for the others. In addition, you can install an extra APM in the X-series chassis and use it as a replacement for any APM that fails while running the Proventia Network IPS application.

  The hardware high availability features in the X-series system also include redundant switch fabrics and a passive backplane, as well as redundant hot swappable fans, power supplies, and modules. In addition, you can deploy Crossbeam X-series systems in active/active or active/standby modes with either Single-Box High Availability (SBHA) and/or Dual-Box High Availability (DBHA) modes.

The combined solution is jointly engineered, tested, and certified by both IBM and Crossbeam, ensuring compatibility of the Proventia Network IPS application with all Crossbeam X-series chassis.

This guide explains how to install and configure the IBM Proventia Network IPS application for Intrusion Detection System (IDS) deployments on Crossbeam X-series systems.

IMPORTANT: This guide covers only IDS deployments of the Proventia Network IPS application. For information on installing and configuring the application as an Intrusion Prevention System (IPS), refer to the Installation and Configuration Guide for *IPS Deployments of IBM Proventia Network IPS on Crossbeam X-Series Systems*.

Intended Audience

This guide is intended for system integrators and other qualified service personnel responsible for installing, configuring, and managing software on Crossbeam X-Series systems.

Related Documentation

Crossbeam Systems Documentation

The following documents are provided on the Crossbeam Systems Documentation CD and are available on the Crossbeam Systems Customer Support web site located at http://www.crossbeam.com/services/online_support.php.

- *X40-X80 Security Services Switch Hardware Installation Guide*
- *X45 Security Services Switch Hardware Installation Guide*
- *XOS Configuration Guide*
- *XOS Command Reference Guide*
- *Install Server User Guide*
- *XOS V8.1 Release Notes*

IBM Documentation

The following documents are available on the IBM Internet Security Systems (ISS) documentation web site located at http://www.iss.net/support/documentation.

- *Installation and Configuration Guide for IPS Deployments of Proventia Network IPS on Crossbeam X-Series Systems*
- *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*
- *Proventia Network IPS Data Sheet*
- *Proventia Network IPS Frequently Asked Questions*
- *SiteProtector System Requirements*
- *SiteProtector Installation Guide*
- *SiteProtector Configuration Guide*
- *SiteProtector Technical Reference Guide*

You can also access the Proventia Network IPS Help System via the Proventia Manager or via SiteProtector's Proventia Network IPS Policy Editor, and you can access the SiteProtector Help System via the SiteProtector Console.

The IBM ISS support knowledgebase is another valuable source of information. Visit the knowledgebase at http://www.iss.net/support/knowledgebase. You can search the knowledgebase using key words or Answer IDs.

For the most current information about product issues and updates, and for information on contacting IBM Customer Support, download the Readme file at http://www.iss.net/download.

Conventions

Typographical Conventions

For paragraph text conventions, see Table 1 on page 7.

For command-line text conventions, see Table 2 on page 8.

Table 1. Typographical Conventions Used in Paragraph Text

Typographical Convention	Types of Information	Usage Examples
Bold	Elements on the graphical user interface.	In the **IP Address** field, type the IP address of the first VAP in the group. Click **OK** to close the dialog. Select the **Print to File** check box.
`Courier`	Keys on the keyboard. File names, folder names, and command names. Any information that you must type exactlly as shown. Program output text.	Press `Esc` to return to the main menu. Save the `user.txt` file in the `user_install` directory. Use the `start` command to start the application. In the **Username** field, type `Administrator`. The XOS CLI `show calendar` command displays the system calendar: `Fri Mar  7 13:32:03 2008`
`Courier Italic`	File names, folder names, command names, or other information that you must supply.	In the **Version Number** field, type `8.1.`*`patch_number`*.
>	A sequence of commands from the task bar or menu bar.	From the taskbar, choose **Start > Run**. From the main menu, choose **File > Save As...** Right-click on the desktop and choose **Arrange Icons By > Name** from the pop-up menu.

Table 2. Typographical Conventions Used in Command-Line Text

Typographical Convention	Types of Information	Usage Examples

`Courier`	User prompts and program output text.	`CBS#` **`show calendar`**
		`Fri Mar  7 13:32:03 2008`

`Courier Bold`	Information that you must type in exactly as shown.	`[root@xxxxx]#` **`md crossbeam`**
`<Courier Italic>`	Angle brackets surrounding Courier italic text indicate file names, folder names, command names, or other information that you must supply.	`[root@xxxxx]#` **`md`** *`<your_folder_name>`*
[ ]	Square brackets contain optional information that may be supplied with a command.	`[root@xxxxx]#` **`dir`** `[`*`drive`*`:] [`*`path`*`] [`*`<filename>`*`] [`**`/P`**`] [`**`/W`**`] [`**`/D`**`].`
|	Separates two or more mutually exclusive options.	`[root@xxxxx]#` **`verify`** `[`**`ON`**`|`**`OFF`**`]`

{ }	Braces contain two or more mutually exclusive options from which you must choose one.	`CBS#` **`configure vap-group`** *`<VAP_group_name>`*
		`CBS(config-vap-grp)#` **`raid`** `{`**`0`**`|`**`1`**`}`

Cautions, Warnings, and Notes

⚠ **Caution:** Lists precautions that you must take to avoid temporary data loss or data unavailability.

⚠ **Warning:** Lists precautions that you must take to avoid personal injury, permanent data loss, or equipment damage.

IMPORTANT: Lists important steps that you must perform properly or important information that you must take into consideration to avoid performing unnecessary work.

NOTE: Provides special information or tips that help you properly understand or carry out a task.

Crossbeam Systems Customer Support

Crossbeam Systems offers a variety of service plans designed to meet your specific technical support requirements. For information on purchasing a service plan for your organization, please contact your account representative or refer to http://www.crossbeam.com/services/support_overview.php.

If you have purchased a Crossbeam Systems product service plan and need technical assistance, you can report issues by telephone:

United States: +1 800-331-1338 **OR** +1 978-318-7595

EMEA: + 33 4 9228 8989 (during normal working hours)
+1 978-318-7595 (outside office hours and on public holidays, if applicable)

Asia Pacific: +1 978-318-7595

You can also report issues via email to support@crossbeamsystems.com.

In addition, all of our service plans include access to the Crossbeam Online Support web site located at http://www.crossbeam.com/services/online_support.php.

The Crossbeam Online Support web site provides you with access to a variety of resources, including Customer Support Knowledgebase articles, technical bulletins, product documentation, and release notes. You can also access our real-time problem reporting application, which lets you submit new technical support requests and view all your open requests.

Crossbeam Systems also offers extensive customer training on all of its products. Please refer to the Crossbeam Training and Education web site located at http://www.crossbeam.com/services/training_education.php for current course offerings and schedules.

IBM Customer Support

IBM ISS provides technical support through its Web site, by email, and by telephone.

The IBM Internet Security Systems (IBM ISS) Resource Center Web site, located at, http://www.iss.net/support, provides direct access to online user documentation, current firmware version listings, detailed product literature, white papers, and the Technical Support Knowledgebase.

Support levels IBM ISS offers three levels of support:

- Standard
- Select
- Premium

Each level provides you with 24x7 telephone and electronic support. Select and Premium services provide more features and benefits than the Standard service. Contact Client Services at clientservices@iss.net if you do not know the level of support your organization has selected.

Table 3 on page 10 provides IBM ISS Technical Support contact information and hours of operation for the Americas and other locations.

Table 3. IBM ISS Customer Support Contact Info and Hours of Operation

Location	Electronic Support	Telephone Numbers	Hours of Operation
North America	Connect to the MYISS section of the Web site: http://www.iss.net	Standard: (1) (888) 447-4861 (toll free) (1) (404) 236-2700 Select and Premium: Refer to your Welcome Kit or call your Primary Designated Contact for this information.	24 hours a day
Latin America	support@iss.net	(1) (888) 447-4861 (toll free) (1) (404) 236-2700	
Europe, Middle East, and Africa	support@iss.net	(44) (1753) 845105	Monday through Friday, 9:00 A.M. to 6:00 P.M. local time, excluding IBM ISS published holidays **Note:** If your local support office is located outside the Americas, you may call or send an email to the Americas office for help during off-hours.
Asia-Pacific, Australia, and the Philippines	support@iss.net	(1) (888) 447-4861 (toll free) (1) (404) 236-2700	
Japan	support@isskk.co.jp	Domestic: (81) (3) 5740-4065	

1

Introduction to the Proventia Network IPS v.2.0 for Crossbeam

This chapter describes how the Proventia Network IPS application operates on the Crossbeam X-Series platform, and describes the configuration options available for the IBM Proventia Network IPS v.2.0 for Crossbeam.

This chapter contains the following sections:

Proventia Network IPS v.2.0 for Crossbeam

IBM Proventia® Network IPS v.2.0 for Crossbeam stops Internet threats before they impact your business network, and delivers complete protection to all three layers of the network: core, perimeter, and remote segments. The Proventia Network IPS employs multiple intrusion prevention technologies which are all highly integrated to work in tandem, providing unprecedented correlation and protection mechanisms. These core technologies enable pre-emptive protection of the network against a wide variety of Internet threats.

The Crossbeam X-Series system’s unique, modular architecture lets you:

- Consolidate your security solutions.
- Scale the application’s performance.
- Provide users with hardware and software high availability.

The combined solution is jointly engineered, tested, and certified by both IBM and Crossbeam, ensuring compatibility of the Proventia Network IPS application with all Crossbeam X-series chassis.

This section explains the Crossbeam X-Series system architecture and explains how the Proventia Network IPS application operates on an X-Series system.

X-Series System Architecture Overview

The Crossbeam X-Series system running the XOS software is an open-networked application platform designed to deliver enhanced application services while providing high performance and high availability. The X-Series system’s modular design allows it to run multiple applications, while providing multi-gigabit throughput performance for all applications.

The Crossbeam X-Series system has a unique, modular architecture design, which provides performance scalability for applications running on the X-Series system, and which provides high availability in case of module failure.

Each X-Series system contains three types of hardware modules:

- Control Processor Module (CPM) maintains overall system configuration, management, and integrity.
- Application Processor Module (APM) hosts a Virtual Application Processor (VAP). A VAP is a set of applications, such as the Proventia Network IPS, which process packets belonging to individual flows.

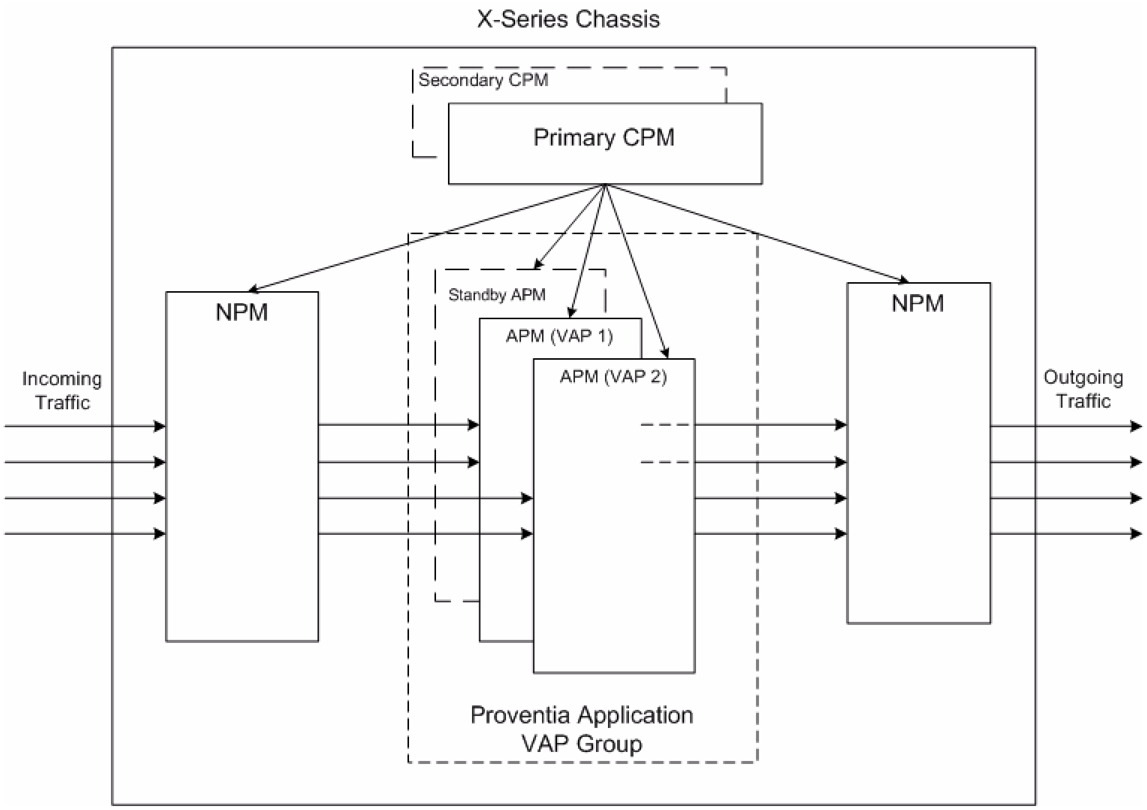
  You install the Proventia Network IPS on a VAP group, which may contain one or more VAPs. If the application's VAP group contains multiple VAPs, you can configure the X-Series system to load-balance traffic across all VAPs in the group.
- Network Processor Module (NPM) provides network connectivity for the X-Series system, classifies packets, and load-balances flows among groups of APMs.

An X-Series system can be configured to provide high availability for all three types of modules and to provide performance scalability for NPMs and APMs.

Refer to Hardware Requirements on page 19 for information about the X-Series chassis and modules that are supported for use with the Proventia Network IPS application.

Figure 1 on page 12 shows how traffic flows through an X-Series system with the Proventia Network IPS application installed on two APMs in an X-Series chassis that contains two CPMs, two NPMs, and three APMs.

Figure 1. High-Level X-Series System Architecture



Proventia Network IPS Application VAPs and VAP Groups

A Virtual Application Processor (VAP) is an application operating environment that runs on an APM. A VAP consists of the OS, system software, and a set of applications (such as the Proventia Network IPS) that run concurrently.

A VAP group is a collection of APMs configured to provide load-balanced network services to run applications installed on the VAP group and to provide high availability to those applications in the event of an APM failure.

The Proventia Network IPS application is installed on a VAP group that consists of one or more VAPs. Each VAP on which the Proventia Network IPS application is installed can function as a single Proventia GC1200 appliance, but if the VAP group contains more than one VAP, all of the appliances (VAPs) in the group act in concert with each other, creating a virtual processing engine comprised of APMs.

The NPM load-balances packet flows among all functioning VAPs in the group, as shown in Figure 1 on page 12; therefore, application performance increases significantly each time an APM is added to the VAP group.

Before you install the Proventia Network IPS application, you must first use the XOS CLI to configure a VAP group, defining the number of VAPs in the group by setting the VAP count and using other parameter settings to control the assignment of VAPs to physical APMs. Refer to Creating and Configuring a VAP Group for the Proventia Application on page 25 for more information.

XOS Configuration of Application Data and Management Interfaces

Before installing the Proventia Network IPS application, you must use the XOS CLI to configure the interfaces that the application will use to monitor traffic and respond to network security threats. You must also use the CLI to configure the interface that Proventia Manager and SiteProtector will use to manage the application. Refer to Basic XOS Configuration Procedures on page 24 for information about configuring interfaces in XOS.

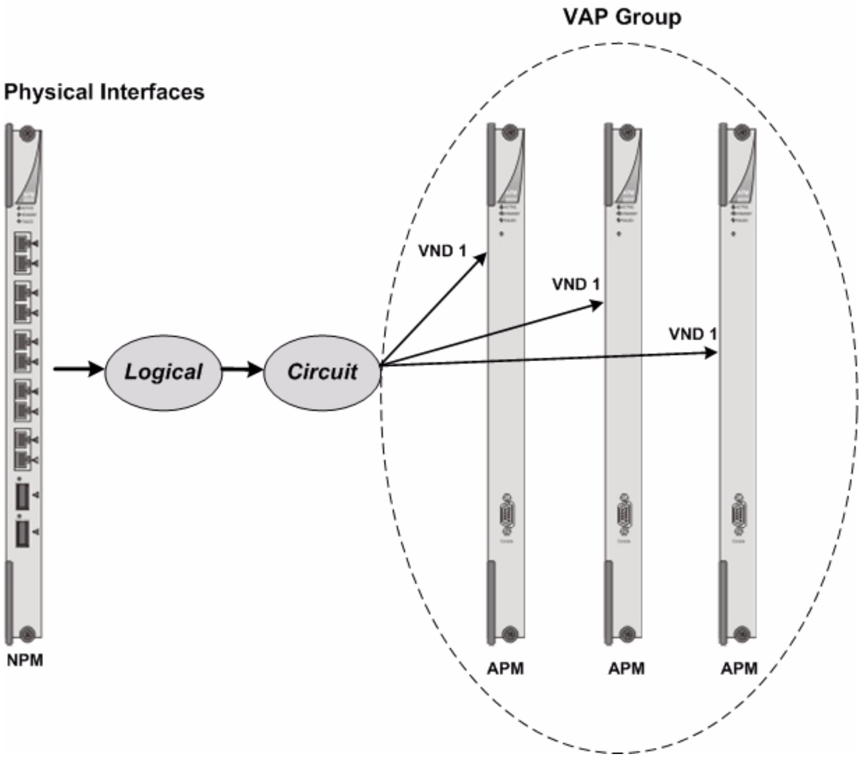
Within XOS, application management and data interfaces have four types of components: physical interfaces, logical interfaces, circuits, and Virtual Network Devices (VNDs). Within XOS, each physical interface on the NPM that is to be used to pass traffic in or out of the VAP group must be mapped to one or more logical interfaces. Each logical interface is then mapped to a circuit.

In addition, some circuits may be defined and configured to pass traffic between multiple VAP groups installed on the same X-Series system. These circuits do not need to be mapped to physical interfaces on the NPM unless the circuits will also be used to pass traffic to and from the X-Series system, since all APMs are connected by a shared data plane.

VAPs see all circuits as VNDs.

Figure 2 on page 14 shows the different components of an XOS configuration of a management or data interface.

Figure 2. XOS Configuration Components of an Application Data or Management Interface



The Proventia Network IPS application treats VNDs as adapter ports on the Proventia GC1200 appliance. Each VAP functions as a separate Proventia GC1200 appliance, while each VAP group functions as an appliance group, or cluster.

NOTE: Although the Proventia Network IPS application treats all VNDs as “adapter ports”, the number of VNDs is often not equal to the number of physical ports on the NPM. Some physical ports on the NPM may be mapped to multiple circuits, and any circuits configured solely to pass traffic between VAP groups within the same X-Series system are not mapped to any physical interface.

In Proventia Manager and SiteProtector, all circuits configured in XOS are represented as VNDs, and all individual physical interfaces configured as part of a single “group interface” for a Multi-Link Trunk (MLT) are also represented at VNDs.

IDS Network Topology Configuration Options

When deployed in Intrusion Detection System (IDS) Passive Monitoring mode, the Proventia Network IPS application provides traditional IDS functionality, monitoring a copy of network traffic passing through a circuit. While in this mode, the application sends alerts and/or notifications whenever it encounters security-related events. The application can also be configured to send Reset packets to attempt to stop a connection if the application detects suspicious network activity over that connection.

You can use Passive Monitoring mode to identify your network's Intrusion Prevention System (IPS) Inline Protection mode policy configuration requirements.

When you deploy the Proventia Network IPS application as an Intrusion Detection System (IDS), you can configure the application to function as one of the following:

- Internal Tap on page 16
- External Tap on page 18

You can configure a Tap to monitor up to 16 circuits at a time.

Internal Tap

An internal Tap monitors traffic flows that are internal to the X-Series system on which the Proventia Network IPS application is installed.

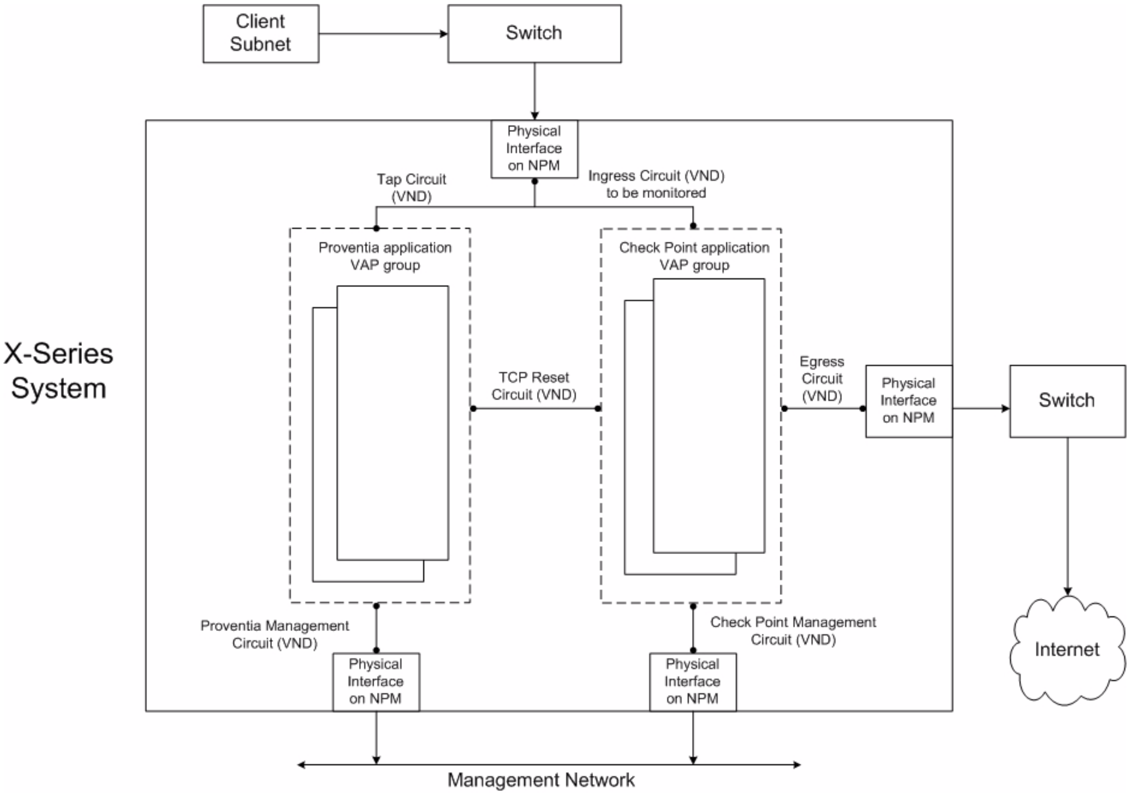
An internal Tap configuration allows the XOS software to copy packets to multiple VAP Groups. This feature allows the Proventia Network IPS application to monitor traffic forwarded or received by another application installed on the same X-Series system. See the *XOS Configuration Guide* for instructions on configuring a virtual Tap, also called a VND Tap.

In an internal Tap configuration, the TCP Reset interface may be connected to an external device, such as a router, or the TCP Reset circuit may be configured as an internal circuit and connected directly to the monitored VAP group, as shown below.

IMPORTANT: You can configure only one TCP Reset circuit per VAP group.

Figure 3 shows a topology diagram of a Standalone IDS configured to function as an internal Tap.

Figure 3. Standalone IDS Internal Tap Configuration


Client Subnet
Switch
Physical Interface on NPM
Tap Circuit (VND)
Ingress Circuit (VND) to be monitored
Proventia application VAP group
Check Point application VAP group
X-Series System
TCP Reset Circuit (VND)
Egress Circuit (VND)
Physical Interface on NPM
Switch
Proventia Management Circuit (VND)
Check Point Management Circuit (VND)
Physical Interface on NPM
Physical Interface on NPM
Internet
Management Network

IMPORTANT: If you configure the TCP Reset circuit as an internal circuit, you must use Proventia Manager to set Local Tuning Parameters to enable each VAP to send TCP Reset packets to the monitored VAP group. (See Application Configuration Requirements on page 47 for instructions.) If you configure an TCP Reset circuit connected to a Check Point firewall, you must disable Anti-Spoofing for that circuit.

You can use an internal Tap to monitor any of the following types of circuits:

- Simple interface — Defined as a single circuit mapped to a single physical interface.
- Redundant Interface

- Multi-Link Trunk (MLT)

  NOTE: Refer to the *XOS Configuration Guide* for limitations and constraints for this type of interface.

- Internal Circuit

See Creating and Configuring Tap and TCP Reset Circuits on page 27 for basic syntax on configuring Tap and TCP Reset circuits for this option.

See Internal Tap Examples on page 38 for examples of configuring Tap and TCP Reset circuits in XOS.

External Tap

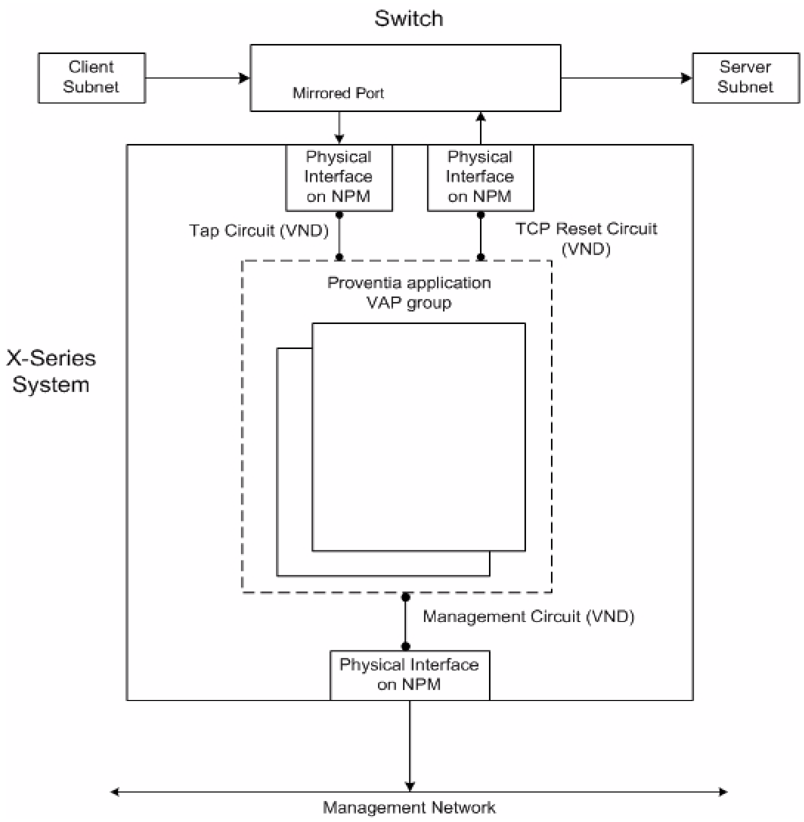
IMPORTANT: This configuration option is supported only on X-Series systems running in Series-6 NPM mode.

An external Tap monitors traffic flows that are external to the X-Series system on which the Proventia Network IPS application is installed.

When you configure an external Tap on the X-series system, an external device, such as a physical Tap or a mirrored port on a switch, sends a copy of its traffic to the X-Series system. An NPM then sends the copied traffic to the Proventia application's VAP group.

Figure 4 shows a topology diagram of a Standalone IDS configured to function as an external Tap.

Figure 4. Standalone IDS External Tap Configuration



You can use an external Tap to monitor any of the following types of circuits:

- Simple interface — Defined as a single circuit mapped to a single physical interface.
- Redundant Interface
- VLAN Trunk (802.1q) (up to 4094 VLANs)

IMPORTANT: You can configure only one TCP Reset circuit per VAP Group; the TCP Reset interface must be connected to an external device, such as a switch.

See Creating and Configuring Tap and TCP Reset Circuits on page 27 for basic syntax on configuring Tap and TCP Reset circuits for this option.

See External Tap Examples on page 43 for examples of configuring Tap and TCP Reset circuits in XOS.

2

Hardware, Software, and Network Requirements

This chapter provides a list of the hardware, software, and network configuration requirements for installing the IBM Proventia Network IPS application as an Intrusion Detection System (IDS) on a Crossbeam X-Series system. This chapter contains the following sections:

- Hardware Requirements on page 19
- Supported Modules on page 20
- Network Configuration Requirements on page 22

Hardware Requirements

Before installing the Proventia Network IPS application, you must make sure the system meets the following hardware requirements.

General Requirements

- The system must include only the supported models of Crossbeam hardware components listed in Table 4 and Table 5 on page 20.
- All models of Control Processor Modules (CPMs), Network Processor Modules (NPMs), and Application Processor Modules (APMs) included in the same X-series chassis must be compatible with one another. Refer to the Crossbeam *X40/X80 Security Switch Hardware Installation Guide* and *X45 Security Switch Hardware Installation Guide* for detailed module compatibility matrices.

Network Processor Module (NPM) Requirements

- If the IDS is to be configured as an external Tap, the X-Series system must be running in Series-6 NPM mode. External Tap configurations are not supported in Series-2 NPM mode.

Application Processor Module (APM) Requirements

- All of the Application Processor Modules (APMs) in a virtual application processor (VAP) group must be the same model. (Each VAP group must contain only APM-8400s or only APM-8600s.)
- Each APM must have a minimum of 2 GB of RAM. (4 GB is recommended.)

  NOTE: Crossbeam recommends that all APMs have the same amount and type of memory installed on them.

- Each APM on which the Proventia Network IPS application is installed must have at least one local hard drive installed on the module.

  NOTE: An APM-8600 can have two local hard drives installed on the module. In this case, the hard drives can be configured to use RAID 0, RAID 1, or no RAID at all. See the *XOS Configuration Guide* for more details on configuring RAID settings on local hard drives installed on APM-8600s.

- Each APM on which the Proventia Network IPS application is installed must have the same number of local hard drives installed on it. If the APMs have two local drives installed on them, each pair of drives must have the same RAID configuration (RAID 0, RAID 1, or no RAID).
- If a single local hard drive is installed on an APM-8600, that drive must be installed in the slot labeled "SATA 1".

Table 4. Supported Chassis

Chassis	Supported Models	Additional Notes
X40 chassis	AC-1, AC-2, AC-3	None
X45 chassis	AC-3	AC-3 is supported only with NPM-8600, NPM-8200, NPM-8210, APM-8600, and CPM-8600 modules.
X80 chassis	AC-1, AC-2, AC-3, DC-1, DC-2	None

Table 5. Supported Modules

Module	Supported Models	Additional Notes
Control Processor Module (CPM)	CPM-8100, CPM-8400, CPM-8600	None
Network Processor Module (NPM)	NPM-8200, NPM-8210, NPM-8600	Multi-application serialization deployments are supported only with NPM-8600s.
Application Processor Module (APM)	APM-8400, APM-8600*	APM-8400 is supported only with dual CPUs. APM-8600 is supported with single and dual CPUs.

*Optimal performance is achieved with APM-8600s.

Software Requirements

Before installing the Proventia Network IPS application, you must make sure the system meets the XOS software version compatibility and configuration requirements listed in the following sections:

- Software Version Compatibility Requirements on page 21
- XOS Configuration Requirements on page 21
- Required Crossbeam Installation (CBI) Package on page 22

Software Version Compatibility Requirements

The Proventia Network IPS application is supported on Crossbeam X-Series systems that run XOS version 8.1 and later.

For information on Proventia Network IPS application version support, refer to the *XOS V8.1 Release Notes*.

XOS Configuration Requirements

Before installing the Proventia Network IPS application, you must complete the following XOS configuration procedures:

- Configure an IP domain name for the X-series system on which the application is to be installed.

  See Configuring an IP Domain Name for the X-Series System on page 25 for instructions.
- Create and configure a VAP group for the application.

  See Creating and Configuring a VAP Group for the Proventia Application on page 25 for instructions.
- Create and configure a management circuit for the application and map the circuit to the application's VAP group.

  See Creating and Configuring a Management Circuit on page 26 for instructions.
- Create and configure the Tap and TCP Reset circuits, and map both circuits to the application's VAP group.

  See Creating and Configuring Tap and TCP Reset Circuits on page 27 for instructions.

The above components of the XOS configuration must meet the requirements listed in the following sections:

- VAP Group Configuration Requirements on page 21
- Circuit Configuration Requirements on page 22
- Additional XOS Configuration Requirements on page 22

VAP Group Configuration Requirements

- The VAP group on which you plan to install the application cannot have any other applications installed on it.
- The application's VAP group must be configured to use the `xslinux_v3` kernel (the default setting for a VAP group configuration).
- The application's VAP group must have a max load count equal to its VAP count.
- A DNS server must be configured for the VAP group on which the application is to be installed.
- All VAPs in the application's VAP group must be UP before the application can be installed.
- Crossbeam and IBM recommend that you configure a fully-qualified domain name (FQDN) for each VAP in the VAP group. SiteProtector and Proventia Manager will display each VAP's FQDN along with the IP address assigned to that VAP's management interface.

Circuit Configuration Requirements

- All circuits must be configured with user-specified device names, using the `device-name <device_name>` parameter. Device names are used to identify circuits displayed in SiteProtector and Proventia Manager.

Management Circuit Configuration Requirements

- If the X-Series system is running in Series-2 NPM mode, the management circuit must be configured with the `ip-flow-rule-no-failover` option.
- The management circuit must be configured with the `increment-per-vap` parameter, even if the VAP group contains only one VAP.
- The management circuit must be configured with the `management-circuit` option.
- The physical link to the management circuit must be UP before the application can be installed.

Tap and TCP Reset Circuit Configuration Requirements

- The Tap circuit must be configured with the `promiscuous-mode` parameter.
- The physical link to the TCP Reset circuit must be UP before the application can be installed.
- If the TCP Reset circuit is an internal circuit, it must be assigned to an IP address for the VAP group whose traffic is being monitored, and the VAP group to be monitored must be configured with the `no rp-filter` parameter.

Additional XOS Configuration Requirements

- If you wish to install the Proventia Network IPS application on multiple VAP groups on the same X-series system, you must install the application on each VAP group separately. You cannot install the application on multiple VAP groups at the same time.

Required Crossbeam Installation (CBI) Package

To run the CBI for the Proventia Network IPS application, you must first place the following CBI package into the `/crossbeam/apps/archive` directory on the CPM:

```
issprovg-2.0-1.cbi
```

See Copying the Crossbeam Installation (CBI) Package onto the X-Series System on page 29 for instructions on obtaining the CBI package.

Network Configuration Requirements

Before installing the Proventia Network IPS application, make sure your network meets the following configuration requirements:

- All physical network connections required to support the desired application deployment and configuration options must be functioning normally before the application is installed. (See IDS Network Topology Configuration Options on page 15 for a list of options you can choose.)
- The physical links to the management and TCP Reset circuits must be UP before the application can be installed.

3

Preparing for Installation

This chapter describes the procedures that you must perform before installing the Proventia Network IPS on a Crossbeam X-series system.

This chapter contains the following sections:

- Pre-Installation Procedure Overview on page 23
- Prerequisite Reading on page 24
- Basic XOS Configuration Procedures on page 24

Pre-Installation Procedure Overview

Before installing the IBM Proventia Network IPS, you must perform the following steps:

1. Read the Crossbeam Systems and IBM documents listed in Prerequisite Reading on page 24.

   You must have a thorough understanding of this material before attempting to install, configure, and run the IBM Proventia Network IPS application.

2. Make sure the X-series system meets all the requirements listed in Hardware Requirements on page 19 and Software Version Compatibility Requirements on page 21.

3. Choose the configuration options that you want to implement upon installation of the Proventia Network IPS application.

   See IDS Network Topology Configuration Options on page 15 for descriptions of the specific options that you can choose.

4. Configure all the physical network connections required for the configuration options that you have chosen.

5. Configure the XOS to meet all the requirements listed in XOS Configuration Requirements on page 21 and Network Configuration Requirements on page 22.

   Basic XOS Configuration Procedures on page 24 contains instructions on configuring XOS to meet the basic requirements.

Prerequisite Reading

Before installing the Proventia Network IPS application on a Crossbeam X-series system, you must have a thorough understanding of the material presented in the following documents:

- Crossbeam documents available on the Crossbeam documentation CD and on the Crossbeam Customer Support web site located at http://www.crossbeamsystems.com/service-support/on-line.cfm:
  - *XOS Configuration Guide*
  - *XOS Release Notes*
- IBM documents available on the IBM ISS documentation web site located at http://www.iss.net/support/documentation:
  - *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*
  - *Proventia Network IPS Data Sheet*
  - *Proventia Network IPS Frequently Asked Questions*

Basic XOS Configuration Procedures

To meet the basic XOS configuration requirements, you must perform the following tasks:

- Configure an IP domain name for the X-series system on which the application is to be installed.

  See Configuring an IP Domain Name for the X-Series System on page 25 for instructions.
- Create and configure a VAP group for the application.

  See Creating and Configuring a VAP Group for the Proventia Application on page 25 for instructions.
- Create and configure a management circuit for the application and map the circuit to the application's VAP group.

  See Creating and Configuring a Management Circuit on page 26 for instructions.
- Create and configure the Tap and TCP Reset circuits, and map both circuits to the application's VAP group.

  See Creating and Configuring Tap and TCP Reset Circuits on page 27 for instructions.

Configuring an IP Domain Name for the X-Series System

Configure an IP domain name for the X-series system on which the application is to be installed:

```
CBS# configure ip domainname <domain_name>
```

where `<domain_name>` is an alphanumeric string, which may include characters, such as dashes and symbols.

For example:

```
CBS# configure ip domainname mycompany.com
```

Creating and Configuring a VAP Group for the Proventia Application

1. Create a VAP group for the Proventia Network IPS application and configure it to use the xslinux_v3 kernel:

   ```
   CBS# configure vap-group <VAP_group_name> xslinux_v3
   ```

2. Set the VAP count and the max load count for the VAP group to be equal to the number of APMs that you plan to include in the VAP group:

   ```
   CBS(config-vap-grp)# vap-count <number_of_APMs_in_group>
   CBS(config-vap-grp)# max-load-count <number_of_APMs_in_group>
   ```

3. Configure the AP list for the VAP group:

   ```
   CBS(config-vap-grp)# ap-list <ap_name1> [<ap_name2>] [<ap_name3>] ...
   ```

   where `<ap_name#>` is the name that the XOS has assigned to the APM.

   IMPORTANT: Make sure the AP list includes only APM-8400s or only APM-8600s. Use the `show chassis` command to determine the model numbers and assigned names of the APMs in your chassis.

4. If the VAP group contains APM-8600s, each APM has two local hard drives, and you wish to configure RAID 0 or 1, use the following command to do so:

   ```
   CBS(config-vap-grp)# raid {0|1}
   ```

5. Configure a basic IP flow rule for the VAP group:

   ```
   CBS(config-vap-grp)# ip-flow-rule <ip_flow_rule_name>
   CBS(ip-flow-rule)# action load-balance
   CBS(ip-flow-rule)# activate
   CBS(ip-flow-rule)# end
   ```

6. Configure a DNS server for the VAP group:

   ```
   CBS# configure dns server <server_ip_addr> vap-group <VAP_group_name>
   ```

   where `<server_ip_addr>` is the DNS server's IP address and `<VAP_group_name>` is the name of the VAP group on which the Proventia Network IPS application is to be installed.

7. If desired, use the following command to configure a unique FQDN **for each VAP,** and map the FQDN to the IP address that you plan to assign to that VAP's management interface.

   ```
   CBS# configure host <management_ip_address> <hostname>.<domain_name>
   ```

   where:

   - *`<management_ip_address>`* is the IP address that you plan to assign to the management interface for this VAP.

     See Creating and Configuring a Management Circuit on page 26 for instructions on assigning IP addresses to the management interfaces for the VAPs in a VAP group.
   - *`<hostname>`* is the unique hostname assigned to the VAP.
   - *`<domain_name>`* is the IP domain name that you configured for the X-series system.

     See Configuring an IP Domain Name for the X-Series System on page 25 for instructions on configuring an IP domain name for the X-series system.

   When you configure an FQDN for a VAP, you can use Proventia Manager to login to that VAP by entering its hostname in a Web browser URL (`https://<FQDN>`). If you do not configure an FQDN for a VAP, when you want to use Proventia Manager to login to that VAP, you must enter the IP address assigned to the management circuit for that VAP (`https://<management_IP_address>`).

Creating and Configuring a Management Circuit

1. Create a management circuit, assign a device name to the circuit, and map the circuit to the application's VAP group:

   ```
   CBS# configure circuit <management_circuit_name> device-name
   <management_circuit_device_name>
   CBS(conf-cct)# vap-group <VAP_group_name>
   CBS(conf-cct-vapgroup)# management-circuit
   ```

   IMPORTANT: During installation, the value that you enter when prompted for the `Management Port Interface` must be the same as the value that you enter for *`<management_circuit_device_name>`* above. If these two values do not match, the management circuit will not work.

2. If the X-Series system is running in Series-2 NPM mode, configure the management circuit with the `ip-flow-rule-no-failover` option:

   ```
   CBS(conf-cct-vapgroup)# ip-flow-rule-no-failover
   ```

3. Configure the management circuit to use a unique IP address to access each VAP in the group:

   ```
   CBS(conf-cct-vapgroup)# ip <ip_address_of_first_VAP_in_group>/<netmask>
   <broadcast_address> increment-per-vap <ip_address_of_last_vap_in_group>
   CBS(conf-cct-vapgroup)# end
   ```

4. Assign the management circuit to a physical interface:

   ```
   CBS# configure interface {fastethernet | gigabitethernet | 10gigabitethernet}
   <NPM_slot_number>/<port_number>
   CBS(conf-intf-<iftype>)# logical <logical_name>
   CBS(intf-<iftype>-logical)# circuit <management_circuit_name>
   CBS(intf-<iftype>-logical)# end
   ```

   NOTE: On NPM-8600s, ports 11 and 12 support only 10 Gigabit Ethernet.

5. Configure a default IP route for the management circuit to use to communicate with the VAP group:

   ```
   CBS# configure ip route <first_ip_address_in_range>/<netmask>
   <next_hop_IP_address> vap-group <VAP_group_name> circuit
   <management_circuit_name>
   ```

   For example:

   ```
   CBS# configure ip route 190.1.1.0/24 192.213.212.111 vap-group
   iss circuit mgmt
   ```

Creating and Configuring Tap and TCP Reset Circuits

NOTE: This section explains how to configure Tap and TCP Reset circuits that use simple, non-redundant interfaces. For examples of circuits configured to use more complex interfaces, see Example XOS Configurations for Supported Use Cases on page 37.

Create and configure the Tap and TCP Reset circuits, and map both circuits to the application's VAP group, as follows:

1. Create a circuit for the Tap interface:

   ```
   CBS# configure circuit <Tap_circuit_name>
   CBS(conf-cct)# device-name <Tap_circuit_device_name>
   ```

2. Map the circuit to the application's VAP group:

   ```
   CBS(conf-cct)# vap-group <VAP_group_name>
   ```

3. Place the circuit in promiscuous mode so that it functions as a Tap.

   ```
   CBS(conf-cct-vapgroup)# promiscuous-mode
   CBS(conf-cct-vapgroup)# end
   ```

4. Assign the circuit to a physical interface:

   ```
   CBS# configure interface {fastethernet | gigabitethernet | 10gigabitethernet}
   <NPM_slot_number>/<port_number>
   CBS(conf-intf-<iftype>)# logical <logical_name>
   CBS(intf-<iftype>-logical)# circuit <Tap_circuit_name>
   CBS(intf-<iftype>-logical)# end
   ```

   NOTE: On NPM-8600s, ports 11 and 12 support only 10 Gigabit Ethernet.

5. Create an TCP Reset circuit and assign a device name to the circuit:

   ```
   CBS# configure circuit <TCP_Reset_circuit_name> device-name
   <TCP_Reset_circuit_device_name>
   ```

   IMPORTANT: During installation, the value that you enter when prompted for the `Kill Port Interface` must be the same as the value that you enter for *<TCP_Reset_circuit_device_name>* above. If these two values do not match, the TCP Reset circuit will not work.

6. Map the circuit to the application's VAP group

   ```
   CBS(conf-cct)# vap-group <VAP_group_name>
   CBS(conf-cct-vapgroup)# end
   ```

7. If you are configuring an internal Tap and you want to configure the TCP Reset circuit as an internal circuit, perform the following steps:

   a. Apply the `internal` parameter to the TCP Reset circuit:

   ```
   CBS# configure circuit <TCP_Reset_circuit_name>
   CBS(conf-cct)# internal
   ```

   b. Assign the TCP Reset circuit to the VAP group whose traffic is being monitored:

   ```
   CBS(conf-cct)# vap-group <monitored_VAP_group_name>
   ```

   c. Configure the TCP Reset circuit to use a specific IP address to send TCP Reset packets to the VAP group whose traffic is being monitored:

   ```
   CBS(conf-cct-vapgroup)# ip <ip_address>/<netmask>
   CBS(conf-cct-vapgroup)# end
   ```

   d. Configure the VAP group whose traffic is being monitored and specify the `no rp-filter` parameter:

   ```
   CBS# configure vap-group <monitored_VAP_group_name> no rp-filter
   CBS(conf-vap-grp)# end
   ```

8. If you are configuring an external Tap, assign the TCP Reset circuit to a physical interface:

   ```
   CBS# configure interface {gigabitethernet | 10gigabitethernet}
   <NPM_slot_number>/<port_number>
   CBS(conf-intf-<iftype>)# logical <logical_name>
   CBS(intf-<iftype>-logical)# circuit <TCP_Reset_circuit_name>
   CBS(intf-<iftype>-logical)# end
   ```

   NOTE: If you want to configure an external Tap, your X-Series system must be running in Series-6 NPM mode.

   NOTE: On NPM-8600s, ports 11 and 12 support only 10 Gigabit Ethernet.

4

Installing the Application

This document describes how to install the Proventia Network IPS application.

This chapter contains the following sections:

Copying the Crossbeam Installation (CBI) Package onto the X-Series System

To load the application onto the X-series system, perform the following steps **on each CPM in the X-Series chassis:**

1. Download the CBI file, `issprovg-2.0-1.cbi`, from the IBM ISS download web site, located at http://www.iss.net/download/index.html, onto a remote Linux machine.
2. Copy the CBI file from the Linux machine onto the CPM. For example, you can use SCP to copy the file:

```
[root@xxxxx admin]# scp issprovg-2.0-1.cbi admin@<ip_address_of_CPM>:
admin@<ip_address_of_CPM>'s password: <admin_password_for_CPM>
```

   SCP displays a successful transfer, as follows:

```
issprovg-2.0-1.cbi                                  100%  100MB
7.2MB/s   00:14
```

3. Log into your XOS system as root:

```
CBS# unix su
Password:<root_password>
[root@xxxxx admin]#
```

4. Move the CBI file into the `/crossbeam/apps/archive/` directory. When the file is transfered to the CPM, the file will be located in `/tftpboot/.private/home/admin/`.

```
[root@xxxxx admin]# mv issprovg-2.0-1.cbi /crossbeam/apps/archive/
```

5. Exit the unix shell to return to the CLI prompt:

```
[root@xxxxx admin]# exit
```

6. Display the loaded applications:

```
CBS# show application
```

```
App ID          : issprovg
Name            : IBM Proventia Network IPS
Version         : 2.0
Release         : 1
CBI Version     : 1.1.0.0
```

Installing the CBI Application Bundle

IMPORTANT: The following conditions must be met or the installation will fail:

- The APMs in the application's VAP group must meet the requirements listed in Application Processor Module (APM) Requirements on page 19.
- The primary CPM, the NPM(s), and all APMs in the application's VAP group must be UP.
- The VAP count must be equal to the max load count.
- The management circuit must be configured, and the physical link to the management interface must be UP.
- The TCP Reset circuit must be configured, and the physical link to the TCP Reset (kill port) interface must be UP.

Use the CBI to install the Proventia Network IPS application, as follows:

1. At the XOS CLI prompt, enter the following command to run the Proventia Network IPS application CBI and begin the installation procedure:

   ```
   CBS# application issprovg vap-group <VAP_group_name> install
   ```

   For *<VAP_group_name>*, enter the name of the VAP group that you created for the Proventia Network IPS application.

2. The following text appears:

   ```
   IBM Internet Security Systems, IBM Proventia Network IPS 2.0  release 1
   ```

3. The XOS then checks the integrity of the CBI package and its dependencies, displaying the following text to show the progress of that operation:

   ```
   Checking Bundle Integrity: [####################] 100% [ ok ]

   Checking Dependencies: [####################] 100% [ ok ]
   ```

4. The XOS begins the CBI interview process by displaying the terms and definitions for the Proventia Network IPS application license agreement and prompting you to read the agreement:

   ```
   Press ENTER to read or 'q' to quit:
   ```

5. Press `Enter` to read the license agreement. When finished, type `y` and press `Enter` to accept the license agreement:

   ```
   [License agreement displayed here]

   Accept the license agreement? [n]: y
   ```

6. When prompted, enter the admin password for the Proventia Manager application.

   ```
   Answer the questions below to configure this application.  Type '?' for help.

   Change password for Proventia Manager user 'admin':
   Password:
   Confirm Password:
   ```

   The password must be between 6 and 99 characters long and cannot contain any of the following characters: `` #&*()|"<>\;'` ``

   NOTE: The admin password for the Proventia Manager is NOT the same as the admin password for the XOS CLI or EMS.

7. When prompted, enter the agent name to be used by Proventia Manager and SiteProtector to reference the VAP group. The default agent name is `Proventia_GC1200`.

   ```
   Agent Name? [Proventia_GC1200]:
   ```

   The agent name must begin with a letter or number and can include letters, numbers, and the dash (-) and underscore (_) characters.

   The agent name has a maximum length of 100 characters (including VAP name).

   Proventia Manager and SiteProtector will append each VAP's name to the agent name that you choose.

   For example, if your VAP group name is `iss`, and you have 2 VAPs in the group, XOS will automatically name the VAPs `iss_1` and `iss_2`. If you specify the agent name, `Proventia`, the Proventia Manager and SiteProtector will refer to the VAPs as `Proventia_iss_1` and `Proventia_iss_2`.

8. When prompted, enter `m`, to configure the Proventia Network IPS application to operate in Intrusion Detection System (IDS) Passive Monitoring mode.

   ```
   Adapter Mode Configuration? [s]: m
   ```

9. When prompted for the management port interface, enter the device name that you assigned to the management circuit. (See Creating and Configuring a Management Circuit on page 26 for details.)

   ```
   Management Port Interface? [provgmgmt]
   ```

   IMPORTANT: The value that you enter when prompted for the `Management Port Interface` must be the same as the value that you entered for *`<management_circuit_device_name>`* when you configured the management circuit. If these two values do not match, the management circuit will not work.

   If the management circuit is not configured or if the physical link to the management interface is DOWN, the installation will prompt you to enter a different management interface name. You cannot proceed with the installation until you specify the correct device name for the management circuit, the management circuit is configured, and the physical link to the management interface is UP.

10. When prompted for the kill port interface, enter the device name that you assigned to the TCP Reset circuit. (See Creating and Configuring Tap and TCP Reset Circuits on page 27 for details.)

    ```
    Kill Port Interface? [provgkill]:
    ```

    IMPORTANT: The value that you enter when prompted for the `Kill Port Interface` must be the same as the value that you entered for *`<TCP_Reset_circuit_device_name>`* when you configured the TCP Reset circuit. If these two values do not match, the TCP Reset circuit will not work.If the TCP Reset circuit is not configured or if the physical link to the TCP Reset (kill port) interface is DOWN, the installation will fail at this point.

    If the TCP Reset circuit is not configured or if the physical link to the TCP Reset (kill port) interface is DOWN, the installation will prompt you to enter a different kill port interface name. You cannot proceed with the installation until you specify the correct device name for the TCP Reset circuit, the TCP Reset circuit is configured, and the physical link to the TCP Reset (kill port) interface is UP.

11. When prompted, if you want to change any configuration settings before installing the application, type `y` and press `Enter` to return to the first question in the installation interview. If you do not want to change configuration settings, press `Enter` to begin installing the application.

    ```
    Are any changes needed? [n]:
    ```

12. XOS installs the Proventia Network IPS application on the VAP group that you specified in step 1 of this procedure. XOS displays the progress of the application installation on each VAP.

    For example, the following text appears when the application is installed on a VAP group called `iss` that consists of two VAPs:

    ```
    Extracting Bundle: [####################] 100% [ ok ]

    Installing issprovg on VAP iss_2: [####################] 100% [ ok ]

    Installing issprovg on VAP iss_1: [####################] 100% [ ok ]

    A vap-group reload is required for the change(s) to take affect.
    Please run the CLI command "reload vap-group iss".
    ```

13. If desired, save the XOS configuration so that it runs on startup:

    ```
    CBS# copy running-config startup-config
    ```

14. Reboot the VAP group so that the installation can take effect:

    ```
    CBS# reload vap-group <VAP_group_name>
    ```

15. When prompted, press `Enter` to proceed with the reload:

    ```
    Proceed with reload? <Y or N> [Y]:
    ```

After the VAP has rebooted, the installation is complete, and you can begin using Proventia Manager to configure the application and to register with SiteProtector.

IMPORTANT: Once the initial installation is complete, if you change the IP address, FQDN, or device name (interface name) assigned to the management circuit for a VAP, you must reconfigure the management interface for that VAP. To do this, enter the following CLI command, and choose option `3` from the menu:

```
CBS# application issprovg vap-group <VAP_group_name> configure
```

```
IBM Proventia Network IPS Configuration Menu
1. Configure Proventia Manager Password
2. Configure Agent Name (requires application restart)
3. Configure Management Interface (requires application restart)
4. Exit

Enter choice: 3
```

Verifying the Installation

Use the following command to verify that the application is running:

```
CBS# show application vap-group <VAP_group_name>
```

where *`<VAP_group_name>`* is the name of the VAP group on which you have installed the application.

For example, if you install the Proventia Network IPS application on the VAP group, `iss`, which has two VAPs in the group, the following command:

```
CBS# show application vap-group iss
```

should produce the following output:

```
VAP Group      : iss
App ID         : issprovg
Name           : IBM Proventia Network IPS
Version        : 2.0
Release        : 1
Start on Boot  : yes
App Monitor    : on

iss_1          : running
iss_2          : running
```

Troubleshooting the Installation

If the installation fails before it is complete, you can view the log files in the following locations:

- **Syslog files —** On the CPM, in the `/var/log/messages/` directory
- **Log files** — On each VAP, in the `/tmp/issarchive/` directory

You can also view the installation error and warning messages in the `/var/log/messages` directory by issuing the following CLI command:

```
CBS# show logging console component cbi level error
```

If the installation completes, you can view the installation errors by looking at the `/var/iss/setup.log` file stored on each VAP. You can also download a VAP's `setup.log` file from the Proventia Manager web-based interface by accessing the IP address or host name assigned to the VAP's management interface.

5

Uninstalling the Application

This chapter explains how to uninstall the Proventia Network IPS application.

This chapter contains the following sections:

- Uninstalling the CBI Application Bundle on page 35
- Troubleshooting the Uninstallation on page 36

Uninstalling the CBI Application Bundle

IMPORTANT: The following conditions must be met or the uninstallation will fail:

- All VAPs must be unregistered from Site Protector. If any VAPs are registered with SiteProtector, the uninstallation fails. (Refer to Troubleshooting the Uninstallation on page 36 for information on error messages generated when this failure occurs.)
- The primary CPM, the NPM(s), and all APMs in the application's VAP group must be UP.
- The VAP count must be equal to the max load count.

To uninstall the application, perform the following steps:

1. From the CLI, enter the following command:

   ```
   CBS# application issprovg vap-group <VAP_group_name> uninstall
   ```

2. When prompted, press `Enter` to confirm the uninstallation.

   ```
   Are you sure you want to uninstall application? <Y or N> [Y]:
   ```

3. The XOS displays the following text:

   ```
   IBM Internet Security Systems, IBM Proventia Network IPS 2.0  release 1

   Checking Dependencies: [####################] 100% [ ok ]
   ```

4. The XOS then stops the application on each VAP in the group and displays the progress of these operations. For example, the following text appears when XOS stops the application on a VAP group called `iss` that contains two VAPs:

   ```
   Stopping issprovg on VAP iss_2: [####################] 100% [ ok ]

   Stopping issprovg on VAP iss_1: [####################] 100% [ ok ]
   ```

   NOTE: If the application was already stopped when you began the uninstallation, you may see some error or warning messages at this point; you can safely ignore these messages.

5. The XOS then uninstalls the application from each VAP in the group and displays the progress of these operations. For example, the following text appears when XOS uninstalls the application from a VAP group called `iss`, which contains two VAPs:

   ```
   Uninstalling issprovg on VAP iss_2: [####################] 100% [ ok ]

   Uninstalling issprovg on VAP iss_1: [####################] 100% [ ok ]
   ```

6. When the uninstallation is complete, the XOS displays the following text:

   ```
   A vap-group reload is required for the change(s) to take affect.
   Please run the CLI command "reload vap-group iss".*
   ```

7. Reboot the VAP group so that the uninstallation can take effect:

   ```
   CBS# reload vap-group <VAP_group_name>
   ```

8. When prompted, type `y` and press `Enter` to proceed with the reload:

   ```
   Proceed with reload? <Y or N> [Y]:
   ```

Troubleshooting the Uninstallation

If the uninstallation fails before it is complete, you can view the log files in the following locations:

- **Syslog files —** On the CPM, in the `/var/log/messages/` directory
- **Log files** — On each VAP, in the `/tmp/issarchive/` directory

You can also view the uninstallation error and warning messages in the `/var/log/messages` directory by issuing the following CLI command:

```
CBS# show logging console component cbi level error
```

NOTE: If the uninstallation fails because you have not unregistered all VAPs from SiteProtector before uninstalling the application, the above command displays the following error message:

```
This sensor appears to be managed by Site Protector. Uninstalling without
first unregistering from Site Protector can lead to orphaned sensors in
Site Protector. Before proceeding with the uninstall, please restart the
application and then unregister each VAP by accessing the VAP's Proventia
Manager web interface and unchecking the "Register with SiteProtector" box
in the System->Management page. If you wish to force the uninstall without
unregistering, you can remove the file /etc/lmi/spregistered from each VAP
in your VAP-group (this is not recommended).
```

6

Example XOS Configurations for Supported Use Cases

This chapter provides topology diagrams that illustrate the use cases supported for Proventia Network IPS applications installed on Crossbeam X-series systems and provides detailed XOS configuration examples for the supported use cases for each topology configuration option.

This chapter contains the following sections:

Internal Tap Examples

In this scenario, Proventia Network IPS is deployed in IDS Passive Monitoring mode, receiving a copy of packets passing through another application (parallelized, not serialized) in the X-Series system.You achieve this packet duplication by configuring a virtual Tap. See the *XOS Configuration Guide* for instructions on configuring a virtual Tap, also called a VND Tap.

IMPORTANT: You can configure only one TCP Reset circuit per VAP group.

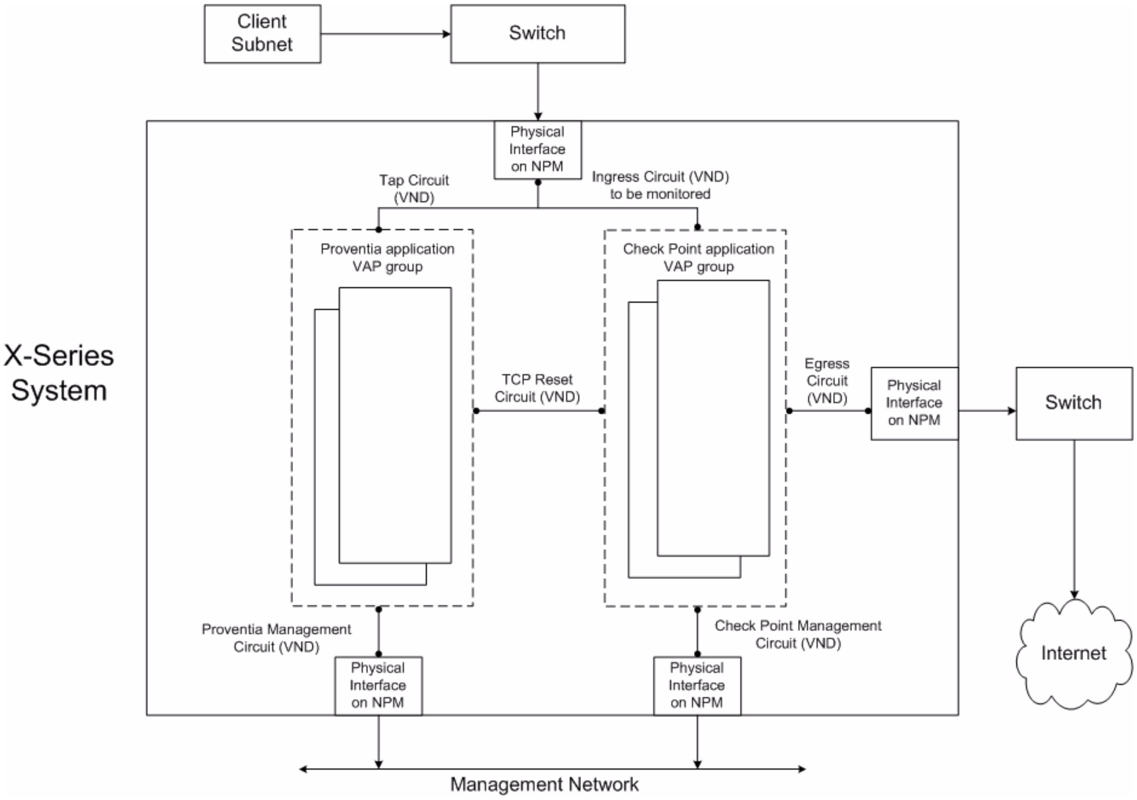
To configure the Proventia application to send TCP Reset packets through the TCP Reset (kill port) interface or through an internal circuit connected to the monitored VAP group, you must use Proventia Manager to configure the kill port interface on each VAP in the Proventia application VAP group. See Application Configuration Requirements on page 47 for instructions.

If you configure the TCP Reset circuit as an internal circuit connected to a Check Point firewall, you must disable Anti-Spoofing for that circuit.

Topology Diagram

The following figure illustrates the topology of a standalone IDS configured to function as an internal Tap.

Figure 5. Standalone IDS Internal Tap Configuration


Client Subnet
Switch
Physical Interface on NPM
Tap Circuit (VND)
Ingress Circuit (VND) to be monitored
Proventia application VAP group
Check Point application VAP group
X-Series System
TCP Reset Circuit (VND)
Egress Circuit (VND)
Physical Interface on NPM
Switch
Proventia Management Circuit (VND)
Check Point Management Circuit (VND)
Internet
Physical Interface on NPM
Physical Interface on NPM
Management Network

Example XOS Configurations

You can use an internal Tap to monitor up to 16 circuits.

This section contains examples that show how to use the XOS CLI to configure Tap and TCP Reset circuits for an internal Tap using each of the following supported interface types:

- Simple Interface Examples on page 39
- Multi-Link Trunk (MLT) Example on page 41
- Internal Circuit Example on page 42

Simple Interface Examples

The following two examples show how to configure internal Tap circuits using simple interfaces:

- Monitoring Traffic Destined for Another VAP Group Configured on the X-Series System on page 39
- Monitoring Traffic on an Internal Circuit Between Two Other VAP Groups Configured on the X-Series System on page 40

Monitoring Traffic Destined for Another VAP Group Configured on the X-Series System

In this example, the Proventia Network IPS application is to be installed on a VAP group named `iss`, and the application is to be deployed in IDS Passive Monitoring mode. An internal Tap will be configured to monitor traffic passing through circuit `dmz` to another VAP group named `fw`, which has been created and configured on the same X-Series system.

The existing configuration for circuit `dmz` is:

```
circuit dmz
   device-name dmz
   vap-group fw
      ip 2.0.0.1/8 2.255.255.255
```

Configure the internal Tap, as follows:

1. Configure the Tap circuit:

   ```
   CBS# configure circuit dmz
   ```

2. Map the Tap circuit to the VAP group on which you plan to install the Proventia Network IPS application:

   ```
   CBS(conf-cct)# vap-group iss
   ```

3. Place the circuit in promiscuous mode, so that the VAP group functions as a Tap:

   ```
   CBS(conf-cct-vapgroup)# promiscuous-mode
   ```

Monitoring Traffic on an Internal Circuit Between Two Other VAP Groups Configured on the X-Series System

In this example, the Proventia Network IPS application is to be installed on a VAP group named `iss`, and the application is to be deployed in IDS Passive Monitoring mode. An internal Tap will be configured to monitor traffic passing through circuit `ser1` between two other VAP groups, `fw1` and `fw2`, which have been created and configured on the same X-series system.

The existing configuration for circuit `ser1` is:

```
circuit ser1
   device-name ser1
   vap-group fw1
      ip 2.0.0.1/8 2.255.255.255
   vap-group fw2
      ip 2.0.0.254/8 2.255.255.255
```

Configure the internal Tap, as follows:

1. Configure the Tap circuit:

   ```
   CBS# configure circuit ser1
   ```

2. Map the Tap circuit to the VAP group on which you plan to install the Proventia Network IPS application:

   ```
   CBS(conf-cct)# vap-group iss
   ```

3. Place the circuit in promiscuous mode, so that the VAP group functions as a Tap:

   ```
   CBS(conf-cct-vapgroup)# promiscuous-mode
   ```

Multi-Link Trunk (MLT) Example

In this example, the Proventia Network IPS application is to be installed on a VAP group named `iss`, and the application is to be deployed in IDS Passive Monitoring mode. An internal Tap will be configured to monitor traffic passing through circuit `lan` to another VAP group named `fw`, which has been configured on the same X-series system and which receives traffic over an MLT interface.

The existing configuration for circuit `lan` is:

```
circuit lan
   device-name lan
   vap-group fw
      ip-forwarding
      ip 2.0.101.1/24 2.0.101.255
```

Configure the internal Tap, as follows:

1. Configure the Tap circuit:

   ```
   CBS# configure circuit lan device-name lan
   ```

2. Map the Tap circuit to the VAP group on which you plan to install the Proventia Network IPS application:

   ```
   CBS(conf-cct)# vap-group iss
   ```

3. Place the circuit in promiscuous mode, so that the VAP group functions as a Tap:

   ```
   CBS(conf-cct-vapgroup)# promiscuous-mode
   CBS(conf-cct-vapgroup)# end
   ```

4. Create a group interface for the multi-link trunk:

   ```
   CBS# configure group-interface lan_group
   ```

5. Place the group interface in multi-link mode, and map the group interface to the Tap circuit:

   ```
   CBS(conf-group-intf)# mode multi-link circuit lan
   ```

6. Configure an interface type for the group interface:

   ```
   CBS(conf-group-intf)# interface-type gigabitethernet
   CBS(conf-grp-intf-gig)# exit
   ```

7. Map the circuit to the physical interfaces for the multi-link trunk:

   ```
   CBS(conf-group-intf)# interface 1/1
   CBS(conf-group-intf-intf)# exit
   CBS(conf-group-intf)# interface 1/2
   CBS(conf-group-intf-intf)# exit
   CBS(conf-group-intf)# interface 1/3
   CBS(conf-group-intf-intf)# exit
   CBS(conf-group-intf)# interface 1/4
   CBS(conf-group-intf-intf)# exit
   CBS(conf-group-intf)# interface 1/5
   CBS(conf-group-intf-intf)# end
   ```

Internal Circuit Example

To create an internal circuit and use that circuit as an TCP Reset circuit, perform the following steps:

1. Create an TCP Reset circuit and assign a device name to the circuit:

   ```
   CBS# configure circuit provgkill device-name provgkill
   ```

2. Map the circuit to the Proventia Network IPS application's VAP group

   ```
   CBS(conf-cct)# vap-group iss
   CBS(conf-cct-vapgroup)# end
   ```

3. Apply the `internal` parameter to the TCP Reset circuit:

   ```
   CBS# configure circuit provgkill
   CBS(conf-cct)# internal
   ```

4. Map the TCP Reset circuit to the VAP group whose traffic is being monitored.

   ```
   CBS(conf-cct)# vap-group fw
   ```

5. Configure the circuit to use a specific IP address to send TCP Reset packets to the VAP group whose traffic is being monitored:

   ```
   CBS(conf-cct-vapgroup)# ip 2.0.101.2/24
   CBS(conf-cct-vapgroup)# end
   ```

6. Configure the VAP group whose traffic is being monitored, and specify the `no rp-filter` parameter:

   ```
   CBS# configure vap-group fw no rp-filter
   CBS(conf-vap-grp)# end
   ```

IMPORTANT: Once you install the Proventia Network IPS application on the VAP group iss, you must use Proventia Manager to configure the kill port on each VAP in the group. See Application Configuration Requirements on page 47 for instructions.

External Tap Examples

NOTE: This scenario is supported only on X-Series systems running in Series-6 NPM mode.

In this scenario, Proventia Network IPS is deployed in IDS Passive Monitoring mode, receiving packets from an external device such as a physical Tap or a switch's mirrored port.

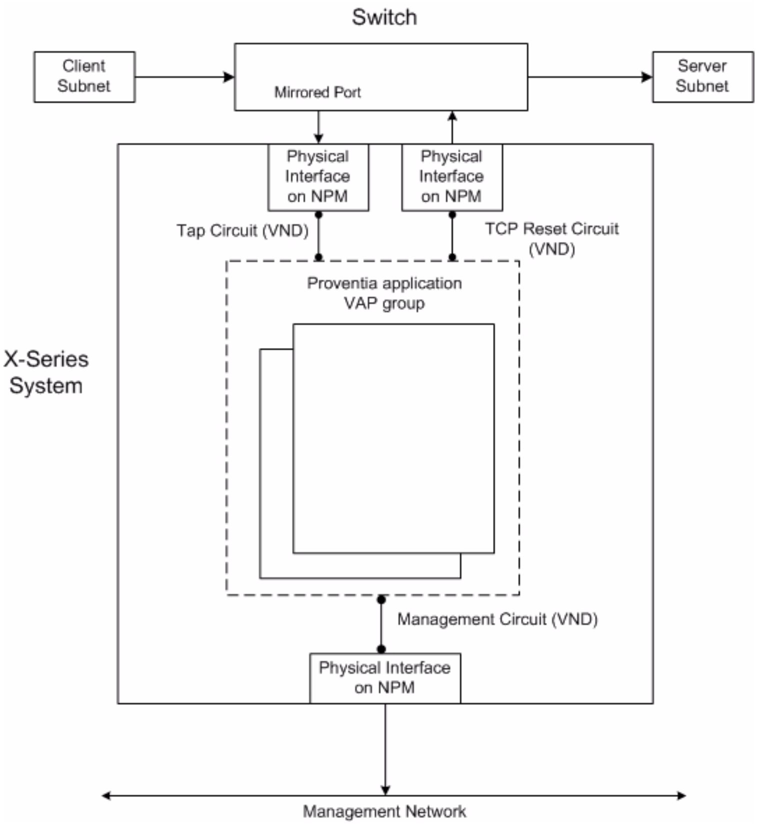
IMPORTANT: You can configure only one TCP Reset circuit per VAP Group; the TCP Reset interface must be connected to an external device, such as a router.

To configure the Proventia application to send TCP Reset packets through the TCP Reset (kill port) interface, you must use Proventia Manager to configure the kill port interface on each VAP. See Application Configuration Requirements on page 47 for instructions.

Topology Diagram

The following figure illustrates the topology of a standalone IDS configured to function as an external Tap.

Figure 6. Standalone IDS External Tap Configuration



XOS Configuration Examples

You can use an external Tap to monitor up to 16 circuits.

This section contains examples that show how to use the XOS CLI to configure an external Tap circuit using each of the following supported interface types:

- Simple Interface Example on page 44
- Redundant Interface Example on page 44
- VLAN Trunk Example on page 45

Simple Interface Example

To monitor flows coming from a mirrored port on an external switch, configure a Tap circuit, and map the circuit to the external interface on the NPM that is connected to the mirrored port on the switch:

```
CBS# configure circuit mirror device-name mirror
CBS(conf-cct-vapgroup)# vap-group iss
CBS(conf-cct-vapgroup)# promiscuous-mode
CBS(conf-cct-vapgroup)# end
```

```
CBS# interface gigabitethernet 1/1
CBS(conf-intf-gig)# logical mirror
CBS(intf-gig-logical)# circuit mirror
CBS(intf-gig-logical)# end
```

To enable the IDS to send TCP reset packets from the X-Series system to the switch, configure an TCP Reset circuit, assign an IP address to that circuit, and map the circuit to another physical interface on the NPM that is connected to the switch.

```
CBS# circuit provgkill device-name provgkill
CBS(conf-cct-vapgroup)# vap-group iss
CBS(conf-cct-vapgroup)# ip 172.16.101.100/23
CBS(conf-cct-vapgroup)# end
```

```
CBS# interface gigabitethernet 1/2
CBS(conf-intf-gig)# logical provgkill
CBS(intf-gig-logical)# circuit provgkill
CBS(intf-gig-logical)# end
```

Redundant Interface Example

To configure a redundant interface for the internal Tap circuit defined in Simple Interface Example on page 44, use the following commands:

```
CBS# configure interface gigabitethernet 1/3
CBS(conf-intf-gig)# end
```

```
CBS# configure redundancy-interface master gigabitethernet 1/1 backup
gigabitethernet 1/3 mac-usage master failovermode preemption-off
```

VLAN Trunk Example

To monitor all VLAN-tagged traffic coming from a mirrored port on an external switch, configure a Tap circuit, map the circuit to the external interface on the NPM that is connected to the mirrored port on the switch, and configure the logical to accept all VLAN-tagged traffic, using the `logical-all` command:

```
CBS# configure circuit mirror device-name mirror
CBS(conf-cct)# vap-group iss
CBS(conf-cct-vapgroup)# promiscuous-mode
CBS(conf-cct-vapgroup)# end
```

```
CBS# configure interface gigabitethernet 1/1
CBS(conf-intf-gig)# logical-all mirror
CBS(intf-gig-logical)# circuit mirror
CBS(intf-gig-logical)# end
```

To monitor one or more specific VLANs, configure the logical to accept traffic from a specific range of VLANs, using the following commands:

```
CBS# configure circuit mirror1to99 device-name mirror1to99
CBS(conf-cct)# vap-group iss
CBS(conf-cct-vapgroup)# promiscuous-mode
CBS(conf-cct-vapgroup)# end
```

```
CBS# configure interface gigabitethernet 1/1
CBS(conf-intf-gig)# logical mirror1to99 ingress-vlan-tag 1 99
CBS(intf-gig-logical)# circuit mirror1to99
CBS(intf-gig-logical)# end
```

7

Application Configuration Requirements

The Proventia Network IPS application has the following Proventia Manager and SiteProtector configuration requirements:

- When applying policies or responses to sensors running on the X-Series platform, it is imperative that the same policy and response be loaded on all members of a VAP group. This will ensure that all load-balanced traffic will be inspected and handled identically across all members.

  For ease of management, it is recommended that all members of a VAP group are configured within the same SiteProtector group. Policies and responses should be applied to the group in order to keep VAP group members identical.

  For information on registering VAPs with SiteProtector, see SiteProtector on page 53. For information on using SiteProtector to manage the Proventia Network IPS application, see the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*, which is available for download from the IBM ISS documentation Web site located at http://www.iss.net/support/documentation.

- Before registering VAPs with SiteProtector, you must make sure SiteProtector is running with the latest database component updates. If the SiteProtector database component is out-of-date, SiteProtector registration may fail for one or more VAPs.

  For instructions on updating the SiteProtector database component, see the *IBM Proventia Management SiteProtector Configuration Guide*, which is available for download from the IBM ISS documentation Web site located at http://www.iss.net/support/documentation.

- If you wish to configure the Proventia application to send TCP Reset packets through the TCP Reset (kill port) interface, you must use Proventia Manager to configure the kill port interface on each VAP, as follows:

  a. From the Proventia Manager main menu, choose **System > Local Tuning Parameters** and click on the **Advanced Parameters** tab.

  b. On the **Advanced Parameters** tab, highlight the parameter, `sensor.vnd.killport`, click **Edit**, and use the **Edit Advanced Parameters** dialog to enable the kill port, as follows:

     - Make sure the box next to **Enabled** is checked (default setting).
     - Under **Value**, click **String** and type `killPort`.

  c. On the **Advanced Parameters** tab, highlight the parameter, `sensor.adapter.reset`, click **Edit**, and use the **Edit Advanced Parameters** dialog to map the TCP Reset circuit to the kill port, as follows:

     - Check the box next to **Enabled**.
     - Under **Value**, click **String** and type the device name that you assigned to the TCP Reset circuit when you configured it in XOS. (See Creating and Configuring Tap and TCP Reset Circuits on page 27 for details on assigning a device name to the TCP Reset circuit.)

  d. If you have configured an internal Tap and the TCP Reset circuit is an internal circuit connected directly to the monitored VAP group, add the Local Tuning Parameter, `np.macaddress.destination`. Then, configure the destination MAC address that the TCP Reset circuit will use to send TCP Reset packets to the monitored VAP group:

     `np.macaddress.destination` `=` *`<XX>`*`:`*`<XX>`*`:`*`<XX>`*`:`*`<XX>`*`:`*`<XX>`*`:`*`<XX>`*

     NOTE: Refer to the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide* for instructions on adding and configuring Advanced Parameters.

8

Managing and Monitoring the Application

This chapter describes the methods that you can use to manage and monitor the Proventia Network IPS application when it is installed on a Crossbeam X-series system. This chapter also describes the procedures that you can use to backup and restore the VAP group on which the Proventia Network IPS application is installed on a Crossbeam X-series system.

This chapter contains the following sections:

Managing the Application

The following sections describe the tools that you can use to manage the Proventia Network IPS application:

- XOS Command-Line Interface (CLI) on page 50
- Proventia Manager on page 52
- SiteProtector on page 53

XOS Command-Line Interface (CLI)

IMPORTANT: With the exception of the `show application` command, the commands described in this section will work only if the following conditions are true:

- The primary CPM, the NPM(s), and all APMs in the application's VAP group are UP.
- The VAP count is equal to the max load count.
- The management circuit is configured, and the physical link to the management interface is UP.
- If you are using an TCP Reset port, the TCP Reset circuit is configured, and the physical link to the TCP Reset interface is UP.

You can use the following XOS CLI commands to perform basic application management. For more information on using the XOS CLI to manage applications, see the *XOS Command Reference Guide* and the *XOS Configuration Guide*.

- Start an application:

  ```
  CBS# application issprovg vap-group <VAP_group_name> start
  ```

  The following example shows the output when the above command is used to start the Proventia Network IPS application on a VAP group called `iss`, which has two VAPs in the group:

  ```
  IBM Internet Security Systems, IBM Proventia Network IPS 2.0  release 1

  Starting issprovg on VAP iss_2: [####################] 100% [ ok ]

  Starting issprovg on VAP iss_1: [####################] 100% [ ok ]
  ```

- Configure an application:

  ```
  CBS# application issprovg vap-group <VAP_group_name> configure
  ```

  This command provides you with access to the following menu, which lets you change your application installation configuration settings:

  ```
  IBM Proventia Network IPS Configuration Menu
  1. Configure Proventia Manager Password
  2. Configure Agent Name (requires application restart)
  3. Configure Management Interface (requires application restart)
  4. Exit

  Enter choice:
  ```

  NOTE: You must stop the application before reconfiguring either the agent name or the management interface.

  For more information on using the above configuration menu, refer to the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*, which is available for download from the IBM Internet Security Systems (ISS) documentation Web site located at http://www.iss.net/support/documentation.

- Stop an application:

  ```
  CBS# application issprovg vap-group <VAP_group_name> stop
  ```

  The following example shows the output when the above command is used to stop the Proventia Network IPS application on a VAP group called `iss`, which has two VAPs in the group:

  ```
  IBM Internet Security Systems, IBM Proventia Network IPS 2.0  release 1

  Stopping issprovg on VAP iss_2: [####################] 100% [ ok ]

  Stopping issprovg on VAP iss_1: [####################] 100% [ ok ]
  ```

- Restart an application:

  ```
  CBS# application issprovg vap-group <VAP_group_name> restart
  ```

  The following example shows the output when the above command is used to restart the Proventia Network IPS application on a VAP group called `iss`, which has two VAPs in the group:

  ```
  IBM Internet Security Systems, IBM Proventia Network IPS 2.0  release 1

  Stopping issprovg on VAP iss_2: [####################] 100% [ ok ]

  Stopping issprovg on VAP iss_1: [####################] 100% [ ok ]

  IBM Internet Security Systems, IBM Proventia Network IPS 2.0  release 1

  Starting issprovg on VAP iss_2: [####################] 100% [ ok ]

  Starting issprovg on VAP iss_1: [####################] 100% [ ok ]
  ```

- Update the VAP group to install the application on any new VAPs that you add to the VAP group after the initial application configuration:

  ```
  CBS# application-update vap-group <VAP_group_name>
  ```

  IMPORTANT: Once you install the Proventia Network IPS application on an X-series system, if you increase the number of VAPs in the application's VAP group, you must run the `application-update` command to install the application on the new VAPs.

- Display all applications installed on all VAP groups or a specified VAP group:

  ```
  CBS# show application [vap-group <VAP_group_name>]
  ```

  The following example shows the state of the application on a VAP group named `iss`, which has two VAPs in the group:

  ```
  VAP Group      : iss
  App ID         : issprovg
  Name           : IBM Proventia Network IPS
  Version        : 2.0
  Release        : 1
  Start on Boot  : yes
  App Monitor    : on

  iss_1          : running
  iss_2          : running
  ```

Proventia Manager

Proventia Manager is a web-based management interface used to manage the Proventia Network IPS application installed on a specific VAP.

If you plan to use SiteProtector to manage the application, you must use the Proventia Manager to register each VAP with SiteProtector.

You can also use the Proventia Manager to perform the following tasks for each specific VAP in the application's VAP group:

- Monitor the status of the application.
- Configure and manage application settings.
- View the quarantine table and apply changes to it.
- Review and manage application activities.

IMPORTANT: If you use the Proventia Manager to make configuration changes to one VAP, you must then make the same changes to each of the other VAPs in the VAP group. Therefore, if your VAP group contains more than one VAP, Crossbeam and IBM recommend using the SiteProtector central management system to make global configuration changes to the VAP group.

To log on to the Proventia Manager:

1. Start a web browser.
2. In the address field, enter the URL for the VAP that you wish to configure, using one of the following formats:

   ♦ **`https://`**`<xxx.xxx.xxx.xxx>`

   where `<xxx.xxx.xxx.xxx>` is the IP address assigned to the management interface for the VAP on which you want to manage the application.

   Refer to Creating and Configuring a Management Circuit on page 26 for instructions on configuring the management IP address for each VAP in the Proventia application's VAP group.

   ♦ **`https://`**`<FQDN>`

   where `<FQDN>` is the fully-qualified domain name (FQDN) that you configured for the VAP.

   Refer to Creating and Configuring a VAP Group for the Proventia Application on page 25 for instructions on configuring an FQDN for each VAP in the Proventia application's VAP group.

3. Login to Proventia Manager using the user name `admin` and the Proventia Manager password that you specified during the application installation.

   NOTE: Some Web browsers may prompt you to provide login and password information twice.

4. If a message informs you that you do not have Java Runtime Environment (JRE) installed, install version 1.5 of the JRE.

   NOTE: If you install JRE version 1.6, Proventia Manager may not work. To resolve this issue, prevent Java from caching Web data by disabling the **Keep Temporary Files on My Computer** setting in the Java control panel.

5. Click **Yes** to use the Getting Started procedures.

   NOTE: ISS recommends that you use these procedures to configure the application for the first time. You can also access the Getting Started procedures from the Proventia Manager Help.

6. Click **Launch Proventia Manager**.

   For more information on using Proventia Manager, see the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*, which is available for download from the IBM Internet Security Systems (ISS) documentation Web site located at http://www.iss.net/support/documentation.

SiteProtector

SiteProtector is the IBM ISS management console. With SiteProtector, you can manage components and appliances (VAPs), monitor events, and schedule reports.

By default, the Proventia Network IPS application is set up for you to manage it through Proventia Manager. However, if you are managing a VAP group that contains more than one VAP, Crossbeam and IBM recommend that you register each VAP with SiteProtector, place all VAPs in the same SiteProtector group, and then use SiteProtector to apply the same policies to all members of the VAP group.

NOTE: You must use the Proventia Manager to manage the following local functions on each VAP, even if the VAP group is registered with SiteProtector:

- Enabling and disabling SiteProtector management
- Viewing quarantined intrusions
- Deleting quarantine rules
- Performing firmware updates

IMPORTANT: Before registering VAPs with SiteProtector, make sure SiteProtector is running with the latest database component updates. If the database component is out-of-date, SiteProtector registration may fail.

For instructions on updating the SiteProtector database component, see the *IBM Proventia Management SiteProtector Configuration Guide*, which is available for download from the IBM ISS documentation Web site located at http://www.iss.net/support/documentation.

To use SiteProtector to manage the Proventia Network IPS application, perform the following steps **on each VAP in the VAP group:**

1. Use Proventia Manager to login to the VAP as `admin`.

   NOTE: Depending on which Web browser you are using, you may be prompted to provide login and password information twice.

2. From the Proventia Manager main menu, select **System > Management**.
3. Select the check box to register the VAP with SiteProtector.
4. If desired, select the **Local Settings Override SiteProtector Group Settings** option to have the VAP maintain any local settings that you have configured at the first heartbeat.

   If you do not select this option, the VAP inherits the settings of the SiteProtector group that you specify at the first heartbeat.

   NOTE: At the second heartbeat and each heartbeat thereafter, any policy settings you have changed at the SiteProtector group level are sent to the VAP.

5. Type the name of the SiteProtector group to which you wish to assign the VAP. If you do not specify a group, SiteProtector adds the VAP to the default “A or G Series” group.

   IMPORTANT: All VAPs must have the same policy settings at all times. Therefore, you should assign all the VAPs in the VAP group to the same SiteProtector group.

6. In the Heartbeat Interval field, enter the number of seconds that the VAP should wait between sending heartbeats to SiteProtector.

   NOTE: This value must be between 300 and 86,400 seconds. The default value is 3600 seconds.

7. Click **Save Changes**.
8. Add the Agent Manager(s) with which you want the VAP to communicate. (See the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide* for instructions on configuring Agent Managers.)

9. When you finish registering each VAP with SiteProtector, open the SiteProtector console to start managing the VAP group.

   NOTE: When you register a VAP with SiteProtector, you may see several of the following messages in the `/var/log/messages` file:

   ```
   isshyd862_1 iss-spa[6208]: Error: mslLoader::LoadServiceLibrary():
   About to load library:  '/opt/ISS/lib/libissSessionConfigSvcs5.so'
   ```

   You can safely ignore these messages; they are purely informational and do not indicate any hardware or software malfunctions.

After you register the VAP group with SiteProtector, you *must* use SiteProtector to manage the following functions:

- Firewall settings
- Intrusion prevention settings
- Alert events

You can still manage update and installation settings in Proventia Manager or in SiteProtector.

NOTE: When you register a VAP with SiteProtector, some areas of Proventia Manager become read-only. When you unregister a VAP from SiteProtector, Proventia Manager again becomes fully functional on that VAP.

For more information on using SiteProtector, refer to the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*, which is available for download from the IBM Internet Security Systems (ISS) documentation Web site located at http://www.iss.net/support/documentation.

Monitoring the Application

The following sections describe the tools that you can use to monitor the Proventia Network IPS application once it is installed on an X-series system:

- XOS Application Monitoring on page 55
- SNMP Health Monitoring and SNMP Traps on page 55

XOS Application Monitoring

On an XOS system, the XOS health monitoring system polls application processes on each VAP in the VAP group every five seconds to verify that they are running.

You can use the following command to check the status of the application processes:

```
CBS# show application [vap-group <VAP_group_name>]
```

The following example shows the state of the application on a VAP group named `iss`, which has two VAPs in the group:

```
VAP Group      : iss
App ID         : issprovg
Name           : IBM Proventia Network IPS
Version        : 2.0
Release        : 1
Start on Boot  : yes
App Monitor    : on

iss_1          : stop
iss_2          : running
```

If the application is not running on a VAP, the health system notifies the NPM to stop new flows to the VAP. The NPM performs this process dynamically without modifying the VAP group's load balance list.

You can use the CLI `show flow distribution` command to verify that no new flows are directed to VAPs that are in a down state.

NOTE: Application monitoring cannot detect process hangs. If a process is not functioning, but the application is still running, the XOS health system will continue to report the application as running.

SNMP Health Monitoring and SNMP Traps

You can use the SNMP server embedded on the CPM to configure X-series chassis-specific SNMP health monitoring and SNMP traps.

You can also use the Proventia Network IPS application's SNMP servers, which are installed on each individual VAP, to configure application-specific SNMP health monitoring and SNMP traps for each VAP on which the application is installed.

The following sections explain how to configure SNMP health monitoring and SNMP traps for both the X-series chassis and the Proventia Network IPS application:

- Configuring SNMP Health Monitoring and SNMP Traps for the Crossbeam X-Series Chassis on page 56
- Configuring SNMP Health Monitoring and SNMP Traps for the Proventia Network IPS Application on page 56

Configuring SNMP Health Monitoring and SNMP Traps for the Crossbeam X-Series Chassis

You can use the SNMP server embedded on the CPM to configure chassis-specific SNMP health monitoring and SNMP traps.

To configure a trap destination, use the following command:

```
CBS# configure snmp-server host <host_ip_address> [traps|informs] [version 1|2c]
<community-string> [udp-port <port-number>]
```

To delete a host, use the following command:

```
CBS# configure no snmp-server host <host_ip_addr> <community-string>
```

To view the SNMP trap log, use the following command:

```
CBS# show traplog
```

For more information on using the CLI to configure SNMP health monitoring and SNMP traps for the X-series chassis and modules, refer to the *XOS Configuration Guide* and the *XOS Command Reference Guide*.

Configuring SNMP Health Monitoring and SNMP Traps for the Proventia Network IPS Application

The IBM ISS application SNMP responses use the `iss.mib` file; you can download this file from the IBM ISS download center located at http://www.iss.net/download. The Proventia application's SNMP health monitoring feature uses the following MIB files from the `net-snmp package8`:

- `/usr/share/snmp/mibs/UCD-SNMP-MIB.txt`
- `/usr/share/snmp/mibs/DISMAN_EVENT-MIB.txt`
- `/usr/share/snmp/mibs/IF-MIB.txt`
- `/usr/share/snmp/mibs/NET-SNMP-MIB.txt`
- `/usr/share/snmp/mibs/NET-SNMP-MIB-AGENT.txt`
- `/usr/share/snmp/mibs/HOST-RESOURCES-MIB.txt`

You can configure Proventia application-specific SNMP health monitoring and SNMP traps for each individual VAP. To configure application health monitoring and health alerts for a particular VAP, login to that VAP and issue the `provgSnmp` command. Then use the SNMP configuration menus to configure SNMP traps and SNMP polling for the VAP.

You can also configure SNMP health monitoring and SNMP traps using SiteProtector and Proventia Manager.

For more information on configuring Proventia application-specific SNMP health monitoring and SNMP traps, refer to the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*, which is available for download from the IBM Internet Security Systems (ISS) documentation Web site located at http://www.iss.net/support/documentation.

Logging Events

You can view events in two ways:

- Viewing Event Logs on page 57
- Obtaining Packet Captures from a Proventia Network IPS VAP on page 57

Viewing Event Logs

By default, event logs for each VAP are stored on the local hard drive(s) installed on each module. The event log files can be found in the directory, `/mnt/aplocaldisk`.

You can use either Proventia Manager or SiteProtector to configure event logging for each VAP.

For more information on configuring event logging, refer to the *Proventia Network IPS for Crossbeam X-Series Hardware User Guide*, which is available for download from the IBM Internet Security Systems (ISS) documentation Web site located at http://www.iss.net/support/documentation.

Obtaining Packet Captures from a Proventia Network IPS VAP

To obtain packet captures from a VAP on which the Proventia Network IPS application is installed, perform the following steps:

1. Use `rsh` to login to the VAP.
2. To obtain a packet capture for all circuits monitored by the Proventia Network IPS application, run the following command:

   ```
   /etc/iss/usr/sbin/tcpdump -i provg_1
   ```

   NOTE: There is no way to filter the packet capture information by VND or by bridge.
3. To obtain a packet capture for the management circuit, run the following command:

   ```
   tcpdump -i <management_circuit_device_name>
   ```

Performing VAP Group Backups and Restores

You can use the XOS CLI to create backup archives of the VAPs on which the Proventia Network IPS application is installed. In case of an application failure, you can use the backup archives that you create to restore the VAP group to a previous state in which the application is known to be fully functional.

NOTE: IBM recommends that you create a backup archive of the Proventia application's VAP group before installing any firmware updates.

The following sections describe the backup and restore functionality provided for the Proventia Network IPS application:

- Restrictions on page 58
- Backing Up a VAP Group on page 58
- Restoring a VAP Group on page 59
- Deleting a VAP Group Archive on page 60
- Displaying VAP Group Archive Information on page 61

Restrictions

The VAP group backup and restore functionality has the following restrictions:

- This functionality is available only from the XOS CLI. You cannot use the EMS to perform application backups and restores.
- You cannot back up and restore a VAP group to or from a remote location.
- You cannot back up and restore the APM's local hard drive.
- You cannot back up and restore any VAP group on which the Proventia Network IPS application is not installed.
- You can store only one archive for each VAP group. If you back up a VAP group more than once, each successive archive overwrites the previous one.

Backing Up a VAP Group

You create a backup archive of a VAP group on which the Proventia Network IPS application is installed, as follows:

1. Enter the following CLI command:]

   ```
   CBS# archive-vap-group backup vap-group <VAP_group_name>
   ```

2. The XOS checks to be sure that you have enough disk space to perform the operation, and displays the following text as it performs this test:

   ```
   Calculating available and required space.......................... Done
   ```

3. A VAP group must be shut down during a backup operation. Therefore, the CLI prompts you to confirm the backup operation. Press `Enter` to confirm the backup operation, or type `N` and press `Enter` to abort the operation.

   ```
   During backup the vap-group will be disabled. Continue? <Y or N> [Y]:
   ```

4. If you have previously backed up this VAP group, the CLI prompts you to confirm that you want to overwrite the previous backup archive with the new one that you are creating. Press `Enter` to confirm the backup operation, or type `n` and press `Enter` to abort the operation.

   NOTE: The CLI can store only one backup archive of each VAP. Each time you back up a VAP group, the XOS overwrites the last VAP backup archive with the new one.

   ```
   An archive with the same name already exists. Do you want to overwrite it? (y)
   ```

5. The XOS executes the backup operation and displays the progress of the operation. For example, the following text appears as the XOS is backing up a VAP group named `iss` that contains two VAPs:

   NOTE: A backup operation may take a significant amount of time to complete. Please be patient.

   ```
   Waiting for vap group to go down ... Done
   Backing up iss_1....................................................... Done
   Backing up iss_2....................................................... Done
   Backing up iss_common.................................................. Done
   CBS#
   ```

6. When the backup is complete, the VAP group archive will be stored in the following directory on the CPM:

   ```
   /tftpboot/archives/<VAP_group_name>
   ```

   This directory will contain the following:

   - A gzipped tar file containing each VAP's filesystem and the VAP group's common filesystem
   - A file containing information about the backup (`archive_info.txt`)

     IMPORTANT: Do NOT modify the `archive_info.txt` file. If you modify this file, you will be unable to restore the archive.

   NOTE: Crossbeam recommends that you copy the VAP group archive files onto another system.

Restoring a VAP Group

To restore a VAP group using a stored backup archive, perform the following steps:

1. Copy the VAP group archive files onto the CPM in the `/tftpboot/archives/`*`<VAP_group_name>`* directory.

1. Enter the following CLI command:

   ```
   CBS# archive-vap-group restore vap-group <VAP_group_name>
   ```

   IMPORTANT: Before entering this command, make sure the archive stored on the CPM was created from a VAP group with the same VAP group name, VAP count, XOS version, application name, application version, and application release as the VAP group you want to restore. The restore operation will fail if any of these parameters are not the same for the backup archive and the VAP group to be restored.

2. All of the VAPs in a VAP group must be shut down during a restore operation. Therefore, the CLI prompts you to confirm the restore operation. Press `Enter` to confirm the restore operation, or type `N` and press `Enter` to abort the operation.

   ```
   During restore the vap-group will be disabled. Continue? <Y or N> [Y]:
   ```

3. The XOS executes the restore operation and displays the progress of the operation. For example, the following text appears as the XOS is restoring a VAP group named `iss` that contains two VAPs:

   NOTE: A restore operation may take a significant amount of time to complete. Please be patient.

   ```
   Waiting for vap group to go down ... Done
   Restoring vap-group iss. This may take several minutes...
   Removing old temporary files ... Done
   Extracting iss_1 archive........................................ Done
   Extracting iss_2 archive........................................ Done
   Extracting iss_common archive................................... Done
   Restoring VapGroup iss
   iss_common restoration has completed
   iss_1 restoration has completed
   iss_2 restoration has completed
   VAP Group iss restoration completed
   Cleaning up temporary files..................................... Done
   CBS#
   ```

4. After the VAP group has rebooted, use the following command to verify that the application has restarted (provided that the application is configured to start on boot):

   ```
   CBS# show application vap-group <VAP_group_name>
   ```

   The following example shows the status of an application that has successfully restarted on a VAP group named `iss`, which has two VAPs in the group:

   ```
   VAP Group      : iss
   App ID         : issprovg
   Name           : IBM Proventia Network IPS
   Version        : 2.0
   Release        : 1
   Start on Boot  : yes
   App Monitor    : on

   iss_1          : running
   iss_2          : running
   ```

Deleting a VAP Group Archive

To delete a local VAP group archive, perform the following steps:

1. Enter the following CLI command:

   ```
   CBS# archive-vap-group delete vap-group <VAP_group_name>
   ```

2. The XOS deletes the VAP group's archive directory and all of the files in it, and displays the progress of the operation. For example, the following text appears as the XOS is deleting the archive for a VAP group called `iss`:

   ```
   Deleting archive for VAP Group iss ... Done
   CBS#
   ```

Displaying VAP Group Archive Information

You can use either of the following CLI commands to display information about the VAP group archives stored on the CPM:

- CBS# **show archive-vap-group**
- CBS# **archive-vap-group show**

These commands display information about all VAP group archives stored on the CPM. For example, the following data is displayed for two VAP groups named `iss1` and `iss2`, which are archived on a CPM:

```
vap-group : iss1
vap count : 3
vap OS version : xslinux_v3
XOS version : 8.1.0-75
application : issprovg
application Version : 2.0
application Release : 1
Date : Thu_Feb_21_10-10-10_EST_2008
Sys Time : 1203606610

Backup files are located in /tftpboot/archive/iss1/

vap-group : iss2
vap count : 2
vap OS version : xslinux_v3
XOS version : 8.1.0-75
application : issprovg
application Version : 2.0
application Release : 1
Date : Thu_Feb_21_10-10-10_EST_2008
Sys Time : 1225746283

Backup files are located in /tftpboot/archive/iss2/
```

You can also use the following command to display the above information for a specific VAP group's archive:

CBS# **archive-vap-group show vap-group** *<VAP_group_name>*

For example, the following data is displayed for the VAP group named `iss`, which is archived on a CPM:

```
vap-group : iss
vap count : 4
vap OS version : xslinux_v3
XOS version : 8.1.0-75
application : issprovg
application Version : 2.0
application Release : 1
Date : Thu_Feb_21_10-10-10_EST_2008
Sys Time : 1254356283

Backup files are located in /tftpboot/archive/iss/
```

Adding and Removing Proventia Application VAP Group Members

This section describes how to perform the following tasks:

- Adding a VAP to a Proventia Application VAP Group on page 62
- Removing a VAP from a Proventia Application VAP Group on page 63

Adding a VAP to a Proventia Application VAP Group

Perform the following steps to add a VAP to the Proventia Network IPS application's VAP group:

1. Acquire and install an APM.

   IMPORTANT: Make sure the new APM meets the requirements listed in Application Processor Module (APM) Requirements on page 19. The new APM's hardware configuration must match the hardware configuration of all other APMs in the VAP group.

2. Increment the management IP address range for the VAP group:

```
CBS# configure circuit <management_circuit_name> vap-group <VAP_group_name>
CBS(conf-cct-vapgroup)# ip <ip_address_of_first_VAP_in_group>/<netmask>
<broadcast_address> increment-per-vap <ip_address_of_last_vap_in_group>
CBS(conf-cct-vapgroup)# end
```

3. Increment the Proventia application VAP group's VAP count:

```
CBS# configure vap-group <VAP_group_name>
CBS(config-vap-grp)# vap-count <new_VAP_count>
```

4. Reconfigure the AP list for the VAP group to add the new APM to the group:

```
CBS(config-vap-grp)# ap-list <ap_name1> [<ap_name2>] [<ap_name3>] ...
```

   where `<ap_name#>` is the name that the XOS has assigned to the APM. (Use the `show chassis` command to determine the assigned names of the APMs in your chassis.)

5. Configure the load-balance VAP list for the VAP group so that the new VAP does not receive any flows. The new APM will have the highest index number in the VAP group; leave this index number off the load-balance VAP list.

```
CBS(config-vap-grp)# load-balance-vap-list <index1> <index2> [<indexn>] ...
```

6. Increment the Proventia application VAP group's max load count:

```
CBS(config-vap-grp)# max-load-count <new_max_load_count>
CBS# end
```

7. Use the following commands to verify that the new APM has the correct firmware installed on it. If the `revs_check` script prompts you to do so, follow the instructions in the *XOS Configuration Guide* to update the firmware on the new APM.

```
CBS# unix su
[root@xxxxx admin]# /crossbeam/bin/revs_check -u
```

8. Install the Proventia Network IPS on the new VAP by entering the following CLI command.

   IMPORTANT: Before running this command, make sure all APMs in the VAP group, including the APM for the new VAP, are UP. If any APMs in the group are not up, the installation will fail.

```
CBS# application-update vap-group <VAP_group_name>
```

9. When the application update is complete, reload the new module:

```
CBS# reload module <module_name>
```

10. After the reload is complete, use the `show application vap-group <VAP_group_name>` command to verify that the application is running on the new VAP.

    For example, if a new VAP is added to a VAP group named `iss`, resulting in a VAP group with two VAPs, the `show application` command should have the following output:

```
CBS# show application vap-group iss
VAP Group       : iss
App ID          : issprovg
Name            : IBM Proventia Network IPS
Version         : 2.0
Release         : 1
Start on Boot   : yes
App Monitor     : on

iss_1           : running
iss_2           : running
```

11. Use Proventia Manager to configure the application on the new VAP, or register the new VAP with SiteProtector and add the new VAP to the VAP group's Site Protector group.

    IMPORTANT: If you have changed the IP address, FQDN, or device name (interface name) assigned to the management circuit for any VAP, you may be unable to access that VAP through Proventia Manager. If this happens, enter the following CLI command, and choose option `3` to reconfigure the management interface.

```
CBS# application issprovg vap-group <VAP_group_name> configure

IBM Proventia Network IPS Configuration Menu
1. Configure Proventia Manager Password
2. Configure Agent Name (requires application restart)
3. Configure Management Interface (requires application restart)
4. Exit

Enter choice: 3
```

12. Add the APM to the load-balance VAP list so that it can receive new flows:

```
CBS# configure vap-group <VAP_group_name>
CBS(config-vap-grp)# load-balance-vap-list <index1> <index2> [<indexn>] ...
```

Removing a VAP from a Proventia Application VAP Group

Perform the following steps to remove a VAP from a Proventia application VAP group.

1. Use Proventia Manager to log in to the VAP that you want to remove from the group, and unregister the VAP from SiteProtector.

2. Use the following commands to remove the VAP from the load-balance VAP list, so that it no longer receives new flows.

    NOTE: You can only remove the VAP with the highest index number. Exclude this VAP from the list.

```
CBS# configure vap-group <VAP_group_name>
CBS(config-vap-grp)# load-balance-vap-list <index1> <index2> [<indexn>] ...
```

3. Decrement the Proventia application VAP group's max load count:

```
CBS(config-vap-grp)# max-load-count <new_max_load_count>
```

4. Reconfigure the AP list for the VAP group to remove the APM from the group:

   ```
   CBS(config-vap-grp)# ap-list <ap_name1> [<ap_name2>] [<ap_name3>] ...
   ```

   where *<ap_name#>* is the name that the XOS has assigned to the APM. (Use the `show chassis` command to determine the assigned names of the APMs in your chassis.)

5. Decrement the Proventia application VAP group's VAP count:

   ```
   CBS(config-vap-grp)# vap-count <new_VAP_count>
   CBS(config-vap-grp)# end
   ```

6. Reconfigure the management IP address range to reclaim the IP address for the VAP that you have just removed from the VAP group:

   ```
   CBS# configure circuit <management_circuit_name> vap-group <VAP_group_name>
   CBS(conf-cct-vapgroup)# ip <ip_address_of_first_VAP_in_group>/<netmask>
   <broadcast_address> increment-per-vap <ip_address_of_last_vap_in_group>
   CBS(conf-cct-vapgroup)# end
   ```

   IMPORTANT: If you have changed the IP address, FQDN, or device name (interface name) assigned to the management circuit for any VAP, you may be unable to access that VAP through Proventia Manager. If this happens, enter the following CLI command, and choose option `3` to reconfigure the management interface.

   ```
   CBS# application issprovg vap-group <VAP_group_name> configure
   ```

   ```
   IBM Proventia Network IPS Configuration Menu
   1. Configure Proventia Manager Password
   2. Configure Agent Name (requires application restart)
   3. Configure Management Interface (requires application restart)
   4. Exit
   ```

   ```
   Enter choice: 3
   ```