

## **Application Note**



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# Automate the configuration of routers for NetFlow export

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## **Table of Contents**

1	Overview		3
2	Configuratio	on Management definitions	3
1	2.1	Device Task and Step definitions	3
	2.2	Port Task and Step definitions	7
3	Using the co	onfiguration automation tasks	. 11

### **1** Overview

For a Cisco Router to export NetFlow records to an Entuity server a set of changes must be made to its configuration. Some of the additional configuration lines apply to the whole router and other are required for each port.

This application note describes an approach to automating the configuration of routers for NetFlow record export using Entuity Configuration Management facilities. This would allow one or multiple routers to be configured using a pair of Configuration Management tasks.

#### 2 Configuration Management definitions

Two tasks will be used to apply the configuration changes. One task will make the device level changes and the other will make the port level changes.

#### 2.1 Device Task and Step definitions

The Configuration Management Step for making the necessary changes at the device level should be created first so that it can be incorporated in the corresponding Task. Here's how such a Step would be created:

Main Menu -> Administration -> Configuration Management -> Steps

New Step	×
Name:	Flow export - Device
Description:	Configure flow export at the device level
Context:	device
Script:	<pre>// Determine the IP address that the NetFlow records should be exported serverIp = param.serverIp; // Obtain the setting provided by the user if (param.serverIp == "zone") // For zone configurations look up the set serverIp = com.entuity.jnirpc.JNIGenericRPC.getClientAddress(Integer // Interact with the device to apply the configuration changes expect.with { if(vendor.equals("9")) { sendln "configure terminal" expect(configPrompt, {}) setDiagnosticLogging false sendln "ip flow-export version 5" expect(configPrompt, {}) sendln "ip flow-export destination " + serverIp + " 9996"</pre>
	OK Cancel

Click "New" then fill in the Name, Description, Context and Script fields as follows:



This is the text for the Script:

// Determine the IP address that the NetFlow records should be exported to
serverIp = param.serverIp; // Obtain the setting provided by the user
if (param.serverIp == "zone") // For zone configurations look up the server IP
serverIp = com.entuity.jnirpc.JNIGenericRPC.getClientAddress(Integer.parseInt(device.devZoneID), false);

```
// Interact with the device to apply the configuration changes
expect.with
{
  if(vendor.equals("9"))
  {
    sendIn "configure terminal"
    expect(configPrompt, {})
    setDiagnosticLogging false
    setLogUser false
    sendIn "ip flow-export version 5"
    expect(configPrompt, {})
    sendIn "ip flow-export destination " + serverIp + " 9996"
    expect(configPrompt, {})
    setLogUser true
    setDiagnosticLogging true
  }
  else
  {
    println "NO VALID METHOD FOR THIS DEVICE"
    throw new Exception("no valid method for this device")
  }
}
```



Once the new Step has been saved select the Tasks tab and click "New" and fill in the Name, Description, Context, Steps and Parameters (Name and Default Value):

New Task X					
General Advance	d				
Name:	Name: Flow export - Device				
Description:	Configure flow export at the device level				
Context:					
Steps:	Name	Description	Add		
	login	Log in to a device			
	Flow export - Device	Configure flow export at the device	Remove		
	logout	Log out to a device	Move Up		
			Move Down		
		L			
Parameters:	Name	Default Value	New		
	serverIp	zone			
			Edit		
			Delete		
Configuration					
Monitor Task:					
-					
		OK	Cancel		

This Task will log into the device, run the Step script defined earlier then log out. The user will be prompted for the serverIP which will default to "zone". If an explicit IP is entered, then it will be used. If the parameter is left with the default "zone" setting, then the appropriate IP will be looked up when used with a multi-zone configuration. If zones have not been configured, then the server IP that the flows should be exported to must be entered.



Select the Advanced tab then fill in the Filter and Selection Limit and check the Show on View Selection option:

Fundation .	
Execution	
Job Timeout (seconds):	300
Connection Method:	use cli access parameters V
Raise Event on Completion:	
Collect Diagnostic Data:	
Hiter:	simple;substringoid(this.sysOid, 6, 7) == "9"
Context Menu	
Show on Context Menu:	
Show on View Selection:	
Confirm Execution:	
Selection Limit:	500

The statement used for the Filter restricts the use of this Task to Cisco devices only. Enabling the Show on View Selection option caused an option to be added to the view context menu that allows the task to be executed on all qualifying devices which, in this case, means all the Cisco devices. The Selection Limit is the largest number of devices that can be selected for a single Configuration Management operation.



#### 2.2 Port Task and Step definitions

The Configuration Management Step for making the necessary changes at the port level should be created first so that it can be incorporated in the corresponding Task. Here's how such a Step would be created:

#### Administration -> Configuration Management -> Steps

Click "New" then fill in the Name, Description, Context and Script fields as follows:

New Step		×
Name:	Flow export - Port	
Description:	Configure flow export at the port level	٦
Context:	port	•
Script:	<pre>// Interact with the device to apply the configuration changes expect.with {     if(vendor.equals("9"))     {         // Obtain a suitable port name for use with the CLI         shortDesc = target.portShortDescr         portIdentifier = shortDesc.substring(2, shortDesc.length() - 2         // Inkoke the configuration mode         sendln "configure terminal"         expect(configPrompt, {})         // Select the interface         sendln "interface " + portIdentifier         expect(configIfPrompt, {})         // Add one line to the configuration         sendln "ip flow ingress"         expect(configIfPrompt, {})</pre>	•
	OK	el



This is the text for the Script:

```
// Interact with the device to apply the configuration changes
expect.with
```

```
{
  if(vendor.equals("9"))
  {
       // Obtain a suitable port name for use with the CLI
    shortDesc = target.portShortDescr
    portIdentifier = shortDesc.substring(2, shortDesc.length() - 2)
        // Inkoke the configuration mode
    sendIn "configure terminal"
    expect(configPrompt, {})
        // Select the interface
    sendIn "interface " + portIdentifier
    expect(configIfPrompt, {})
       // Add one line to the configuration
    sendIn "ip flow ingress"
    expect(configIfPrompt, {})
  }
  else
  {
    println "NO VALID METHOD FOR THIS DEVICE"
    throw new Exception("no valid method for this device")
  }
}
```



Once the new Step has been saved select the Tasks tab and click "New" and fill in the Name, Description, Context and Steps fields:

New Task			×		
General Adva	nced				
Name:	Flow export - Port	Flow export - Port			
Description:	Configure flow export at the	Configure flow export at the port level			
Context:	port	port v			
Steps:	Name	Description	Add		
	login	Log in to a device			
	Flow export - Port	Configure flow export at the port le	Remove		
	logout	Log out to a device	Move Up		
			Move Down		
Parameters:	Name	Default Value	New		
			Edit		
			Delete		
Configuration Monitor Task:					
		ОК	Cance		

For each physical port on a device, this Task will log into the device, run the Step script defined earlier then log out.



Select the Advanced tab then fill in the Filter and Selection Limit and check the Show on View Selection option:

ew Task		×
General Advanced		
Execution		
Job Timeout (seconds): Connection Method: Raise Event on Completion: Collect Diagnostic Data: Filter:	300 use cli access parameters simple;(substringoid(this.ref.device.sysOid, 6, 7) == "9") && (portEx(this).portVirtualIndicator == 0)	
Context Menu Show on Context Menu: Show on View Selection:	<ul> <li>Image: Constraint of the second second</li></ul>	
Confirm Execution: Selection Limit:	500	
	O	K Cancel

The Filter statement not only restricts the use of this task to Cisco devices but also limits it to ports that are flagged as Physical via the Classification attribute. This avoids any attempt to enter NetFlow commands for virtual ports that don't exist in the CLI configuration.



### **3** Using the configuration automation tasks

In the Explorer, right click either an individual device or a view and select the *Configuration Management -> Flow* export – *Device* menu option. This corresponds to the new device level Task that's been created:

	EXPLORER	0		
CANCEL	/All Objects	< BACK	👔 Summary 📄 Contents	🏠 Servi
💏 JD's lab		>		
BOSTON-ROUTER	Configuration Management	Add SN	MP community string	
bottom2960	Add to View	Copy of	Set sysContact	
bottom3550	Add to Service	Copy ru	nning config to startup config	
brn30055cade506	Explore	Delete (	SNMP community string	[
brother2	MIB Browser	Elow ex	nort - Device	
bsw1	Remote Terminal	Set sys	Contact	
buildervm	Show Open Incidents	SNMP	lump	
CHICAGO-ROUTER	Suppress Events		0 (0%)	
CHICAGO-SERVER	Threshold Settings	>		
CHICAGO-SWITCH	Access via Web Broweer	>		
CHICAGO-SWITCH2	Access via Web Browser	>		
dual-nic-server	Access via web Browser in a New Tab			
e2821	соппеститу керотт	>		
hyperv		>		

You'll be prompted for the IP address that the devices will need to be configured to export the flows to. If your server isn't configured to use Zones you must enter the appropriate IP address before clicking OK. If you're using Zones then leave the setting as "zone":

Parameters for 'Flow export - Device'	×
serverIp = zone	
	OK Cancel



The port task can be run against all the ports of a device by multi-selecting those ports in the ports dashboard then selecting **Configuration Management -> Flow Export – Port** from the context menu. This option is also available from the view context menu which is how all the ports on all the devices in that view could be configured in one operation:

