

Netcool Configuration Manager 6.4.2

Reference Guide



Note

Before using this information and the product it supports, read the information in [“Notices” on page 19.](#)

This edition applies to version 6.4.1 of IBM Tivoli Netcool Configuration Manager (product number 5725-F56) and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this publication

IBM Tivoli Netcool Configuration Manager provides configuration management capabilities for network devices, as well as extensive configuration policy thresholding capabilities.

The *IBM Tivoli Netcool Configuration Manager Reference Guide* contains reference information about IBM Tivoli Netcool Configuration Manager.

Intended audience

This publication is intended for system administrators who are responsible for installing and integrating Netcool Configuration Manager with Network Manager and Tivoli Netcool/OMNIBus, and for network operators who are responsible for monitoring network events related to configuration changes.

What this publication contains

This publication contains the following sections:

- Chapter 1, “Port utilization,” on page 1
- Chapter 2, “Troubleshooting,” on page 9

Publications

This section lists publications in the Netcool Configuration Manager PDF document set. The prerequisite publications in the IBM Tivoli Network Manager IP Edition and IBM Tivoli Netcool/OMNIBus library are also listed here. The section also describes how to access Tivoli publications online and how to order Tivoli publications.

Netcool Configuration Manager PDF document set

The following documents are available in the Netcool Configuration Manager library:

- *IBM Tivoli Netcool Configuration Manager Installation and Configuration Guide*

Describes how to install IBM Tivoli Netcool Configuration Manager. It also describes necessary and optional post-installation configuration tasks. This publication is for administrators who need to install and set up IBM Tivoli Netcool Configuration Manager.

- *IBM Tivoli Netcool Configuration Manager User Guide*

Describes user tasks for IBM Tivoli Netcool Configuration Manager, such as how to access reports, use devices, and execute the different utilities to maintain and support Auto-Discovery. This publication is for users working with IBM Tivoli Netcool Configuration Manager.

- *IBM Tivoli Netcool Configuration Manager Administration Guide*

Describes administration tasks for IBM Tivoli Netcool Configuration Manager, such as how to set up user accounts, create and manage the OS registry, administer database and policy exports and imports, and perform housekeeping and security tasks. This publication is for administrators who are responsible for the maintenance and availability of IBM Tivoli Netcool Configuration Manager.

- *IBM Tivoli Netcool Configuration Manager Reference Guide*

Contains reference information about IBM Tivoli Netcool Configuration Manager.

- *IBM Tivoli Netcool Configuration Manager API Guide*

Provides information about how to use the Java API to programmatically access IBM Tivoli Netcool Configuration Manager.

- *IBM Tivoli Netcool Configuration Manager NSM REST API Guide*

Describes the Service Management Interface API.

- *IBM Tivoli Netcool Configuration Manager Integration Guide*

Describes how to integrate Netcool Configuration Manager with Tivoli Netcool/OMNIBus and Network Manager.

- *IBM Tivoli Netcool Configuration Manager Quick Start Guide*

Gets you started with a typical installation for IBM Tivoli Netcool Configuration Manager.

- *IBM Tivoli Netcool Configuration Manager Release Notes*

Gives important and late-breaking information about IBM Tivoli Netcool Configuration Manager. This publication is for deployers and administrators, and should be read first.

Prerequisite publications: IBM Tivoli Network Manager IP Edition

To use the information in this publication effectively when dealing with an integrated installation of Netcool Configuration Manager, Network Manager, and Tivoli Netcool/OMNIBus, you must have some prerequisite knowledge, which you can obtain from the Network Manager documentation, especially the following publications:

- *IBM Tivoli Network Manager IP Edition Release Notes*

Gives important and late-breaking information about IBM Tivoli Network Manager IP Edition. This publication is for deployers and administrators, and should be read first.

- *IBM Tivoli Network Manager Getting Started Guide*

Describes how to set up IBM Tivoli Network Manager IP Edition after you have installed the product. This guide describes how to start the product, make sure it is running correctly, and discover the network. Getting a good network discovery is central to using Network Manager IP Edition successfully. This guide describes how to configure and monitor a first discovery, verify the results of the discovery, configure a production discovery, and how to keep the network topology up to date. Once you have an up-to-date network topology, this guide describes how to make the network topology available to Network Operators, and how to monitor the network. The essential tasks are covered in this short guide, with references to the more detailed, optional, or advanced tasks and reference material in the rest of the documentation set.

- *IBM Tivoli Network Manager IP Edition Product Overview*

Gives an overview of IBM Tivoli Network Manager IP Edition. It describes the product architecture, components and functionality. This publication is for anyone interested in IBM Tivoli Network Manager IP Edition.

- *IBM Tivoli Network Manager IP Edition Installation and Configuration Guide*

Describes how to install IBM Tivoli Network Manager IP Edition. It also describes necessary and optional post-installation configuration tasks. This publication is for administrators who need to install and set up IBM Tivoli Network Manager IP Edition.

- *IBM Tivoli Network Manager IP Edition Administration Guide*

Describes administration tasks for IBM Tivoli Network Manager IP Edition, such as how to administer processes, query databases and start and stop the product. This publication is for administrators who are responsible for the maintenance and availability of IBM Tivoli Network Manager IP Edition.

- *IBM Tivoli Network Manager IP Edition Discovery Guide*

Describes how to use IBM Tivoli Network Manager IP Edition to discover your network. This publication is for administrators who are responsible for configuring and running network discovery.

- *IBM Tivoli Network Manager IP Edition Event Management Guide*

Describes how to use IBM Tivoli Network Manager IP Edition to poll network devices, to configure the enrichment of events from network devices, and to manage plug-ins to the Tivoli Netcool/OMNIBus Event Gateway, including configuration of the RCA plug-in for root-cause analysis purposes. This

publication is for administrators who are responsible for configuring and running network polling, event enrichment, root-cause analysis, and Event Gateway plug-ins.

- *IBM Tivoli Network Manager IP Edition Network Troubleshooting Guide*

Describes how to use IBM Tivoli Network Manager IP Edition to troubleshoot network problems identified by the product. This publication is for network operators who are responsible for identifying or resolving network problems.

- *IBM Tivoli Network Manager IP Edition Network Visualization Setup Guide*

Describes how to configure the IBM Tivoli Network Manager IP Edition network visualization tools to give your network operators a customized working environment. This publication is for product administrators or team leaders who are responsible for facilitating the work of network operators.

- *IBM Tivoli Network Manager IP Edition Management Database Reference*

Describes the schemas of the component databases in IBM Tivoli Network Manager IP Edition. This publication is for advanced users who need to query the component databases directly.

- *IBM Tivoli Network Manager IP Edition Topology Database Reference*

Describes the schemas of the database used for storing topology data in IBM Tivoli Network Manager IP Edition. This publication is for advanced users who need to query the topology database directly.

- *IBM Tivoli Network Manager IP Edition Language Reference*

Describes the system languages used by IBM Tivoli Network Manager IP Edition, such as the Stitcher language, and the Object Query Language. This publication is for advanced users who need to customize the operation of IBM Tivoli Network Manager IP Edition.

- *IBM Tivoli Network Manager IP Edition Perl API Guide*

Describes the Perl modules that allow developers to write custom applications that interact with the IBM Tivoli Network Manager IP Edition. Examples of custom applications that developers can write include Polling and Discovery Agents. This publication is for advanced Perl developers who need to write such custom applications.

- *IBM Tivoli Monitoring for Tivoli Network Manager IP User's Guide*

Provides information about installing and using IBM Tivoli Monitoring for IBM Tivoli Network Manager IP Edition. This publication is for system administrators who install and use IBM Tivoli Monitoring for IBM Tivoli Network Manager IP Edition to monitor and manage IBM Tivoli Network Manager IP Edition resources.

Prerequisite publications: IBM Tivoli Netcool/OMNIBus

To use the information in this publication effectively when dealing with an integrated installation of Netcool Configuration Manager, Network Manager, and Tivoli Netcool/OMNIBus, you must have some prerequisite knowledge, which you can obtain from the Tivoli Netcool/OMNIBus documentation, especially the following publications:

- *IBM Tivoli Netcool/OMNIBus Installation and Deployment Guide*

Includes installation and upgrade procedures for Tivoli Netcool/OMNIBus, and describes how to configure security and component communications. The publication also includes examples of Tivoli Netcool/OMNIBus architectures and describes how to implement them.

- *IBM Tivoli Netcool/OMNIBus User's Guide*

Provides an overview of the desktop tools and describes the operator tasks related to event management using these tools.

- *IBM Tivoli Netcool/OMNIBus Administration Guide*

Describes how to perform administrative tasks using the Tivoli Netcool/OMNIBus Administrator GUI, command-line tools, and process control. The publication also contains descriptions and examples of ObjectServer SQL syntax and automations.

- *IBM Tivoli Netcool/OMNIBus Probe and Gateway Guide*

Contains introductory and reference information about probes and gateways, including probe rules file syntax and gateway commands.

- *IBM Tivoli Netcool/OMNIBus Web GUI Administration and User's Guide*

Describes how to perform administrative and event visualization tasks using the Tivoli Netcool/OMNIBus Web GUI.

Accessing terminology online

The IBM Terminology website consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology website at the following Web address:

<http://www.ibm.com/software/globalization/terminology>

Accessing publications online

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli Information Center website at:

<http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp>

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File > Print** window that allows Adobe Reader to print letter-sized pages on your local paper.

Ordering publications

You can order many Tivoli publications online at the following website:

<http://www.elink.ibm.link.ibm.com/publications/servlet/pbi.wss>

You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, contact your software account representative to order Tivoli publications. To locate the telephone number of your local representative, perform the following steps:

1. Go to the following website:

<http://www.elink.ibm.link.ibm.com/publications/servlet/pbi.wss>

2. Select your country from the list and click **Go**. The **Welcome to the IBM Publications Center** page is displayed for your country.
3. On the left side of the page, click **About this site** to see an information page that includes the telephone number of your local representative.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully.

With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education website:

<https://www.ibm.com/training/search?query=tivoli>

Support information

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

Online

Go to the IBM Software Support site at <http://www.ibm.com/software/support/probsub.html> and follow the instructions.

IBM Support Assistant

The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related information and serviceability tools for problem determination. To install the ISA software, go to <http://www.ibm.com/software/support/isa>

Conventions used in this publication

This publication uses several conventions for special terms and actions and operating system-dependent commands and paths.

Typeface conventions

This publication uses the following typeface conventions:

Bold

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text
- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:** and **Operating system considerations:**)
- Keywords and parameters in text

Italic

- Citations (examples: titles of publications, diskettes, and CDs)
- Words defined in text (example: a nonswitched line is called a *point-to-point* line)
- Emphasis of words and letters (words as words example: "Use the word *that* to introduce a restrictive clause."; letters as letters example: "The LUN address must start with the letter *L*.")
- New terms in text (except in a definition list): a *view* is a frame in a workspace that contains data
- Variables and values you must provide: ... where *myname* represents....

Monospace

- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

Operating system-dependent variables and paths

This publication uses the UNIX convention for specifying environment variables and for directory notation.

When using the Windows command line, replace *\$variable* with *%variable%* for environment variables, and replace each forward slash (/) with a backslash (\) in directory paths. For example, on UNIX systems, the \$NCHOME environment variable specifies the directory where the Network Manager core components are installed. On Windows systems, the same environment variable is %NCHOME%. The names of

environment variables are not always the same in the Windows and UNIX environments. For example, %TEMP% in Windows environments is equivalent to \$TMPDIR in UNIX environments.

If you are using the bash shell on a Windows system, you can use the UNIX conventions.

Chapter 1. Port utilization

Use this information to obtain an overview of network port utilization. Specifically, the overview identifies where connections are being made on the different ports associated within the architecture.

Port utilization is useful for customers who deploy very secure, firewalled environments to build their network design. This document provides the basis for the firewall rules required to allow Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance access to the required resources.

Note: Future releases may alter these port definitions.

Note:

Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance are separate software packages.

While Netcool Configuration Manager - Base does not require Netcool Configuration Manager - Compliance for operation, the opposite is not true.

Netcool Configuration Manager - Compliance requires a functioning Netcool Configuration Manager - Base implementation for its functionality to work.

That being said, this section attempts to be comprehensive in its addressing server port definitions. If the customer is not implementing Netcool Configuration Manager - Compliance in their solution, those ports associated with Netcool Configuration Manager - Compliance can be ignored for network design.

Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance port definitions overview

Use this information to understand the port numbers associated with Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance .

Use this information to understand the port numbers associated with the following applications that make up the Netcool Configuration Manager - Base component:

- Netcool Configuration Manager - Base Database Server (subsequently referred to as Netcool Configuration Manager - Base Database Server)
- Netcool Configuration Manager - Base Presentation Server (subsequently referred to as Netcool Configuration Manager - Base Presentation Server)
- Netcool Configuration Manager - Base Worker Server (subsequently referred to as Netcool Configuration Manager - Base Worker Server)

Use this information to also understand the port numbers associated with the following application that makes up the Netcool Configuration Manager - Compliance component:

- Netcool Configuration Manager - Compliance Server (subsequently referred to as Netcool Configuration Manager - Compliance Server)

Each of the previously listed Servers can be run in a virtual environment on one or more server hardware platforms.

Netcool Configuration Manager - Base servers

Netcool Configuration Manager - Base consists of one or more Netcool Configuration Manager - Base Presentation Servers and one or more Netcool Configuration Manager - Base Worker Servers.

These servers connect to a Netcool Configuration Manager - Base database Server which maintains the details of the devices under management including the Units of Work that were submitted by users and

that will be processed by the Netcool Configuration Manager - Base Worker Servers. An additional Netcool Configuration Manager - Base reporting Server can be initialized to support report generation.

Netcool Configuration Manager - Base Database Server

The Netcool Configuration Manager - Base database server hosts the database server relational database management system.

The Netcool Configuration Manager - Base database server is the nexus of all the activity that occurs in the Netcool Configuration Manager - Base component. Both the Presentation and Worker servers are constantly reading and writing data in the database, as the product is being utilized by end users or the application programming interface (API).

The database server hosts the database server relational database management system. It is by default configured to listen on port 1521 for Oracle and port 50000 for DB2. The database port needs to be open for database queries that are made by the Netcool Configuration Manager - Base servers. The Presentation server needs access to port 1521 or 50000 to be able to execute the reads and writes that are being requested by either the GUI client or the API. The Worker servers need to connect to the database to gather the UOWs created by end users or API clients and process the UOWs against devices.

Workers will also need to write the configurations they pull from the network devices as well the details of the UOWs they execute. The reporting server will need access to the database server as well to gather the data needed to generate its reports. Finally, the Netcool Configuration Manager - Base administrator should be able to connect to the database from the management client with tools such as SQL Developer. This allows access to the tables that Netcool Configuration Manager - Base uses.

Often times, the Netcool Configuration Manager - Base administrator is not the owner of the database server and the overall management of the database server, the operating system is maintained by another group. Getting access to the database servers console either via SSH or Telnet may or may not be possible based on corporate policy. Direct access to the database console is useful for the Netcool Configuration Manager - Base administrator to help debug issues.

Netcool Configuration Manager - Base Presentation server

The Presentation server not only supports the GUI and API clients; it is used by both the reporting and Netcool Configuration Manager - Compliance solutions as a means to ensure security policy is enforced.

The Presentation server mainly supports the Netcool Configuration Manager - Base GUI and API requests for data and submission of tasks to the Netcool Configuration Manager - Base execution queues.

Both the GUI and API requests are executed on either port **16310** or **16311** if secure connections are required. These are the defaults used by the Netcool Configuration Manager - Base installer and could be changed if the customer so chooses.

Netcool Configuration Manager - Base GUI has IDT - which is used to generate secure and logged connections to network devices using the Netcool Configuration Manager - Base infrastructure. These secure connections from the user's client machine connect up to the Presentation server over one of two ports, either **8104** or **8105**.

The IDT daemon can be configured in one of two ways. The recommended method of implementation is for most customers to run IDT inside its own JVM instead of inside the Worker server's JVM. This allows IDT to have its own resources instead of sharing them with Unit of Work processing. This recommended method utilizes **port 8105**. **Port 8104** is the other option when the IDT daemon runs inside the Worker server JVM. **Port numbers 8105 and 8104** are defaults used at install time that can be changed.

The Presentation server also has to support calls from both the Netcool Configuration Manager - Compliance server (if implemented) and the Reporting server. These two servers connect by using the API port **16310** or **16311** to communicate with the Netcool Configuration Manager - Base implementation.

These connections are designed to ensure that the security model that is defined in Netcool Configuration Manager - Base is not violated by either Netcool Configuration Manager - Compliance or the reporting engine.

Most notably is to make sure that the devices that cannot be seen in Netcool Configuration Manager - Base are not viewable either in reporting or Netcool Configuration Manager - Compliance. In multiple Presentation server environments, Netcool Configuration Manager - Compliance and reporting only need to point to one of these servers.

An optional piece of software that most customers use is known as the Out of Band Change (OOBC) daemon. This tool is designed to monitor Syslog messages and set up device synchronizations when it sees activity of interest. This software is hosted on the server where Syslog messages are aggregated. This daemon then connects to the Netcool Configuration Manager - Base Presentation server via the API and submit synchronization tasks against the devices the rules matched on. OOBC connects to the Presentation server using either port **16310** or **16311**.

Finally, the Netcool Configuration Manager - Base administrator needs to be able to reach the server either by using the preferred method of SSH (**port 22**) or Telnet (**port 23**). If Telnet is chosen, then it is necessary to enable FTP ports (**port 20, 21**) to allow the movement of files back and forth.

Netcool Configuration Manager - Base Worker server

The Worker server is the jump point between Netcool Configuration Manager - Base and the actual network hardware. Connections will be made to the Worker server from the Presentation server, network devices, and other Worker servers.

Most medium to large implementations of Netcool Configuration Manager - Base will have more than one Worker server. These are usually separate physical blades or servers but could also be multiple JVMs running on different ports in the same physical hardware.

The Presentation server connects to the work server to do two things. First, IDT will continue moving from the client GUI to the Presentation server and now hop to the Worker server. This means that the Presentation server will need to connect to **port 8104** or **8105** based on how IDT is configured (see this discussion in the previous Netcool Configuration Manager - Base Presentation server section).

The Presentation server will also try to connect to **port 8102** on the Worker server when logging changes are made on the Presentation server. Logging changes occur when the Netcool Configuration Manager - Base administrator purposefully changes the logging levels on the servers. This is done with a command line utility. When the logging level is changed, the utility will go out to all servers and refresh their cache to the new logging level. So if the logging script is run on the Presentation server, it will attempt to change it on all workers via **port 8102**. Access to this port is not required.

While not required, allowing the Presentation server to connect to the workers via SSH on **port 22** will greatly enhance the supportability of this architecture. This is especially true from the point of view of driver management. Drivers are required to be installed on all presentation and Worker servers. Driver installation files are large and could be tiresome to install individually on each server. By using SCP and RSYNC (<http://www.samba.org/rsync/>), the drivers could be installed in one central location (for example, the Presentation server) and the RSYNC utility will copy them over **port 22** to all the Worker servers.

Worker to worker connectivity is very limited. It is only when logging is changed on a Worker server that the Worker server attempts to connect to other workers via **port 8102** to update their logging level as well. As mentioned earlier between the presentation and the worker, this port is not required for Netcool Configuration Manager - Base to function properly.

When Worker servers are interacting with network hardware, the devices will create connections to the Worker servers using TFTP, FTP, or SCP to either push or pull data to/from the worker. It is hard to be specific on which protocol will be used as different devices at different levels of IOS may support one, some, or all of the protocols. It is best if **ports 20, 21, 22, and 69** are made available for devices to connect to the workers.

Other port definitions

Network Devices

Worker servers will be making direct connections to devices to process Units of Work and complete IDT tunnels to the command line of the device. Currently, Worker servers connect to devices using either SSH or Telnet (typically over **ports 22 or 23**, respectively). Netcool Configuration Manager - Base will eventually use SNMP as a means to work with devices so it makes sense early on to allow access to **port 161** on network hardware.

There are cases where network devices may not have their management console on the standard ports of **22 or 23**. A case in point is Cisco's 15454 SONET switch which uses **port 3083**. You need to be aware of the ports which Worker servers will need to connect to access a device's management console and address that in their network design document.

There is an optional case that Netcool Configuration Manager - Base is configured for IDT sessions to be jumped from the Presentation server directly to the network device. This process takes the Worker server out of the picture with respect to IDT. If architecture is chosen, then the Presentation server will need access to the **ports 22 and 23** and any non-standard ports to be able to directly connect to devices.

Domain Naming Server (DNS)

A number of Netcool Configuration Manager - Base servers will need access to naming services. Sometimes this is accomplished with extensive use of the server's host files which get updated on a regular basis. With other customers, they utilize a DNS server for these naming services.

If the customer chooses to use DNS, then both the presentation and Worker servers will need access to the DNS server. The server that is running the ODBC daemon will also need access to the DNS server to ensure a hostname and not an IP address is forwarded to the Presentation server when ODBC submits a Unit of Work.

External User Authentication Server

Netcool Configuration Manager - Base can be configured to utilize external authentication servers such as TACACS+. If this is configured, then the Presentation server will need access to **port 49** on these servers to authenticate users who log into Netcool Configuration Manager - Base. If other authentication servers are used such as RADIUS or LDAP, then those ports will need to be defined as well.

Syslog Server

If ODBC is to be utilized in your solution, then a Syslog server must be receiving Syslog messages from your network hardware. In most implementations this service is already up and running. If not, then you will need to configure a Syslog server and allow network devices to send messages to **port 514**.

Reporting Server

The reporting GUI client will need to be able to access **port 16310** or **port 16311** (for secure connections) to the Reporting Server for the users to access the reporting tools that Netcool Configuration Manager - Base employs. These are default ports that could be modified at installation time

Netcool Configuration Manager - Compliance Servers

Netcool Configuration Manager - Compliance is a software package that extracts most of its data for analysis from Netcool Configuration Manager - Base (for example, device configurations.) It then populates its database with these configurations and then will use its policy definitions that were created by the customer to analyze those configurations for violations.

Netcool Configuration Manager - Compliance Database Server

Unlike the Netcool Configuration Manager - Base database server, this server will only be servicing one main client and that is the Netcool Configuration Manager - Compliance server itself.

It listens for SQL queries on port **1521** or port **50000** by default. Like with Netcool Configuration Manager - Base, the Netcool Configuration Manager - Compliance administrator should be able to connect to this database using SQL Developer and/or similar tools from the client management system.

Unlike Netcool Configuration Manager - Base there is no defined API for Netcool Configuration Manager - Compliance so connecting to the database is the only realistic way of exporting data.

Netcool Configuration Manager - Compliance Server

The Netcool Configuration Manager - Compliance server will be listening for end user client connections on ports **7003** or **7004** (for secure connections) as well as on port **8002** for requests from the GUI. Ports **7003** and **7004** are defaults used at install time and can be changed.

These were chosen on the chance that Netcool Configuration Manager - Compliance would be installed on the same server the presentation or reporting server was located on. Unlike Netcool Configuration Manager - Base, Netcool Configuration Manager - Compliance uses ports **7003** or **7004** to download the Netcool Configuration Manager - Compliance GUI to the user's desktop cache.

Once the GUI is started, it will communicate with Netcool Configuration Manager - Compliance over **8002** for any put or gets to the Netcool Configuration Manager - Compliance server. The Netcool Configuration Manager - Compliance server will also need to be accessible for the Netcool Configuration Manager - Compliance administrator to work at the command line. The preferred method is SSH (port **22**) or Telnet/FTP (port **20, 21, 23**) for system administration functions.

Netcool Configuration Manager - Base Presentation server

Netcool Configuration Manager - Compliance will connect to the Netcool Configuration Manager - Base Presentation server on port **16310** or **16311** (for secure connections) to authenticate users to the Netcool Configuration Manager - Compliance GUI and check their security settings for devices in the network. It will also communicate over this channel to synchronize device configurations, set up remedial command set actions, and check on remedial actions success or failures.

Port details

The following table lists the details for Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance ports, as well as some of the integration ports.

<i>Table 1. Port details for Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance..</i> If you have changed ports from their default values, you can list the ports that are currently in use by Netcool Configuration Manager by running the <code>/opt/IBM/tivoli/netcool/ncm/bin/utils/portUsage.sh</code> script.					
Netcool Configuration Manager - Base port configurations					
Source	Destination	Bandwidth reqs	Notes	Port(s)	Purpose
Client	Secure WebSphere admin server	Medium		16316	WebSphere administration
Client	WebSphere admin server	Medium		16315	WebSphere administration
NCM worker server	WebSphere server	Medium		16311	NCM/ITNM device synchronization
Presentation server	Netcool Configuration Manager - Base database	Large	1	TCP 1521	Data read/write

Table 1. Port details for Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance..

If you have changed ports from their default values, you can list the ports that are currently in use by Netcool Configuration Manager by running the `/opt/IBM/tivoli/netcool/ncm/bin/utils/portUsage.sh` script.

(continued)

Netcool Configuration Manager - Base port configurations					
Source	Destination	Bandwidth reqs	Notes	Port(s)	Purpose
Worker server	Netcool Configuration Manager - Base database	Very large	1	TCP 1521	Data read/write
Reporting server	Netcool Configuration Manager - Base database	Medium	1	TCP 1521	Database Read
Management client	Netcool Configuration Manager - Base database	Small	1	TCP 1521	SQL Developer or other DB tools
Management client	All servers	Medium	-	TCP 22	SCP/SSH
			-	TCP 20,21,23	FTP/Telnet
Client/API	Presentation server	Medium	1	TCP 16310	Application GUI/API
			1, 5	TCP 16311	Secure application GUI/API
			1, 3	TCP 8105	IDT standalone SSH tunnels
			1, 3	TCP 8104	IDT SSH tunnels
Reporting	Presentation server	Small	1	TCP 16310	API client
			1, 5	TCP 16311	Secure API client
OABC	Presentation server	Small	1	TCP 16310	API client
			1, 5	TCP 16311	Secure API client
Presentation server	Worker server	Small/medium	1, 3	TCP 8104	IDT
			1, 3	TCP 8105	IDT standalone
			1	TCP 8102	Logging update
			7	TCP 22	Driver management
Worker server	Worker server	Small	1	TCP 8102	Logging update

Table 1. Port details for Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance..

If you have changed ports from their default values, you can list the ports that are currently in use by Netcool Configuration Manager by running the `/opt/IBM/tivoli/netcool/ncm/bin/utils/portUsage.sh` script.

(continued)

Netcool Configuration Manager - Base port configurations					
Source	Destination	Bandwidth reqs	Notes	Port(s)	Purpose
Network devices	Worker server	Small	-	UDP 69	TFTP
			-	TCP 20	FTP data
			-	TCP 22	SCP
			-	TCP 21	FTP control
Worker server	Network devices	Small	-	TCP 22	SSH for IDT/ UOWs
			-	TCP/UDP 161	SNMP for UOWs
			-	TCP 23	Telnet for IDT/ UOWs
			4	Custom	Custom
Presentation server	Network devices	Small	2	TCP 22	SSH for IDT
			2	TCP 23	Telnet for IDT
Client	Reporting server	Medium	1	TCP 16310	Application GUI
			1, 5	TCP 16311	Secure application GUI
Presentation server	TACACS+ server	Small	6	TCP 49	GUI user authentication
Network devices	Syslog server	Small	1	UDP514	Syslog messages
OOBC	DNS	Small	-	UDP 53	Device hostname resolution
Presentation server	DNS	Small	-	UDP 53	Device hostname resolution
Worker server	DNS	Small	-	UDP 53	Device hostname resolution
Netcool Configuration Manager - Compliance port configurations					
Source	Destination	Bandwidth reqs	Notes	Port(s)	Purpose
Netcool Configuration Manager - Compliance server	Netcool Configuration Manager - Compliance database	Large	1	TCP 1521	Database

Table 1. Port details for Netcool Configuration Manager - Base and Netcool Configuration Manager - Compliance..

If you have changed ports from their default values, you can list the ports that are currently in use by Netcool Configuration Manager by running the `/opt/IBM/tivoli/netcool/nmc/bin/utils/portUsage.sh` script.

(continued)

Netcool Configuration Manager - Base port configurations					
Source	Destination	Bandwidth reqs	Notes	Port(s)	Purpose
Management client	Netcool Configuration Manager - Compliance database	Small	1	TCP 1521	SQL Developer or other DB tools
Client	Netcool Configuration Manager - Compliance server	Medium	1	TCP 16310	Webstart download
			1, 5	TCP 16311	Secure Webstart download
			1	TCP 8001-3	Application GUI
Management client	Netcool Configuration Manager - Compliance server	Medium	-	TCP 22	SCP/SSH
			-	TCP 20,21,23	FTP/Telnet
Netcool Configuration Manager - Compliance server	Presentation server	Medium	1	TCP 16310	API client
			1, 5	TCP 16311	Secure API client

Notes

1. The stated values are default at installation. However, these values can also be modified during the installation phase.
2. IDT can be optionally configured for connections to devices that will skip worker servers. Connections will be made directly from presentation server.
3. IDT can be configured to run inside the worker JVM or its own JVM (recommended). The standalone version runs on a different port (8105) compared to the version that runs inside of the worker JVM (8104).
4. Some devices management consoles will be running on non-standard ports and will need to have custom RADs defined as well as firewall rules (for example, Cisco 15454's management console runs on 3083).
5. Secure connections are optional in these architectures.
6. Only needed if external authentication processes are used for user login to Netcool Configuration Manager - Base.
7. While not required, installing drivers on the presentation server and distributing via SCP/RSYNC is very convenient.

Chapter 2. Troubleshooting

Use this information about Netcool Configuration Manager to perform troubleshooting tasks.

Troubleshooting reporting

If you are having problems with reporting, check the troubleshooting tasks.

Logon fails after updating to Cognos 3.1.3.0

If logon fails after updating to Cognos 3.1.3.0, you may need to manually edit the `setTCRenv.sh` file.

Symptom

After updating to Cognos 3.1.3.0, the following logon error occurs:

```
QE-DEF-0285 The logon failed.  
QE-DEF-0325 The logon failed for the following reason:  
RQP-DEF-0068 Unable to connect to at least one database during a  
multi-database attach to 1 database(s) in:  
    testDataSourceConnection  
UDA-SQL-0569 Unable to load the driver manager library ( libdb2.so ).  
UDA-SQL-0571 The operating system returned an error message  
( libdb2.so: cannot open shared object file: No such file or  
directory ).
```

Probable cause

The upgrade has overwritten the correct version of the `setTCRenv.sh` file.

Solution

Add two additional lines to the `setTCRenv.sh` file. The file is stored in the `JazzSM/reporting/bin` directory.

```
LD_LIBRARY_PATH=/lib32:/lib64:$LD_LIBRARY_PATH
```

```
export LD_LIBRARY_PATH
```

The IBM Support Assistant Lite collector

The IBM Support Assistant Lite Collector (ISA Lite) automates the collection of troubleshooting data for Netcool Configuration Manager, and collects data to help IBM Support to remotely diagnose problems.

About ISA Lite

ISA Lite allows automated data collection within all environments supported by Netcool Configuration Manager. It zips up all gathered data, displays final filename details and locations, and then prompts you to FTP the final output file to IBM Support, or an FTP location of your choice.

ISA Lite is distributed on the installation medium of IBM Tivoli Netcool Configuration Manager and placed in dedicated directories. You launch ISA Lite from these directories.

Collecting troubleshooting data early, even before opening a PMR, helps IBM Support to rapidly:

- Start analyzing logs and trace data with minimal delay.
- Identify problems related to environment and configuration.
- Correlate described symptoms and known issues with the collected data.
- Make data available to the Development team where necessary.

Note: ISA Lite has been constructed for Netcool Configuration Manager using the full version of IBM Support Assistant workbench. For teams wanting to construct their own ISA Lite type collectors, ISA

workbench is available for download. For more information about the IBM® Support Assistant, refer to the following IBM Web site: <http://www.ibm.com/software/support/isa>

Running ISA Lite

ISA Lite is run in the directory in which it was placed when Netcool Configuration Manager was installed.

You can run ISA Lite on all platforms supported by Netcool Configuration Manager as long as JRE 1.4.2 or higher is supported/installed on the platform.

Remember: To avoid potential uninstall issues should you wish to uninstall Netcool Configuration Manager at a later date, you must run ISA Lite as the same Unix user used to install Netcool Configuration Manager (usually 'icosuser').

Note: Within the ISA Lite directories are GUI and console versions of ISA Lite. These steps document the use of the GUI version only.

1. To start ISA Lite, type `$ITNCM_INSTALL_DIR/ISA/ISALite/runISALite.sh`

The **ISA Lite** window is displayed.

2. Expand the Data Collection Option tree, and select one data type for collection.
3. Provide a name for the zip file to be created.

Note: This is a redundant step, as the name you specify here is not actually used. You specify the actual name for your data package later. Nevertheless, you need to enter a name here.

4. Click **Collect Data**.

Collection progress is indicated in the interface, and a number of prompts require that you enter additional data.

5. When prompted, enter the PMR number for the issue you are reporting (if a PMR number exists).
6. When prompted, enter the directory in which the zip file is to be stored.
7. When prompted (rarely), enter the Netcool Configuration Manager installation directory.
8. At the end of the collection process, you can automatically FTP the file to IBM Support. If you are offline or behind a firewall, you may need to complete this step manually.
9. Optional: If you manually FTP the file to IBM Support, use the following details:

Server

`ftp.emea.ibm.com`

Directory

`/toibm/tivoli/`

For more information on exchanging information with IBM Technical Support for problem determination, see <http://www-01.ibm.com/support/docview.wss?rs=180&context=SSEQTP&uid=swg21153852>

The zip file to be sent to IBM is named according to the following convention: `ppppp.bbb.ccc.itncm.<hostname>.YYYY.MM.DD-HH.MM.SS.zip`, where `ppppp` is your PMR number, `bbb` your branch, `ccc` your country code. For example: `12345.999.000.itncm.myhost.2010.11.22-00.48.58.zip`

If you are using the IBM Service Request (SR) problem submission tool to communicate with IBM Support, update your PMR to indicate that data has been sent and include some details about the data where possible, such as a timeline of the problem occurrence.

Troubleshooting single sign-on

If you are having problems with single sign-on, check the troubleshooting tasks.

Troubleshooting OOB

If the Login Error dialog displays after you log into DASH and then launch the Compliance GUI, follow the troubleshooting procedure.

One reason the Login Error dialog displays is to indicate that single sign-on (SSO) failed. The failure is most likely due to errors in configuring SSO. Follow the troubleshooting procedure to ensure that you have correctly configured SSO.

This task describes how to troubleshoot SSO configuration as a result of a Login Error dialog displaying.

1. Check that the user attempting to log into DASH has an account in Netcool Configuration Manager. If the user does not have an account in Netcool Configuration Manager, create one.
Note: For SSO between DASH and Netcool Configuration Manager to work, a user must exist (that is, have an account) in both DASH and Netcool Configuration Manager.
2. Check that the DASH LTPA keystore was imported into Netcool Configuration Manager. If not, import the DASH LTPA keystore into Netcool Configuration Manager.
3. Check that a federated user repository and the ObjectServer VMM were created and configured on Netcool Configuration Manager. If not, create and configure a federated user repository and the ObjectServer VMM on Netcool Configuration Manager. To check that a federated user repository exists on Netcool Configuration Manager:
 - a) Log into the Netcool Configuration Manager ISC. For example: `https://myserver.mycampus.ibm.com:18101/ibm/console/`
 - b) Access **Security**.
 - c) Check that the Federated user repository is set to be the current repository.
 - If not, set up a federated user repository to be the current repository.
 - Add the ObjectServer VMM to the federated user repository.
4. Check that SSO was enabled on Netcool Configuration Manager. To determine if SSO was enabled on Netcool Configuration Manager, do the following:
 - a) Log into the Netcool Configuration Manager ISC. For example: `https://myserver.mycampus.ibm.com:18101/ibm/console/`
 - b) Access **Security > Global Security > Web Security > Single sign-on**
 - c) Ensure that only the **Enabled** checkbox is selected.

This troubleshooting procedure should result in a user being able to successfully log into DASH and then launch the Compliance GUI.

SSO failed: the login panel displays

If the login panel displays after you log into DASH and then launch the Compliance GUI, follow the troubleshooting procedure.

One reason the login panel displays is to indicate that single sign-on (SSO) failed. The failure is most likely due to errors in configuring SSO. Follow the troubleshooting procedure to ensure that you have correctly configured SSO.

This task describes how to troubleshoot SSO configuration as a result of a login panel displaying.

1. Check that SSO was enabled on Netcool Configuration Manager. To determine if SSO was enabled on Netcool Configuration Manager, do the following:
 - a) Log into the Netcool Configuration Manager ISC. For example: `https://myserver.mycampus.ibm.com:16310/`
 - b) Download either of the clients.

- c) If the login panel is not bypassed, then SSO is disabled.
- d) Enable SSO by executing the `configSSO.sh` script. For example:

```
cd /opt/bin/IBM/tivoli/netcool/ncm/bin/utils
./configSSO.sh enable
```

2. Check that a federated user repository and the ObjectServer VMM were created and configured on Netcool Configuration Manager. If not, create and configure a federated user repository and the ObjectServer VMM on Netcool Configuration Manager. To check that a federated user repository exists on Netcool Configuration Manager:
 - a) Log into the Netcool Configuration Manager ISC. For example: `https://myserver.mycampus.ibm.com:18101/ibm/console/`
 - b) Access **Security**.
 - c) Check that the Federated user repository is set to be the current repository.
 - If not, set up a federated user repository to be the current repository.
 - Add the ObjectServer VMM to the federated user repository.
3. Check that SSO attributes were configured on DASH. If not, configure SSO attributes on DASH. To determine if SSO attributes were configured on DASH, do the following:
 - a) Log into DASH and launch the WebSphere Administrative console.
 - b) Access **Security > Global Security > Web Security > Single sign-on**
 - c) Ensure that the **Enabled** checkbox is selected.
 - d) Ensure that the domain name is correct.
 - If DASH and Netcool Configuration Manager are on the same server, then a value should not be present.
 - If DASH and Netcool Configuration Manager are on different servers, ensure that the value specifies a super domain for the host names of both products. This must be the case in order for an HTTP cookie to be forwarded from DASH to Netcool Configuration Manager.
4. Check that there is a connection between the DASH Wizard and the Netcool Configuration Manager host server. If DASH and Netcool Configuration Manager reside on different servers, check the following:
 - a) A fully qualified host name (rather than an IP address) must have been specified when prompted for the location of the Netcool Configuration Manager server when installing the Netcool Configuration Manager DASH Wizards on DASH.
 - b) In the installation directory, view the file `ITNCM_TIP_InstallLog.log`.
 - c) Look for the line
`USER_INPUT_ITNCM_CONSOLE_RESULTS="\myserver.mycampus.ibm.com\","16310\"`. If an IP address was specified, change it to a fully qualified host name.

If DASH and Netcool Configuration Manager reside on the same server, then either a fully qualified host name or an IP address can be specified.

This troubleshooting procedure should result in a user being able to successfully log into DASH and then launch the Compliance GUI.

SSO failed: the login panel displays due to incorrect TIP URL browser specification

If the login panel displays after you log into DASH and then launch the Compliance GUI, follow the troubleshooting procedure associated with checking that the URL specification for the DASH browser is correct.

One reason the login panel displays is to indicate that single sign-on (SSO) failed. The failure could be the result of an incorrect URL specification for the DASH browser. Follow the troubleshooting procedure to ensure that you have correctly specified the URL for the DASH browser.

This task describes how to troubleshoot SSO configuration as a result of a login panel displaying, which might be due to an incorrect URL specification for the DASH browser. The URL to specify depends on whether DASH and Netcool Configuration Manager reside on the same server.

1. If DASH and Netcool Configuration Manager reside on the same server, the host part of the URL used to access DASH must be consistent with the value entered when prompted for the location of the Netcool Configuration Manager server when installing the Netcool Configuration Manager DASH Wizards on the DASH server. Specify one of the following values:
 - a) If a host name was entered during installation then specify that host name in the TIP URL browser. For example: `https://myserver.mycampus.ibm.com:16311/ibm/console/logon.jsp`
 - b) If an IP address was entered during installation then use the IP address in the TIP URL browser. For example: `https://9.16.2.190:16211/ibm/console/logon.jsp`
2. If DASH and Netcool Configuration Manager reside on different servers, a fully qualified host name (rather than an IP address) must have been specified when prompted for the location of the Netcool Configuration Manager server when installing the Netcool Configuration Manager DASH Wizards on the DASH server. Check the following:
 - a) In the installation directory of the Netcool Configuration Manager server, view the file `ITNCM_TIP_InstallLog.log`.
 - b) Look for the line:
`USER_INPUT_ITNCM_CONSOLE_RESULTS=\"myserver.mycampus.ibm.com\", \"16310\".`
 - c) If an IP address was specified, change it to a fully qualified host name.
3. If DASH and Netcool Configuration Manager reside on different servers, check that the SSO attributes were configured correctly on DASH. Check that the **Enabled** checkbox is selected and that the domain name is correct:
 - a) Log into DASH and launch the WebSphere Administrative console.
 - b) Access **Security > Global Security > Web Security > Single sign-on**
 - c) Ensure that the **Enabled** checkbox is selected.
 - d) Ensure that the domain name is correct.
 - Ensure that the value specifies a super domain for both DASH and Netcool Configuration Manager host names. This must be the case in order for an HTTP cookie to be forwarded from DASH to Netcool Configuration Manager.

Note:

If an IP address is used for the host part then the HTTP cookie containing the LTPA token will have the host attribute set to the IP address of the DASH server. When launching a Netcool Configuration Manager client, the cookie will not be forwarded to the Netcool Configuration Manager server, resulting in SSO not working.

The cookie must have the domain attribute set to the SSO domain value for the DASH to enable the forwarding of the cookie to the Netcool Configuration Manager server.

The forwarding of the cookie to the Netcool Configuration Manager server occurs when you specify a fully qualified host name in the URL for the DASH browser.

This troubleshooting procedure should result in a user being able to successfully log into DASH and then launch the Compliance GUI.

SSO failed to configure ObjectServer repository

If you see the following error after attempting to configure the ObjectServer repository for SSO, follow this troubleshooting procedure: `JVMCFRE003 bad major version; class=com/ibm/tivoli/tip/vmm4ncos/ObjectServerAdapter, offset=6`

This task describes how to troubleshoot SSO configuration as a result of a Java 6 SDK being selected as the default JRE. You first check whether Java 7 SDK is present and has been set as default SDK. If it has not, you install it if required, and then set it as default.

1. Check that the Java 7 SDK has been installed with IBM Installation Manager.
 - a) Navigate to the bin directory in the AppServer directory on the server. The default location is `/opt/IBM/WebSphere/AppServer/bin`
 - b) To view available SDKs, run the following command:

```
./managesdk.sh -listAvailable -verbose
```

2. Ascertain whether Java 7 SDK is present, and perform one of the following steps:

If Java 7 SDK is not present

- a. Using the IBM Installation Manager, install Java 7 SDK.
- b. Execute the following command to set Java 7 as the default SDK:

```
./managesdk.sh -setNewProfileDefault -sdkName 1.7_64
```

If Java 7 SDK is already present

- a. Execute the following command to set Java 7 as the default SDK:

```
./managesdk.sh -setNewProfileDefault -sdkName 1.7_64
```

3. Restart Netcool Configuration Manager and reconfigure the ObjectServer as a repository.

This troubleshooting procedure eliminates the JVMCFRE003 bad major version error.

Troubleshooting installation

If you are having problems with installation, check the troubleshooting tasks.

Fix Pack install gives duplicate user errors

When you install Fix Pack 6 or later, you might see errors caused by duplicate user IDs.

Fix Pack 6 introduced an index to the user table that prevents creation of duplicate user IDs. If you upgrade to Fix Pack 6 or later, you might see errors in the upgrade.log such as: `ORA-0145 2: cannot CREATE UNIQUE INDEX; duplicate keys found`

These errors are caused by users with duplicate IDs. If you see such errors, complete the following steps to resolve the problem.

1. Retrieve duplicate user IDs by running the following command:

```
SELECT userid, countnumber from (SELECT userid, COUNT(userid) AS  
countnumber FROM users GROUP BY userid) AS my_table WHERE countnumber > 1
```

2. Retrieve the various records for each duplicate user ID by running the following command, where *id* is a user ID retrieved in the previous command.

```
SELECT uniquekey, type FROM users WHERE userid = id
```

Two or more records are returned for each user ID. For each user ID, all records except one have the type `inactive`.

3. For each user ID of type `inactive`, change the user ID by using the following command, where *key* is the uniquekey of that user ID.

```
UPDATE users SET userid = 'NewName' WHERE uniquekey = key and type = 'inactive'
```

For example: `UPDATE users SET userid='MarySmith_12345_inactive' WHERE uniquekey = '12345' AND type = 'inactive'`

Using the `'inactive'` clause prevents alteration of an active user in error.

4. Apply the index to the user table:

```
CREATE UNIQUE INDEX USERID_IDX ON USERS(USERID);
```

OOBC installation fails when using AIX 6.1

Installation of OOBC on AIX 6.1 can fail if TL 7 is not applied.

Symptom

The installer exits without installing OOBC, and the following message is written to the console:

```
Error: Port Library failed to initialize
Could not create the Java virtual machine.
```

Probable cause

Your AIX operating system is AIX 6.1 Technology Level (TL) 6 or below.

Solution

To determine the level of your operating system, you can run the following command.

```
oslevel -s
```

You will see a result like, for example:

```
6100-06-01-1141
```

This is TL 6 (second number).

To fix this error, upgrade AIX 6.1 to TL 7.

OOBC installation fails when using AIX 7.1

Installation of OOBC on AIX® 7.1 can fail if TL 1 Service Pack (SP) 2 is not applied.

Symptom

The installer exits without installing OOBC, and the following message is written to the console:

```
Error: Port Library failed to initialize
Could not create the Java virtual machine.
```

Probable cause

Your AIX operating system is AIX 7.1 Technology Level (TL) 0 or 1, Service Pack 0 or 1.

Solution

To determine the level of your operating system, you can run the following command.

```
oslevel -s
```

You will see a result like, for example:

```
7100-01-01-1141
```

This is TL 1 (second number), SP 1 (third number).

To fix this error, upgrade AIX 7.1 to TL 1 SP2 or later.

Troubleshooting the database

If you are having problems with using the database with Netcool Configuration Manager, check the troubleshooting tasks.

Exception thrown in DB2 database

If an exception is thrown in the DB2 database during a SmartModel tier 1 upgrade, then follow the troubleshooting procedure.

This task describes how to troubleshoot the following exception thrown in the DB2 database during a SmartModel tier 1 upgrade:

```
Exception in thread "main" <openjpa-2.0.1-r422266:989424 fatal store error>
org.apache.openjpa.persistence.OptimisticLockException:
Unable to obtain an object
lock on "UPDATE RESOURCEBROWSER t0 SET t0.supportlevel = ?
WHERE (t0.currentdriver IS NOT NULL) [java.lang.String]".
FailedObject: UPDATE RESOURCEBROWSER t0 SET t0.supportlevel = ?
WHERE (t0.currentdriver IS NOT NULL) [java.lang.String]
```

1. Increase the value for the logfilsiz database cfg parameter:

```
db2 update db cfg dbname using logfilsiz newvalue
```

2. Increase the value for the logprimary database cfg parameter:

```
db2 update db cfg for dbname using logprimary newvalue
```

This troubleshooting procedure should result in avoiding the exception.

Troubleshooting drivers

Use this section to view drivers troubleshooting information.

Custom driver may add leading 0x0a to password when communicating with devices

If Netcool Configuration Manager appends a leading 0x0A to the password, thereby causing connectivity issues, edit the deviceComInterface.txt as described in this workaround.

Workaround

Change `com.intelliden.icos.util.handlers.TelnetComHandler` to `com.intelliden.drivers.util.handlers.SocketComHandler` in the `deviceComInterface.txt` file. `SocketComHandler` is a raw connection and will ignore all the hand shake information and will just send and receive the data that Netcool Configuration Manager and the device are giving it.

Follow these steps to determine the location of `deviceComInterface.txt` used:

1. Run `./driverTools.sh -show-details <arg>`
where `<arg>` can be UUID, VTMOs or network resource name.
Example output:

```
[icosuser@klxv0803:/opt/IBM/tivoli/netcool/ncm/bin/utills]
08:08:37> ./driverTools.sh -show-details Riverbed_20131204
Loading driver information from database...
-----
UUID                : IBM-fc43b18e-805b-4554-befc-40ffc5bf53ee
Vendor              : Riverbed
Type                : wan
Model               : steelhead-xx50
OS                  : 8.x
Supported Models    : 550,1050,2050,6050,7050
Supported Oss       : 8.*
Display Name        : riverbed_wan_steelhead-xx50_8.x_v20131203.083318
Version             : 20131203.83318
Description          :
-----
Type                : SmartModel
Driver Class        : com.ibm.tivoli.ncm.drivers.riverbed.RiverbedDriver
Jar File            : Jar-b63a722b-34ba-482a-9eaa-3bebd2a1e09.jar
Metadata            : Metadata-24902fdb-01d7-4a61-afa2-1af6f054795e
Metadata            : Metadata-03e0700f-e390-4f42-ad53-906af4f81f3e
Metadata            : Metadata-7354e070-d920-444b-997f-55c7361ca768
Metadata            : Metadata-b5f684ab-ee2e-4cf7-a9e8-bf91274e628e
Master Schema Version : 201311290917
Schema Object Version : BL_ITNCM_CONTENT_19_20131129_0854
```

2. Check the list of metadata folders for the deviceComInterface.txt location.
Example deviceComInterface.txt location: /opt/IBM/tivoli/netcool/ncm/drivers/metadata/Metadata-03e0700f-e390-4f42-ad53-906af4f81f3e
3. Change the deviceComInterface.txt file as follows:
telnet:com.intelliden.drivers.util.handlers.SocketComHandler:
ssh:com.intelliden.icos.util.handlers.SSHComHandler:
4. Restart the servers.

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