

IBM Tivoli Netcool Configuration Manager V6.3

Initial investigative procedures for generic Cisco device import issues

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In this IBM Tivoli® Netcool® Configuration Manager version 6.3 training module, you learn how to perform initial investigations when faced with common Cisco device import issues. Additionally, you learn what messages to look out for, what areas to review, and how to overcome configuration connectivity issues between IBM Tivoli Netcool Configuration Manager and generic Cisco devices.

Objectives

After you complete this training module, you can perform these tasks:

- Interpret common generic log messages and the symptoms that relate to device import failures
- Perform high-level investigative procedures to identify the causes of Cisco Systems device import failures
- Handle high-level common unit of work (UOW) issues that are faced in IBM Tivoli Netcool Configuration Manager V6.3
- Perform initial investigation to overcome common UOW import issues
- Gather detailed information of failed UOW import for faster root cause analysis (RCA)
- Gather additional information before seeking assistance from IBM Support

In this IBM Tivoli Netcool Configuration Manager version 6.3 training module, you learn to interpret common generic Cisco device import log error messages. You learn which symptoms to look for relating to Cisco device import failures. This training module specifically covers log messages that relate only to Cisco Systems devices. You learn how to perform high-level investigative procedures to trace the cause of a Cisco network device import failure. After completing this training module, you can name, explain, and perform investigative procedures on four common units of work import issues that you sometimes face with IBM Tivoli Network Configuration Manager version 6.3, and you learn how to investigate and to gather additional information before you contact IBM Support.

Overview

In this training module, you encounter these items:

- Common unit of work (UOW) importing issues that are faced with IBM Tivoli Netcool Configuration Manager V6.3
- Initial investigative steps to perform that identify UOW importing issues
- Two sample scenarios of Cisco UOW importing issues and how to overcome them

In this module, you cover common import failures faced when either an IBM Tivoli Netcool Configuration Manager version 6.3 administrator or user executes a unit of work import task from the Resource Browser application against external Cisco devices. Importing is a common task that is performed for initial input of your network's device information into the database. When importing an existing device into the database, the system also writes the running configuration to the stored candidate configuration on the device. There are actually two more configurations with the running configuration. They are the current configuration and the stored configuration. The running configuration ensures that these three configurations (current, running, and stored) are synchronized. You explore common issues that you might see during the synchronization task.

Additionally, you learn the initial steps to investigate and analyze configuration issues. Common sample scenarios and investigation methods are demonstrated. These sample scenarios give you a complete understanding on how to investigate and overcome common unit of work importing issues. The investigative steps are beneficial for you to follow if you are either a system administrator or super user of the IBM Tivoli Netcool Configuration Manager version 6.3 application. Following the initial investigation steps helps in either resolving unit of work importing issues or in providing IBM Support with a full set of background information, logs, and details to promptly resolve the issues.

Logging in to Tivoli Netcool Configuration Manager

Log in to the IBM Tivoli Netcool Configuration Manager V6.3 front-end GUI as user administrator or related user who has privileges to start or view UOW tasks and logs



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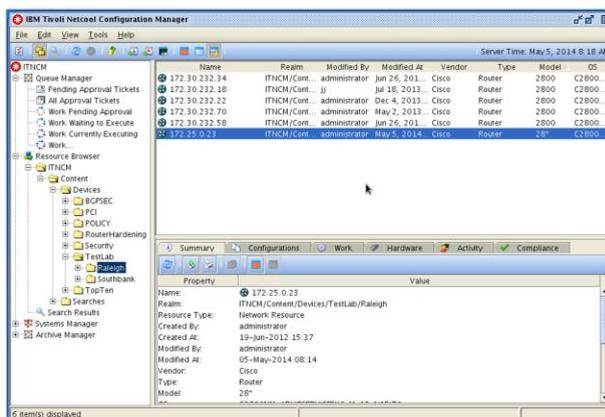
This slide reviews how a unit of work (UOW) import task is started. There are four basic steps to submit a UOW import task:

1. Log in as user administrator
2. Access the Resource Browser and select a device
3. Enter relevant network resources, failure options, priority, work schedule, and a unit of work task description
4. Click the **Finish** button to begin the unit of work import task.

This screen capture depicts the login to IBM Tivoli Netcool Configuration Manager front-end interface.

Creating an import task for a device

Access the Resource Browser and select any device within your realm. Right-click and select **Import** to create a unit of work task



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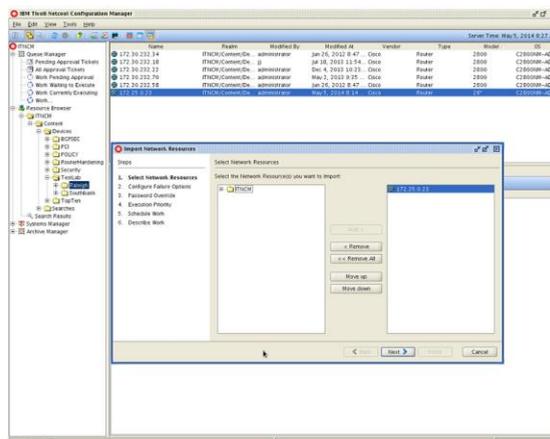
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This slide depicts how to access the Resource Browser and select a device. Here a device with an IP of 172.25.0.23 is selected. After you select a device, right-click and select **IMPORT** to begin creating a unit of work task.

Step 1: Performing a unit of work import task

Enter your relevant network resources, configure failure options, execution priority, work schedule, and description of the UOW task



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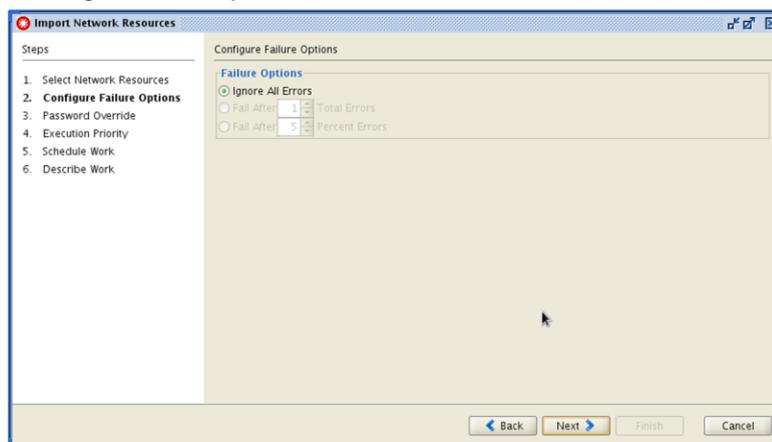
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On this slide, a unit of work (UOW) import task is started on the device you selected. Here you enter relevant network resources, failure options, priority, work schedule, and a unit of work task description. Select the relevant network resources. If the device is already selected, click **Next** to proceed.

Step 2: Performing a unit of work import task

Enter your relevant configure failure option for the unit of work task



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On this slide, you can set the relevant failure options for the unit of work (UOW) import task. This example shows **Ignore All Errors**. Click **Next** to proceed.

Steps 3 and 4: Performing a unit of work import task

Enter your relevant password override and execution priority of the unit of work task

The image displays two overlapping screenshots of the 'Import Network Resources' wizard. The left window is titled 'Password Override' and contains the following elements:

- Steps:** 1. Select Network Resources, 2. Configure Failure Options, 3. Password Override, 4. Execution Priority, 5. Schedule Work, 6. Describe Work.
- Title:** Password Override
- Text:** Override the default Passwords provided by ITNCM? (Optional)
- Form:** Override ITNCM Authentication, Login Name: [text box], Password: [text box], Enable Password: [text box], Only Use This Authentication.
- Navigation:** Back, Next

The right window is titled 'Execution Priority' and contains the following elements:

- Steps:** 1. Select Network Resources, 2. Configure Failure Options, 3. Password Override, 4. Execution Priority, 5. Schedule Work, 6. Describe Work.
- Title:** Execution Priority
- Form:** Execution Priority, Low, Medium, High.
- Navigation:** Back, Next, Finish, Cancel

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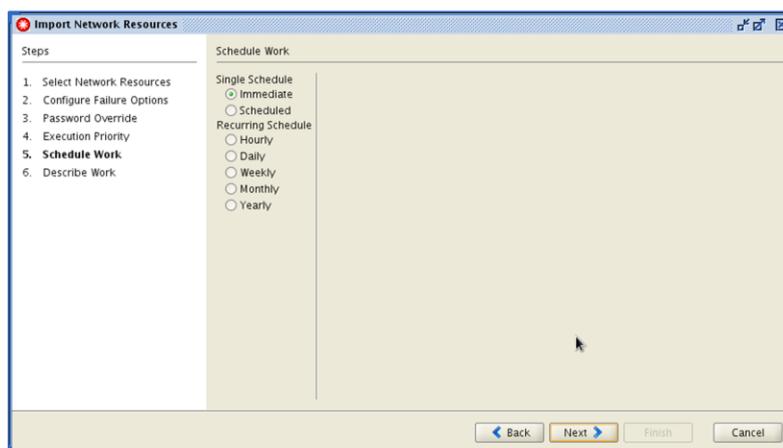
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This screen capture shows a unit of work import task's password override and execution priority windows. Because this example is a test import, it uses the default login and passwords with a low execution priority. Click **Next** for each section to proceed.

Step 5: Performing a unit of work import task

Enter your relevant schedule work of the unit of work task



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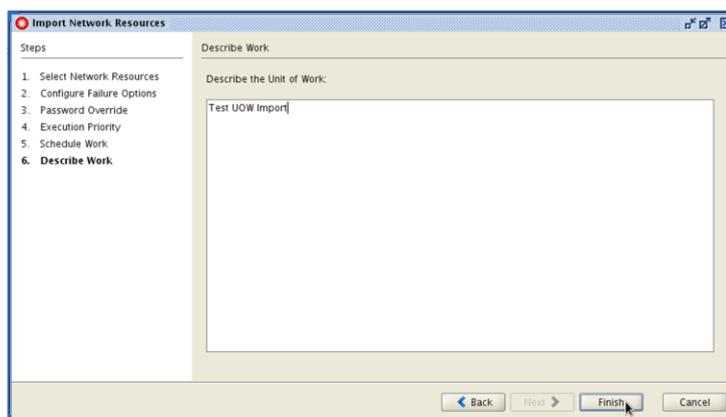
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In this screen capture, because this example is a test import task, a unit of work import task has been scheduled to immediately run within a single schedule. Click **Next** to proceed.

Step 6: Performing a unit of work import task

- Enter your task description of the unit of work task
- Click **Finish**



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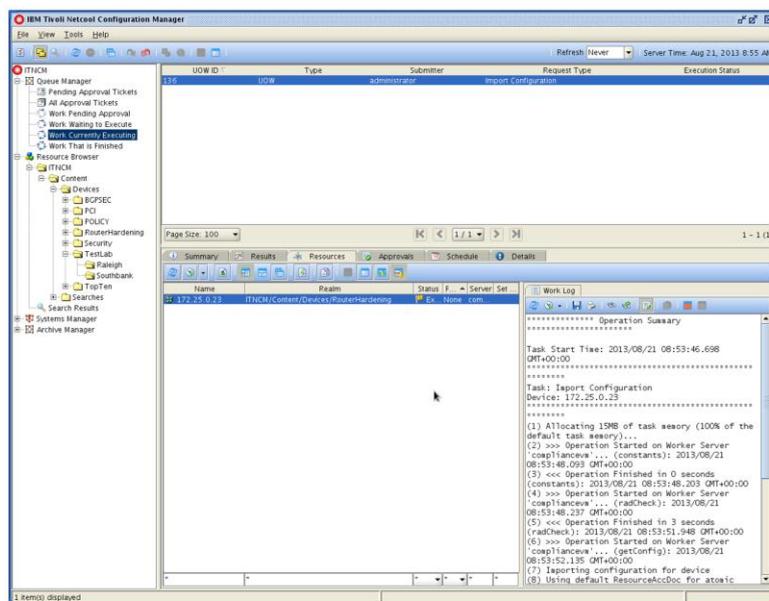
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At this point, enter the relevant unit of work task description and click the **Finish** button to begin the unit of work import task.

Moving to Queue Manager

After your unit of work task updates, it goes to the Queue Manager



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After you update the unit of work task, the task goes to the Queue Manager unless it requires approval. Then, an administrator super user must approve it before it moves to the Queue Manager.

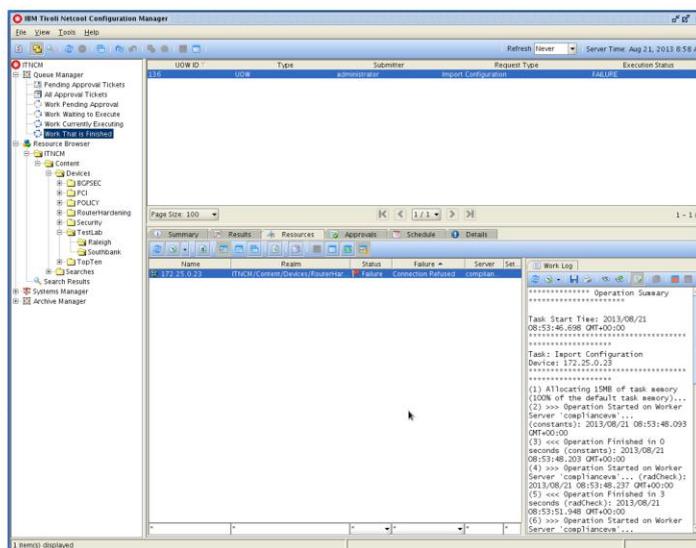
The unit of work import task then goes sequentially into these queues:

1. Work Waiting to Execute
2. Work Currently Executing
3. Work That is Finished

In this example, an administrator executed a unit of work import task for a Cisco router device with an IP of 172.25.0.23. The task is in the Executing phase, which means that it is in the Work Currently Executing queue.

Reviewing a unit of work import task

1. Log in to the IBM Tivoli Netcool Configuration Manager V6.3 front-end GUI as user administrator or related user with privileges to start or view UOW tasks and logs
2. Access the Queue Manager
3. Select the **Work That is Finished** queue to see the completed UOW import task in the right panel
4. Select the **Resources** tab to view the UOW log



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This slide lists the basic steps for reviewing a unit of work (UOW) import task after it completes:

1. Log in to the IBM Tivoli Netcool Configuration Manager front-end GUI as user administrator
2. Access the Queue Manager
3. Select the **Work That is Finished** queue
4. Select the **Resources** tab to view the unit of work log

In this screen capture, an administrator ran a UOW import task for a Cisco router device from the realm of ITNCM/Content/Devices/RouterHardening. The task is complete, which means that it is in the Work That is Finished queue.

This UOW import task failed. So the first area to review is the cause of failure and what message is depicted would be the unit of work (UOW) log or Work log. You access this log from the **Resources** tab of the selected UOW task in the lower right pane. You can save this log to your local client machine if you require a copy for review.

Common unit of work import task issues

Most common error messages that you encounter when executing UOW imports:

- Could not get actual model
- Unable to connect to device <IP Address>
- All resource access types that are defined in the RAD have been tried. Cannot initialize driver
- Error getting actual model and OS from <IP Address>

NOTE: These messages are subset messages that you can see in a UOW.log for started UOW tasks. Always note the time stamp of failure of the error message and review the same time stamp from the **intelliden.log** file, typically located in the **/opt/IBM/tivoli/netcool/ncm/logs** directory

When you import a unit of work or synchronize tasks for your Cisco devices, you might encounter some common error messages.

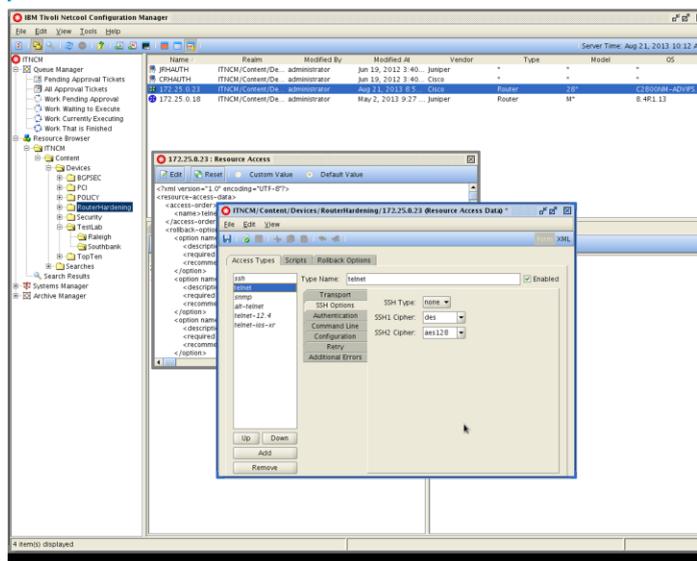
These four message snips can be either a subset of an entire message or a combination of the all of the previous messages that you might encounter in the unit of work log. Although these messages are common, you might see others, depending on the tasks that are performed or type of UOW.

Such messages mean that the unit of work import task that you started failed. Take note of the failure messages and the time stamp of the failure. You can then check the Intelliden.log for the same time frame to view more in-depth messages that can highlight why the task failed.

Overview of initial investigative steps

When you review a failed UOW import log and notice any of the generic messages noted previously, perform these initial actions:

- Review UOW log or Work log and intelliden.log
- Check your resource access document for access types defined
- Check your device scripts that are defined within the resource access document (RAD)



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When you review a failed UOW import log and notice any of the generic messages noted previously, perform these initial actions, as these are some quick overview areas to cover:

-When you notice UOW failures when users are performing an import to devices from IBM Tivoli Netcool Configuration Manager, the first area to review is the UOW.log and intelliden.log. Review the UOW.log first for the failed task from the UOW front-end GUI as noted in previous slides and take note for that specific time frame of the failure. This information confirms the specific error message and gives you direction on where to look at next.

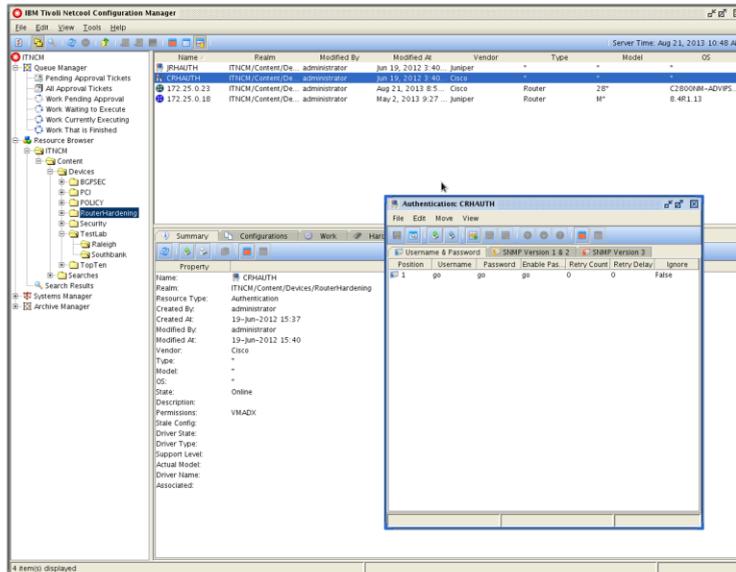
-Check your resource access document and device scripts to see whether you have Telnet and SSH access types that are enabled *together*, which might not always work. If your intention was to use this type of resource access document for devices for which you can only use either Telnet or SSH, you must separate these functions so that you configure Telnet type devices to be within a Telnet realm and SSH-type devices to be within an SSH realm. Then, create a resource access document for each connection type.

-To check the access types defined, you can review the screen capture on this slide. You can select the device in question from the Resource Browser, right-click the device, and select Resource Access to open a pop-up window. Select **Edit** to launch another pop-up window where you can review and edit your access types under the Access Types tab and device scripts that are configured under the **Scripts** tab. More details on these areas are covered in the sample scenarios later in this training module.

Refer to the next slide for another additional area to review when you encounter such unit of work import issues.

Other initial investigative steps to perform

When you review a failed UOW import log and see any of the previous generic messages, you must determine whether SSH or Telnet connectivity to the device is functioning



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You also must determine whether the Telnet or SSH connection is reaching the device from the IBM Tivoli Netcool Configuration Manager (ITNCM) server but has a wrong password. So from the IBM Tivoli Netcool Configuration Manager server command line, test the Telnet or SSH connection to the device directly to determine whether it is available and open for a successful connection. If it connects directly without any issues, then an authentication resource might have an incorrect user name or password defined. In this slide screen capture, you can see an authentication resource that is defined for Cisco Devices under the ITNCM/Content/Devices/RouterHardening realm. The test Cisco Router of 172.25.0.23 uses this resource when a UOW import task is started against it.

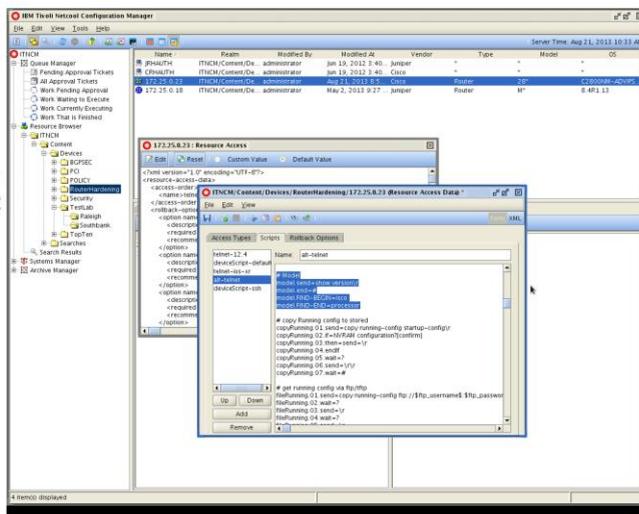
In addition, if you perform a test direct Telnet or SSH connection to the device directly and this connection fails, then it could cause the common UOW import failures that are mentioned previously. Connectivity failure to the device from IBM Tivoli Netcool Configuration Manager server can occur for several reasons:

- The actual device is unavailable and outside of network access
- The Telnet or SSH daemons are not enabled on the device itself
- Telnet or SSH is not configured properly on the device even though it is enabled

You can investigate these areas quickly to rule out common issues.

Sample Scenario 1: Unit of work import failure RAD

- As an example, here is the resource access document (RAD) used and noted from the unit of work (UOW) log snippet for the Cisco firewall:
Using ResourceAccDoc resource 'ITNCM/PIX-A'
- Open the RAD for the device and review the scripts section for the specific connection type that is used, such as Telnet or SSH



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You now have narrowed this unit of work (UOW) import failure to either a resource access document (RAD) issue or a connectivity issue. So the obvious next step is to review the RAD of the device in question.

For example, every UOW log specifies the RAD that is used:

Using ResourceAccDoc resource 'ITNCM/PIX-A'

The administrator should have already configured this item, but if you are a super user and did not set up the RAD for particular devices, the UOW log is the best area to quickly determine whether the default resource access doc is used or if a custom RAD was created. The example here depicts a custom resource access doc because no default is mentioned.

Now that you know the specific RAD used, open it and access the scripts section, as shown in this screen capture. You can select the device from the Resource Browser, right-click the device, and select **Resource Access** to open a pop-up window. Select **Edit** to launch another pop-up window where you can review and edit your access types under the **Access Types** tab and device scripts that are configured under the **Scripts** tab. Here you select the **Scripts** tab and then the connection script, which is based on the connection type to the device, such as Telnet or SSH. This example uses the alt-Telnet script.

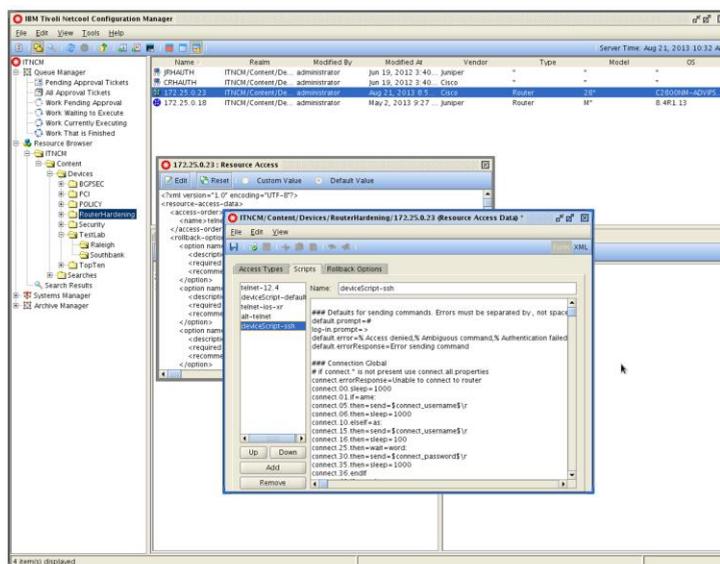
After you access the relevant connection script, double-check first the model section, because the UOW and Intelliden logs point to the fact that Tivoli Netcool Configuration Manager cannot obtain the OS and model details of the device. This script in the RAD is the controlling section. It has the commands that tell IBM Tivoli Netcool Configuration Manager how to connect to the device and obtain the relevant information needed. So the model section for the example looks like the lines that are highlighted in the screen.

A possible area to review is the last two lines of this model section. In the case of this scenario, you will probably have to customize them for the specific Cisco firewall, such as Cisco/Firewall/535/7.*. So to know what specific details to enter in these two lines, log on to the device, perform a show version and see from which section, such as Begin, to which section, such as END, you must pull for the device. That is, enter the beginning and ending words or snips of the words from your show version output of the device. These words tell IBM Tivoli Netcool Configuration Manager which specific section of the **show version** command it must import back into the IBM Tivoli Netcool Configuration Manager system when it connects to the device.

If the model section has already been configured correctly and the issue persists, check the deviceScript-ssh section in the RAD. Refer to the next slide for details on this procedure.

Sample Scenario 1: Unit of work import failure scripts review

Open the RAD for the device and review the scripts section for the specific connection type that is used, such as Telnet or SSH



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If the script model section of device resource access document is configured correctly and the issue persists, check in the deviceScript-ssh section of the resource access document. In this section, you review the configuration of the SSH connection that IBM Tivoli Configuration Manager is using to access the device. If the connection to the device cannot be made, IBM Tivoli Configuration Manager cannot pull the OS and model details as depicted in previously mentioned logs. These details can differ from device to device and depend on the connection type that your device allows.

Again, to access the resource access document's scripts, you can review this screen capture. You can select the specific device in question from the Resource Browser, as described previously. This example shows the deviceScript-ssh script.

After you access the script as shown in this screen capture, check whether any lines are missing, for example, these lines:

```
default.prompt=#
```

```
log-in.prompt=>
```

These lines tell IBM Tivoli Netcool Configuration Manager what device prompt to expect when it connects. If this information is not available, IBM Tivoli Netcool Configuration Manager cannot send or receive further commands.

Also, see whether you can connect to the device successfully from the IBM Tivoli Netcool Configuration Manager server command prompt and whether you can perform a Intelliden Device Terminal (IDT) manual connection from the IBM Tivoli Netcool Configuration Manager GUI to the device.

Check the version of SSH that is used, such as SSH1 or SSH2, and whether this information is blocked on the device. The aim is to rule out connectivity issues that might be preventing this UOW from importing successfully.

Sample Scenario 2: Unit of work import failure connection global sections

Sample connection global section with issues for the SSH connection

```
connect.errorResponse=Unable to connect to router
connect.00.sleep=1000
connect.01.if=as:
connect.05.then=send=$connect_username$r
connect.06.then=sleep=1000
connect.10.elif=as:
connect.15.then=send=$connect_username$r
connect.16.then=sleep=1000
connect.25.then=wait=word:
connect.30.then=send=$connect_password$r
connect.35.then=sleep=1000
connect.36.endif
connect.45.send=terminal length 0\r
connect.50.wait=#
connect.55.send=no terminal more\r
connect.60.wait=#
```

Sample connection global section to resolve issue so that unit of work import can work

```
connect.errorResponse=Unable to connect to router
connect.00.sleep=2000
connect.01.wait=as:
connect.05.send=$connect_username$r
connect.25.wait=word:
connect.30.send=$connect_password$r
connect.31.wait=>
connect.32.send=enable
connect.33.wait=word:
connect.34.send=$enable_password$r
connect.36.wait=#
connect.45.send=terminal length 0\r
connect.50.wait=#
connect.55.send=no terminal more\r
connect.60.wait=#
```

When you review the Intelliden log messages again, the error messages that are depicted in this example confirm that you must review the resource access document involved. The aim of the resource access document and device scripts is to set a combination of commands to both log in to the device and send commands automatically, like an expect script, when unit of work tasks are done on the device. The connection method that is used here is SSH. However, the device seems to be prompting for a user name and password, which is not the case because user name and password are sent earlier as part of the SSH protocol itself rather than something devices explicitly ask for. Further investigation reveals that the unit of work import task is failing because IBM Tivoli Configuration Manager is unable to connect correctly to the device. As mentioned in the previous slide, IBM Tivoli Configuration Manager connects to the device using the details of the connection global section in device scripts that are defined in your specific resource access document. Because the error in the Intelliden log points to this connect section that is causing the failure, you must review and rectify this section. The first point noted that in this slide shows the original resource access document section that you configured. Because the connection method in this example uses the SSH protocol, it fails. Therefore, you must eliminate the if-then portions of the script and change them to Wait, which is shown in the second section. After you do so, you save your changes into the specific SSH device script of your resource access document and run your unit of work import task again. This action resolves the sample scenario issue. When the previous investigation methods do not help you determine the problem's root cause by yourself, they at least provide key areas for you to collect and compile, which you can then provide to IBM Support. The detailed information gathering speeds IBM Support's root cause analysis time.

Summary

Now that you have completed this training module, you can accomplish these tasks:

- Interpret common generic log messages and the symptoms that relate to device import failures
- Perform high-level investigative procedures to identify the causes of Cisco Systems device import failures
- Handle high-level common unit of work (UOW) issues that are faced in IBM Tivoli Netcool Configuration Manager V6.3
- Perform initial investigation to overcome common UOW import issues
- Gather detailed information of failed UOW import for faster root cause analysis (RCA)
- Gather additional information before seeking assistance from IBM Support

In this IBM Tivoli Netcool Configuration Manager version 6.3 training module, you learned to interpret common generic Cisco device import log error messages. You learned which symptoms to look for relating to Cisco device import failures. This training module specifically covered log messages that relate only to Cisco Systems devices. You learned how to perform high-level investigative procedures to trace the cause of a Cisco network device import failure. You can now name, explain, and perform investigative procedures on four common units of work import issues that you sometimes face with IBM Tivoli Network Configuration Manager version 6.3, and you learned how to investigate and to gather additional information before you contact IBM Support.

Now that you have completed this training module, you can accomplish these tasks:

- Explain high level the common unit of work issues that are faced within IBM Tivoli Netcool Configuration Manager
- Perform initial investigation to overcome common UOW import issues
- Gather detailed information of failed unit of work import for faster root cause analysis



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