

HP Network Node Manager i Software

Step-by-Step Guide to Custom Poller

Software Version 9.00



This document steps through an example of setting up the Custom Poller to monitor a MIB that NNMi does not monitor by default. The Custom Poller is only available with NNMi 8.11 or greater.

NOTE: In NNMi 9.00, if you are logged in a “root” (Unix) or “administrator” (Windows), then no user name or password is required for most command line tools.

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Setting Up Your MIB

Step 1: Identify the MIB Variable You Want to Poll

To begin, identify a MIB variable that you want to poll.

This example monitors the disk usage on Microsoft PCs using the `rfc2790-HOST-RESOURCES-MIB`. This MIB is shipped with NNMi under the following directory:

```
%NnmInstallDir%\misc\nnm\snmp-mibs\Standard
```

The `%NnmInstallDir%` location depends on your operating system:

Windows 2008

```
%NnmInstallDir% =
<drive>\Program Files(x86)\HP\HP BTO Software\
```

Windows 2003

```
%NnmInstallDir% =
<drive>\Program Files(x86)\HP\HP BTO Software\
```

UNIX

```
$NnmInstallDir = /opt/OV/
```

This example uses `rfc2790-HOST-RESOURCES-MIB` for the following reasons:

- The availability of Microsoft PCs makes this example easy to test
- You can easily increase disk space usage to change the resultant query and trigger a State change

Step 2: Ensure the MIB Includes Supported Types

Make sure you are familiar with the MIB you will be using. This is especially important because the variables used must have a type that NNMi supports. See “Troubleshooting Tips” for a list of supported MIB variables.

- 1 First, check whether the MIB is loaded by selecting **Configuration > Loaded MIBs**. The `rfc2790-HOST-RESOURCES-MIB` should appear in the Loaded MIBs view. Because the MIB is loaded in NNMi, you can study the MIB using the Loaded MIBs view:
 - a Click the check box that precedes the MIB you want to view.
 - b Select **Actions > Display MIB File**.

NOTE: Alternatively, you could view the MIB file in a text editor.

An excerpt from the `rfc2790-HOST-RESOURCES-MIB` is shown below:

```
HrStorageEntry ::= SEQUENCE {
  hrStorageIndex Integer32,
  hrStorageType AutonomousType,
  hrStorageDescr DisplayString,
```

```

hrStorageAllocationUnits Integer32,
hrStorageSize Integer32,
hrStorageUsed Integer32,
hrStorageAllocationFailures Counter32
}

```

As shown in the example excerpt, `hrStorageDescr` is of type `DisplayString`. `hrStorageUsed` is of type `Integer32` and `hrStorageAllocationUnits` is of type `Integer32`. The NNMI Custom Poller supports both of these types.

According to the MIB definition, `hrStorageUsed` is the size of the storage measured in `hrStorageAllocationUnits`. To measure the amount of storage used in kilobytes (KB) on the "C:" drive, this example uses the following MIB expression:

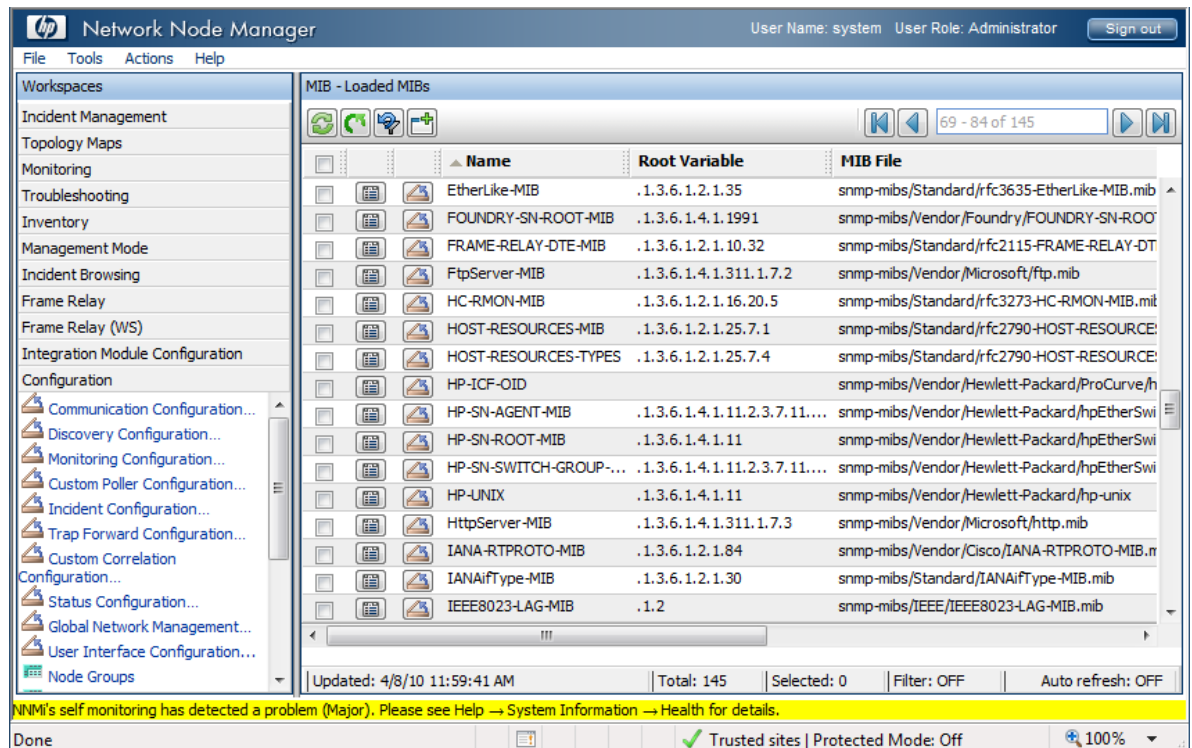
```
((hrStorageUsed / 1000) * hrStorageAllocationUnits)
```

This example also uses the `hrStorageDescr` to identify the "C:" drive.

Step 3: Load the Required MIB

NNMI's Custom Poller requires that the MIB be loaded onto the NNMI management server.

Using the **Loaded MIBs** view described in "Step 2: Ensure the MIB Includes Supported Types", we can determine that the `rfc2790-HOST-RESOURCES-MIB` is loaded in NNMI as shown in the following example:



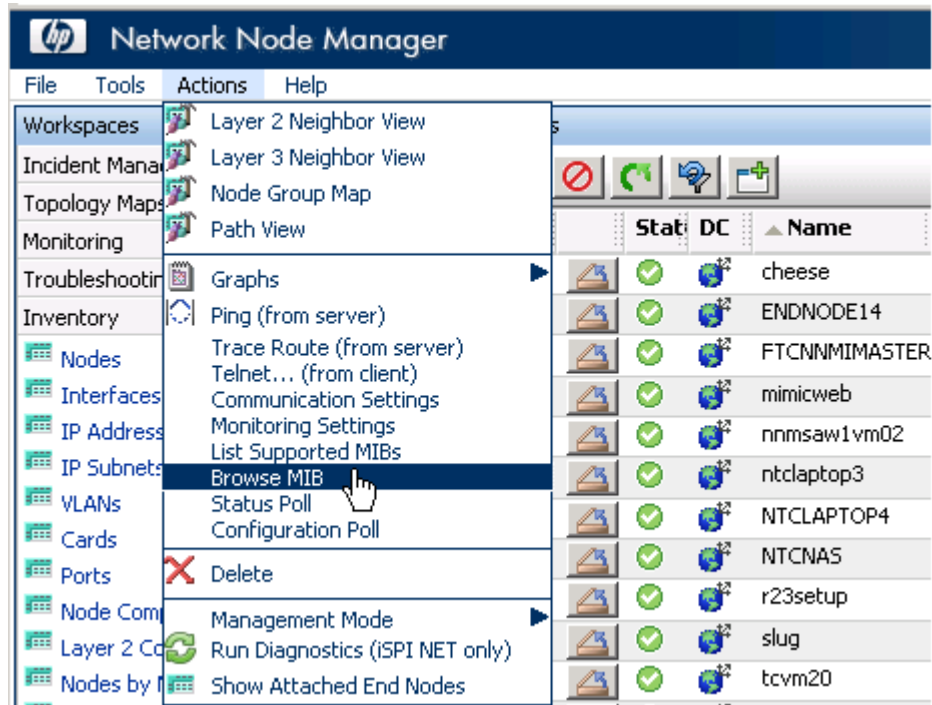
TIP: To check whether the MIB is already loaded, you can also run the `nnmloadmib.ovpl -list` command. Look for the desired MIB in the results.

If the MIB had not been loaded, you can load it with the **Tools > Load MIB...** or the `nnmloadmib.ovpl -load` command.

Step 4: Use the MIB Browser to View Current MIB Variable Values

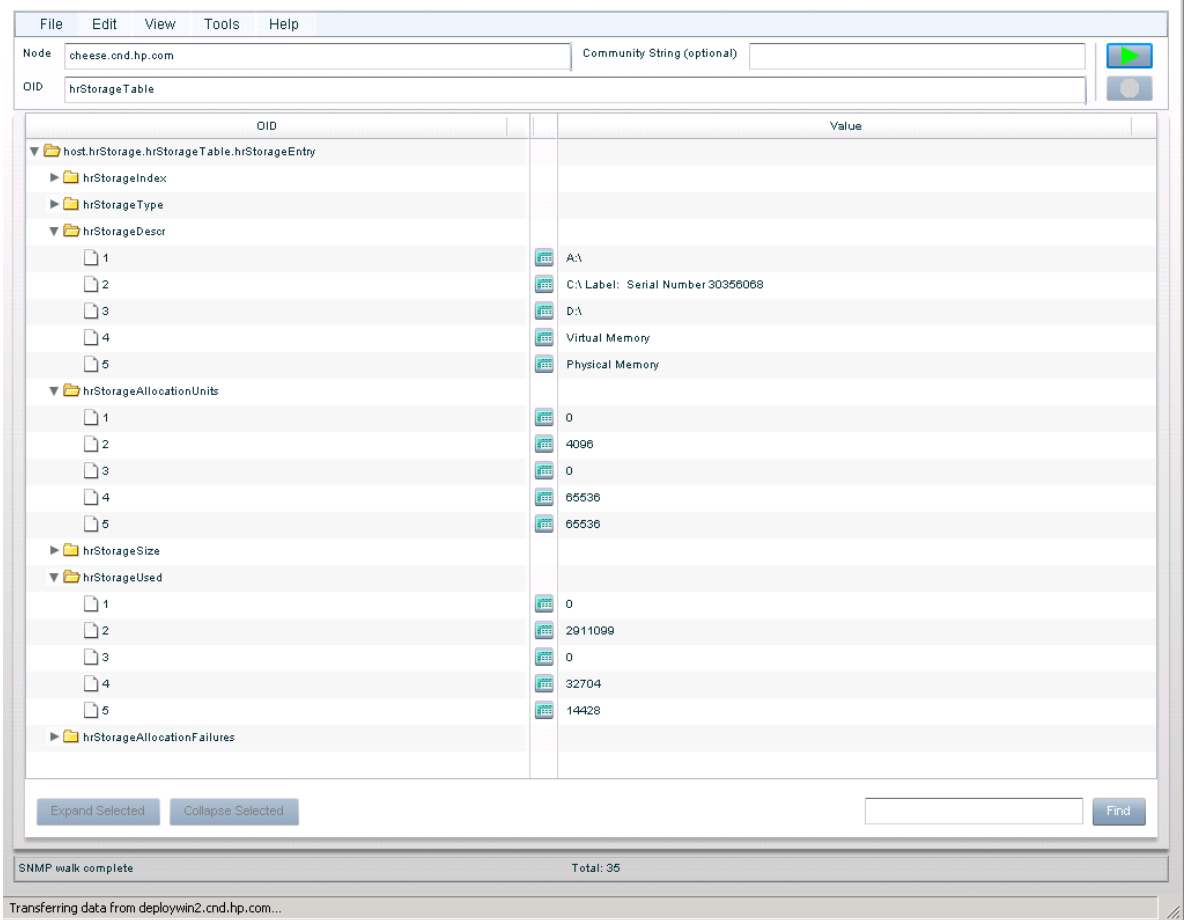
Next, use the MIB Browser to perform an SNMP query and become familiar with the MIB variable values returned from the node. In this example, the node is a Windows PC server.

1. Select a node that has a Device Category of Server (🌐).
2. Select **Actions** > **Browse MIB**.



In the **Node** attribute you should see the name of the node you selected.

3. In the **OID** attribute, enter `hrStorageTable`.
4. Click the ▶ Start SNMP Walk icon.



To check the storage used on the "C:" drive, look for the string from the hard disk that begins with C:\.

As shown in the example above, one of the strings in the **Value** column begins with C:\. You can see the value for hrStorageAllocationUnits is 4096 on this drive. The hrStorageUsed value is 2911099.

Next, you need to enable Custom Poller so that you can use it to specify the MIB Expression you want NNMi to poll.

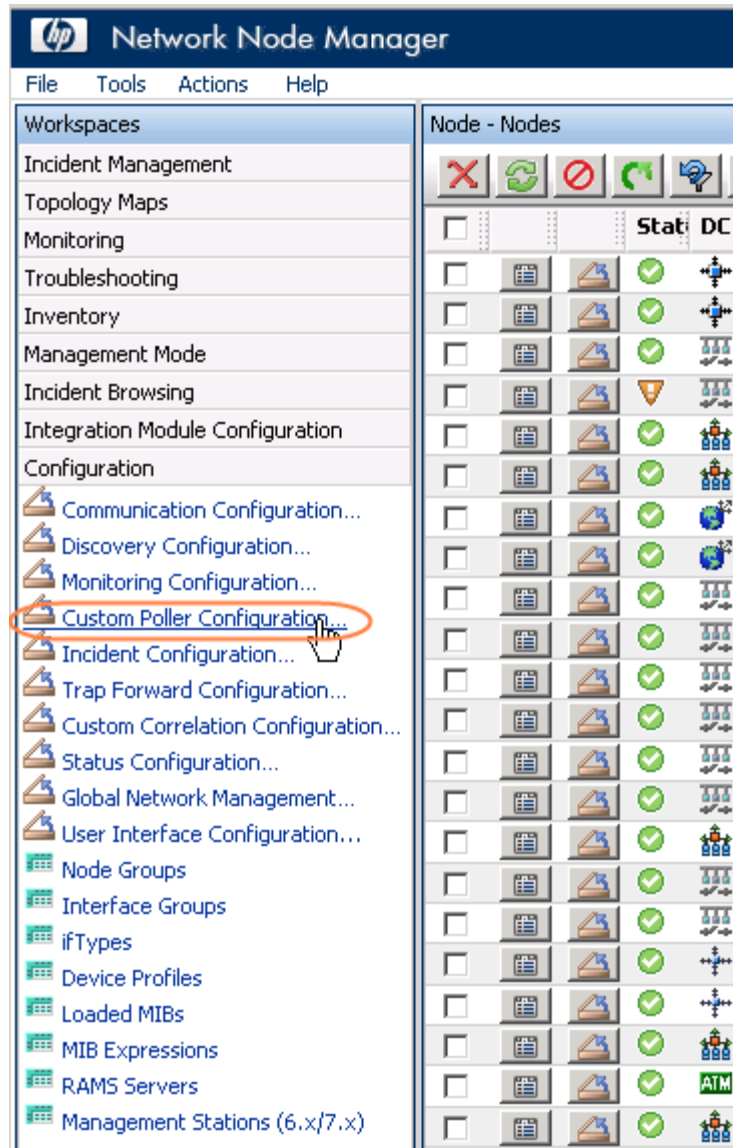
Setting Up a Custom Poll

Step 1: Enable Custom Poller

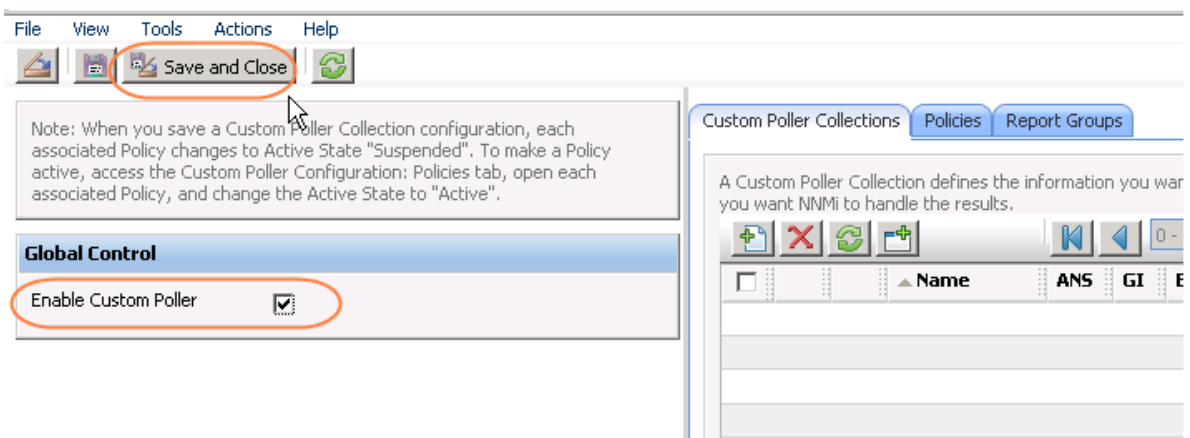
Custom Poller is not enabled by default.

To enable Custom Poller:

1. Navigate to the **Configuration** workspace.
2. Select **Custom Poller Configuration**.



3. Click to check **Enable Custom Poller**.
4. Click **Save and Close**.

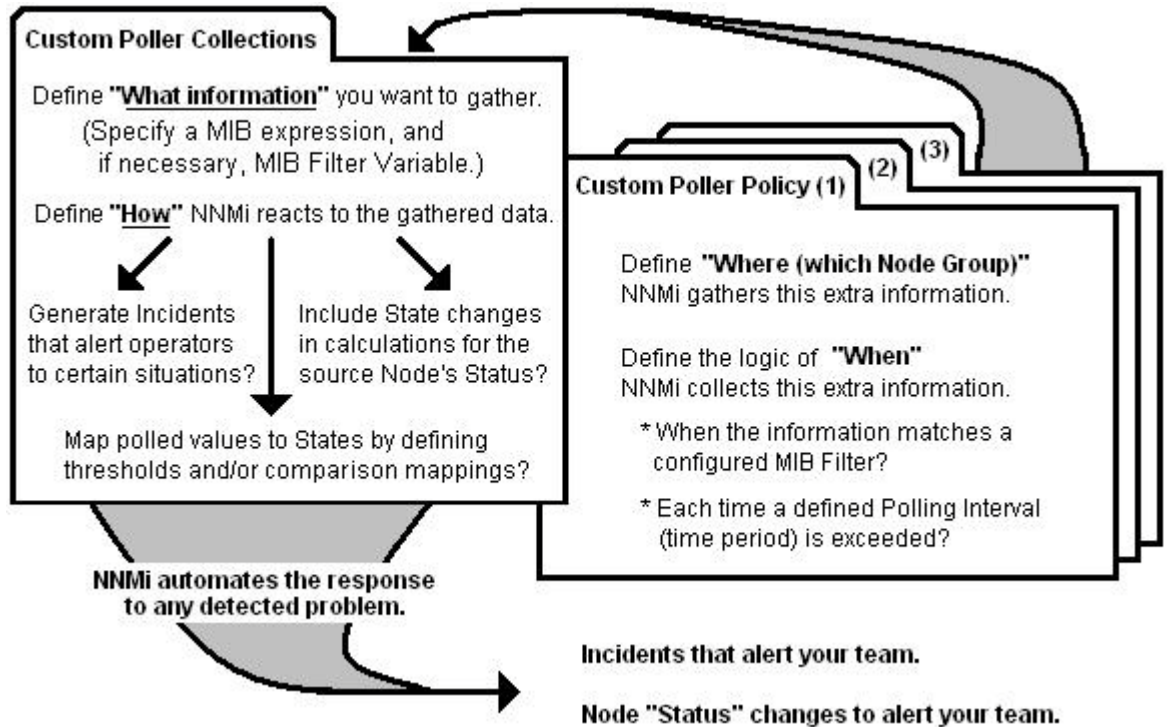


Step 2: Create a Custom Poller Collection

After you enable Custom Poller, you are ready to create a Custom Poller Collection. A Custom Poller Collection defines the information you want to gather (poll) as well as how NNMi reacts to the gathered data.


In addition to a Custom Poller Collection, you should define at least one Custom Poller Policy. Each policy specifies the Node Group on which you apply the Custom Poller Collection.

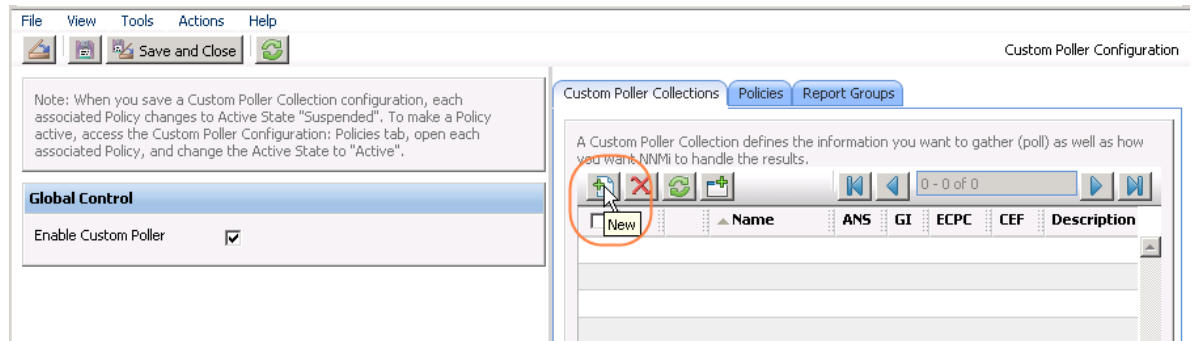
A diagram of the hierarchy of Custom Poller Collections is depicted below:



In our example, we are required to provide a MIB Filter value to select the disks we want NNMi to monitor. If we do not specify a MIB Filter Variable and MIB Filter, NNMi assumes the MIB variable does not have multiple instances.

To create our Custom Poller Collection:

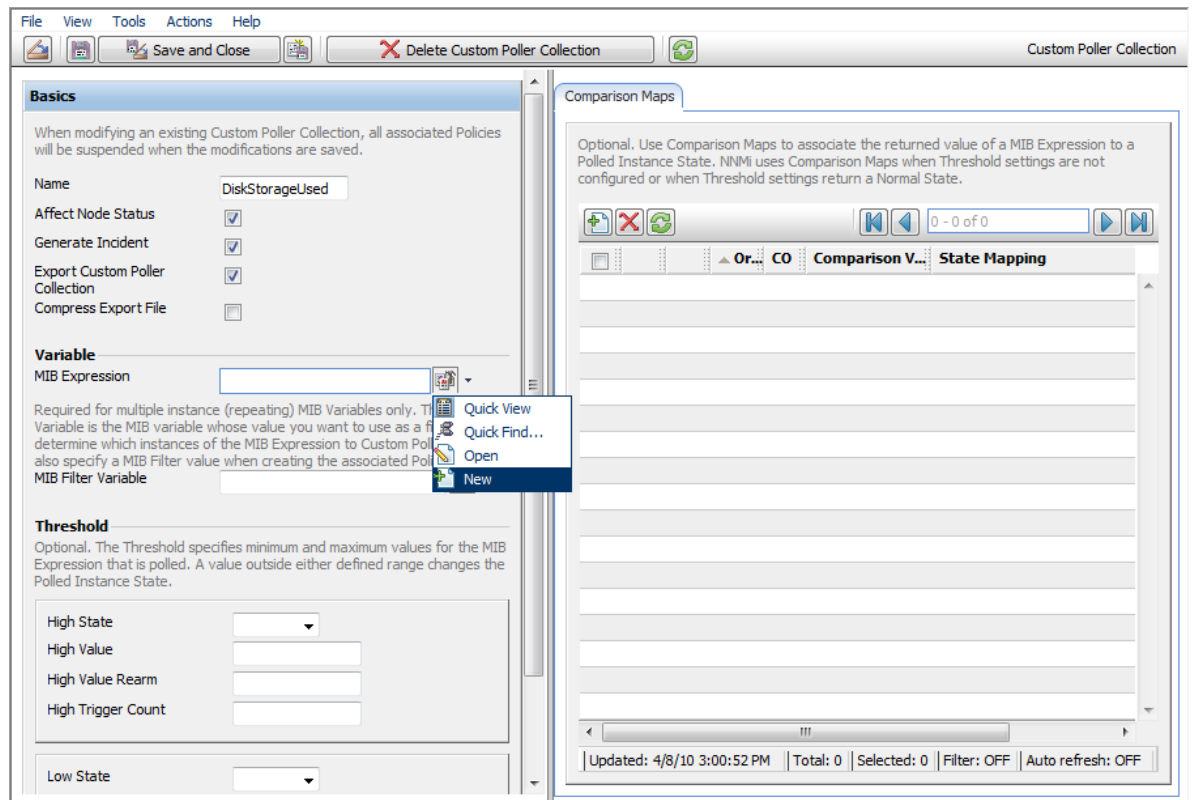
1. Open the same Custom Poller Configuration form as described in Step 1: Enable Custom Poller:
 - a. Navigate to the **Configuration** workspace.
 - b. Select **Custom Poller Configuration**.
2. Navigate to the **Custom Poller Collections** tab.
3. Click the  New icon.



4. In the **Name** attribute of the Custom Poller Collections form, name the Collection `DiskStorageUsed`.
5. Click to check **Affect Node Status**, **Generate Incident** and **Export Custom Poller Collection**.

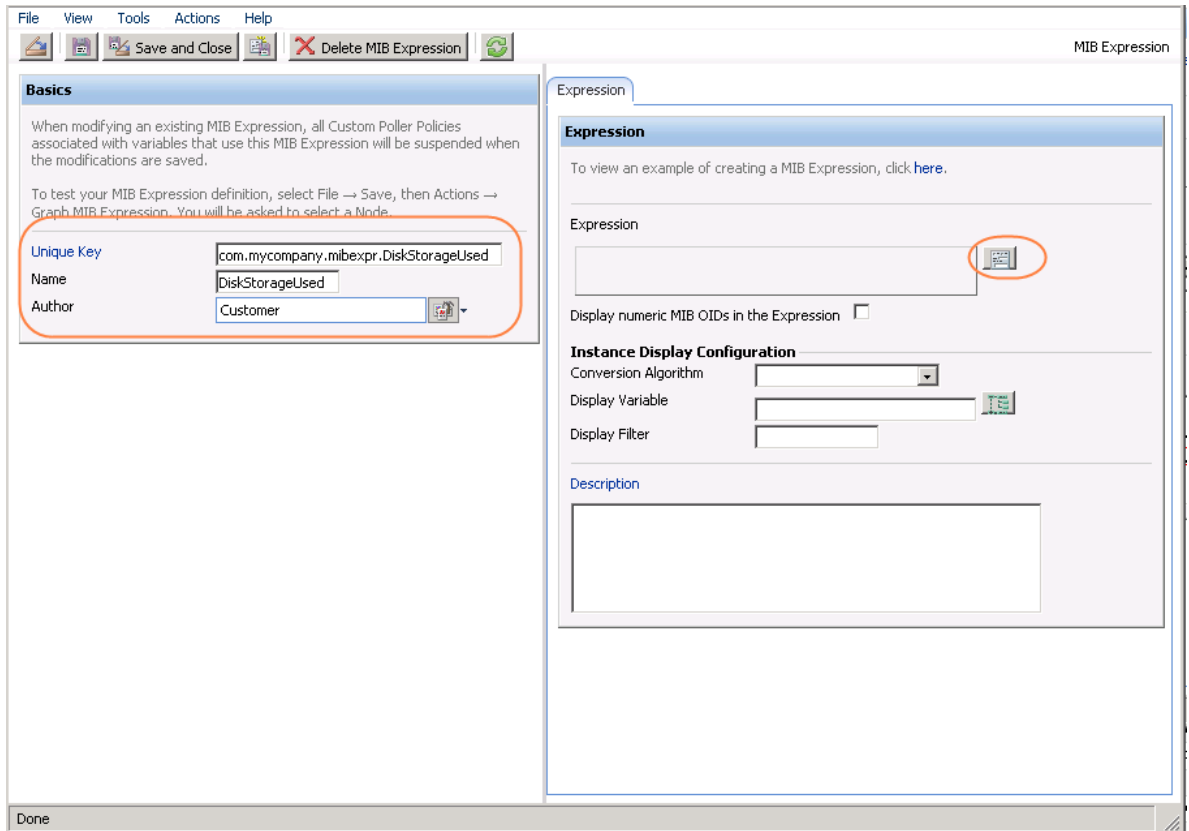
Next, we need to specify a MIB expression.

6. In the MIB Expression attribute, click  New to open a New MIB Expression form.



7. Enter in a Unique Key, Name and Author.
This example uses the author **Customer**, which is the default.

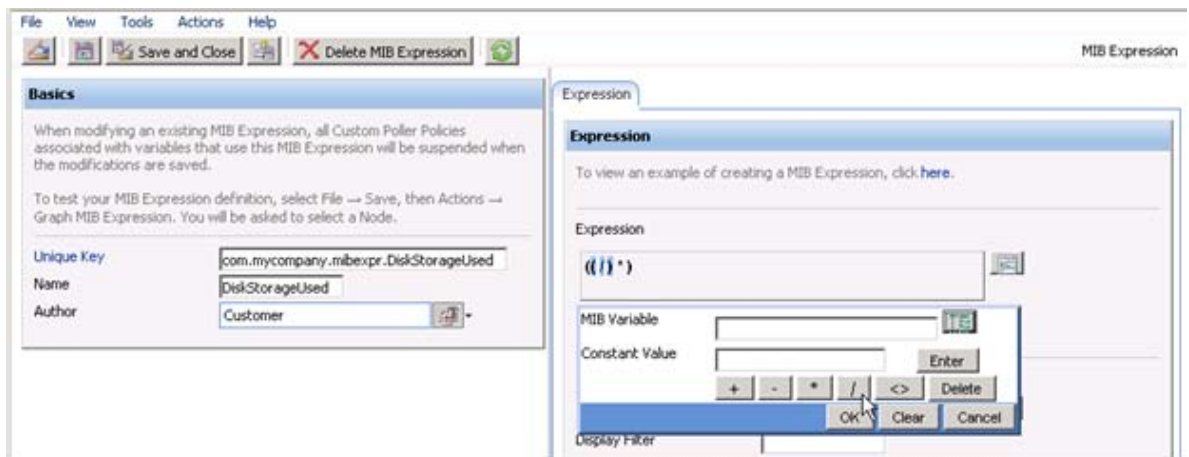
Next, create the MIB expression.



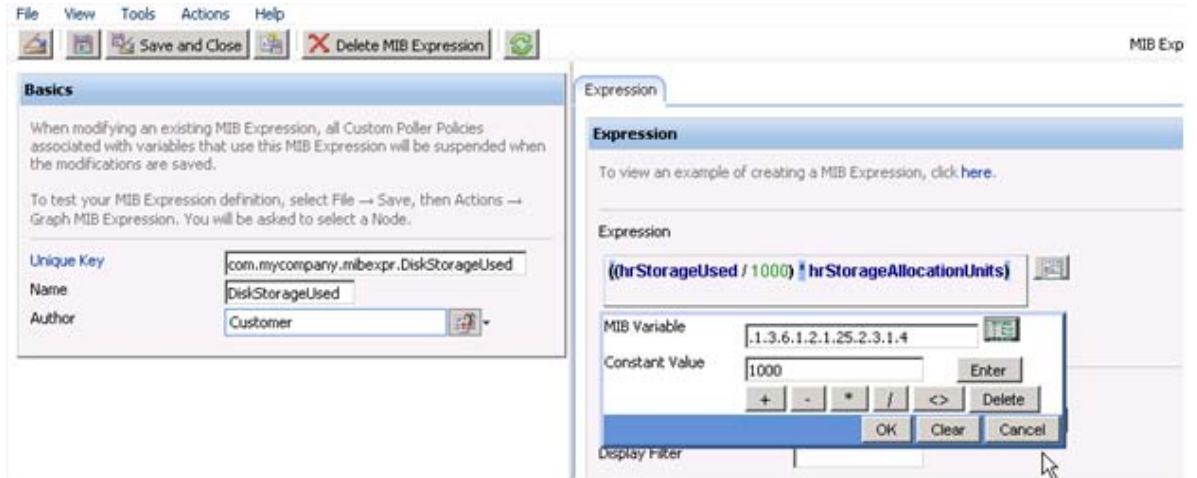
- Write out the expression before working with the user interface. In this example, the MIB expression is:

$$((hrStorageSize / 1000) * hrStorageAllocationUnits)$$

- When specifying the expression, you want to begin by inserting all of the operands. The operands in this expression include / and *.



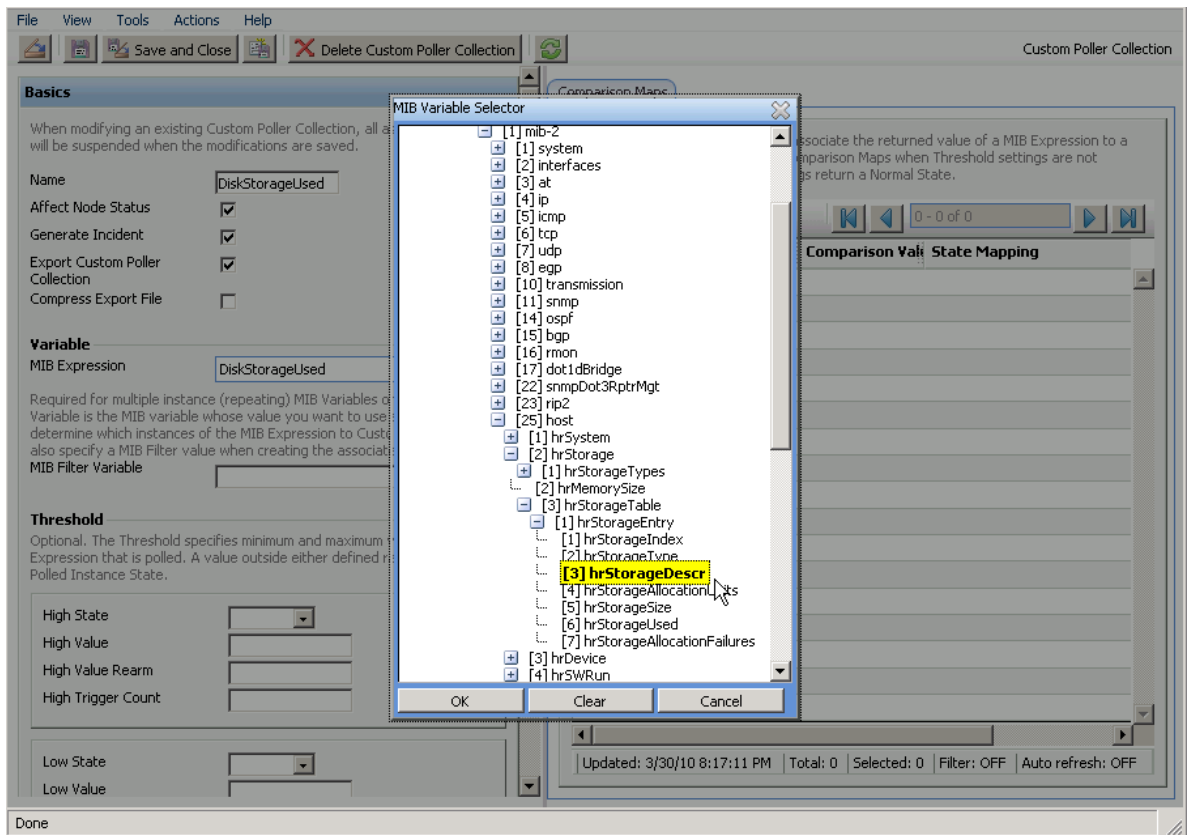
- After you select each operand, place the cursor in the location where you want to insert a MIB variable.
- Navigate the MIB Variable tree to select the `hrStorageUsed` and `hrStorageAllocationUnits` variables.
- Add the constant 1000.



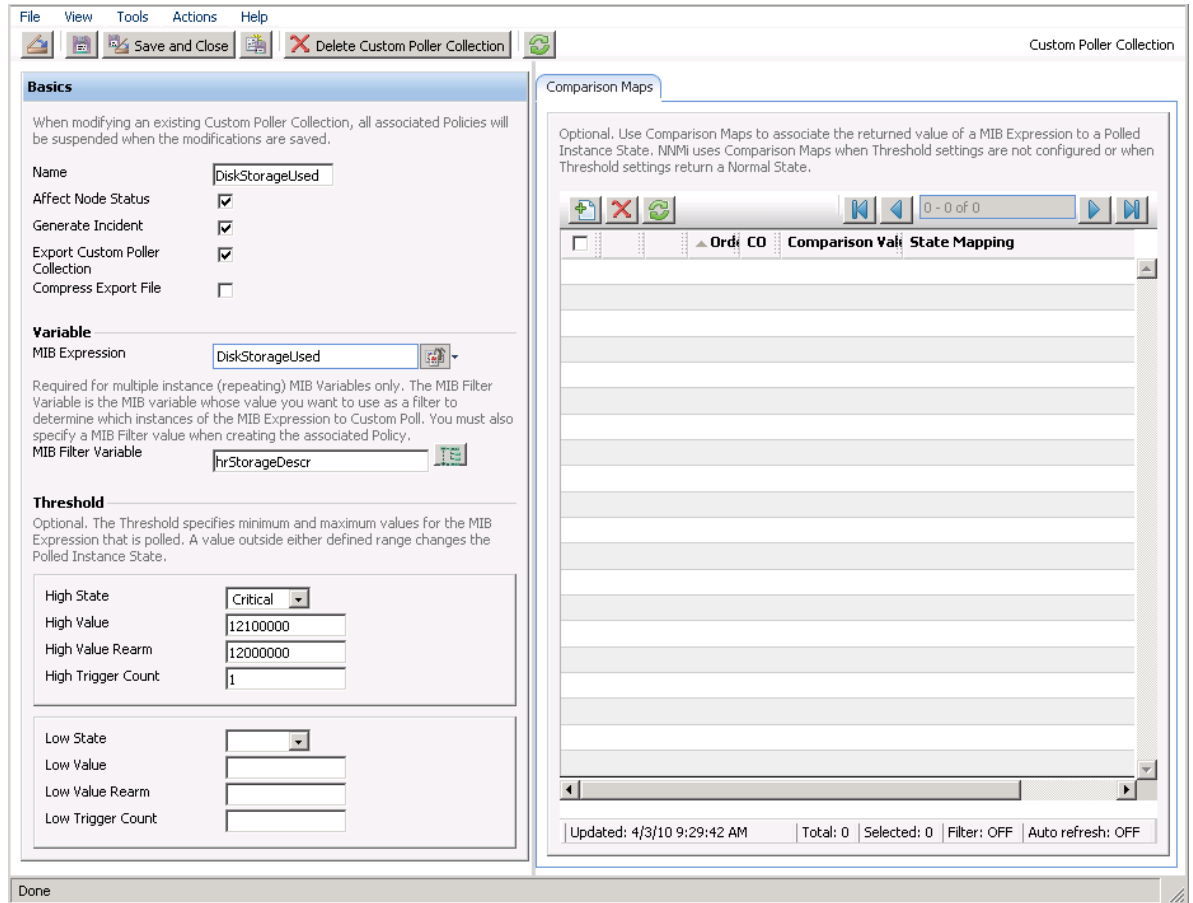
13. Click **Save and Close**.

Next you must specify a MIB Filter Variable. This example uses `hrStorageDescr`.

14. From the MIB Filter Variable entry, navigate to the `hrStorageDescr` value.



Finally, set a threshold to trigger an alarm. This example uses 12100000 as the threshold value with a rearm value of 12000000. The alarm triggers with just one sample above the threshold.



15. In the **High Value** attribute, enter 12100000.

16. In the **High Value Rarm** attribute, enter 12000000.

17. Click **Save and Close**.

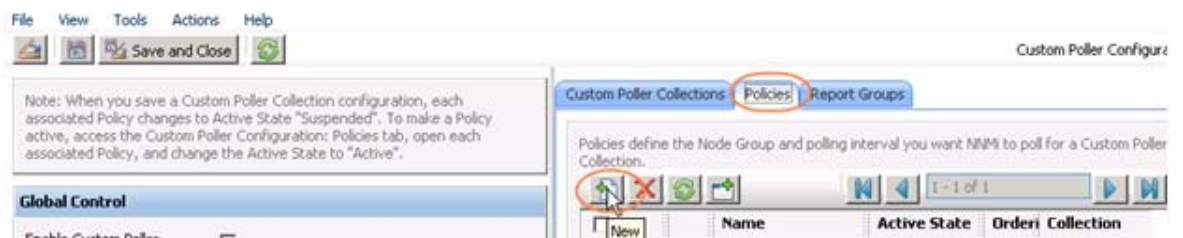
You now have a Custom Poller Collection.

Next, you create a policy for the Custom Poller Collection that looks for C: at the start of the value.

Step 3: Create a Policy for a Custom Poller Collection

A Policy defines which Node Groups are participating in this Custom Poller Collection and how often the variable is polled. It is also used to define the MIB filter to select specific instances. You can create more than one Policy associated with a Custom Poller Collection.

1. To begin, navigate to the **Policies** tab and select the  New icon.



2. In the **Name** attribute, enter `WindowsUsedDiskSpace`.

NNMi displays this name in the incident browser, whenever an associated incident is generated for the Custom Poll.

Next specify the ordering.

Because you can create more than one Policy associated with a Custom Poller Collection, you need to specify an order to remove ambiguity when a node is matched to more than one policy.

For example, you might want a Custom Poller Collection to run against a Node Group for Routers and a Node Group for Switches. You also might want to poll the routers every 5 minutes and the switches every 8 minutes.

If a node is both a switch and a router, then it is not allowed to be polled twice by the same collection. You might decide that if a node is both a switch and a router, it is important that it be polled more quickly (using the Router policy). Therefore, you use a higher priority order number for the Router Policy. When you specify an order, the node is matched against the highest priority policy (lowest Ordering number).

Because we have only one Policy for a Collection, we do not need to be concerned about this order.

3. In the Ordering attribute, accept the default value of **1**.

4. Use the **Quick Find** pull down menu to select the Collection that we previously defined.

5. Change the Active State to **Active**.

6. Use the **Quick Find** pull down menu to select the **Microsoft Windows Systems Node Group**.

Next, specify the MIB Filter.

7. Recall that the values from our SNMP walk, the C drive always started with `C:`. Therefore, in the MIB Filter attribute, enter `C:*` as the filter. Avoid matching all instances by entering the asterisk (*) as the filter. This could lead to a large number of matches and adversely affect NNMi Custom Poller performance.

Finally, specify the Polling Interval.

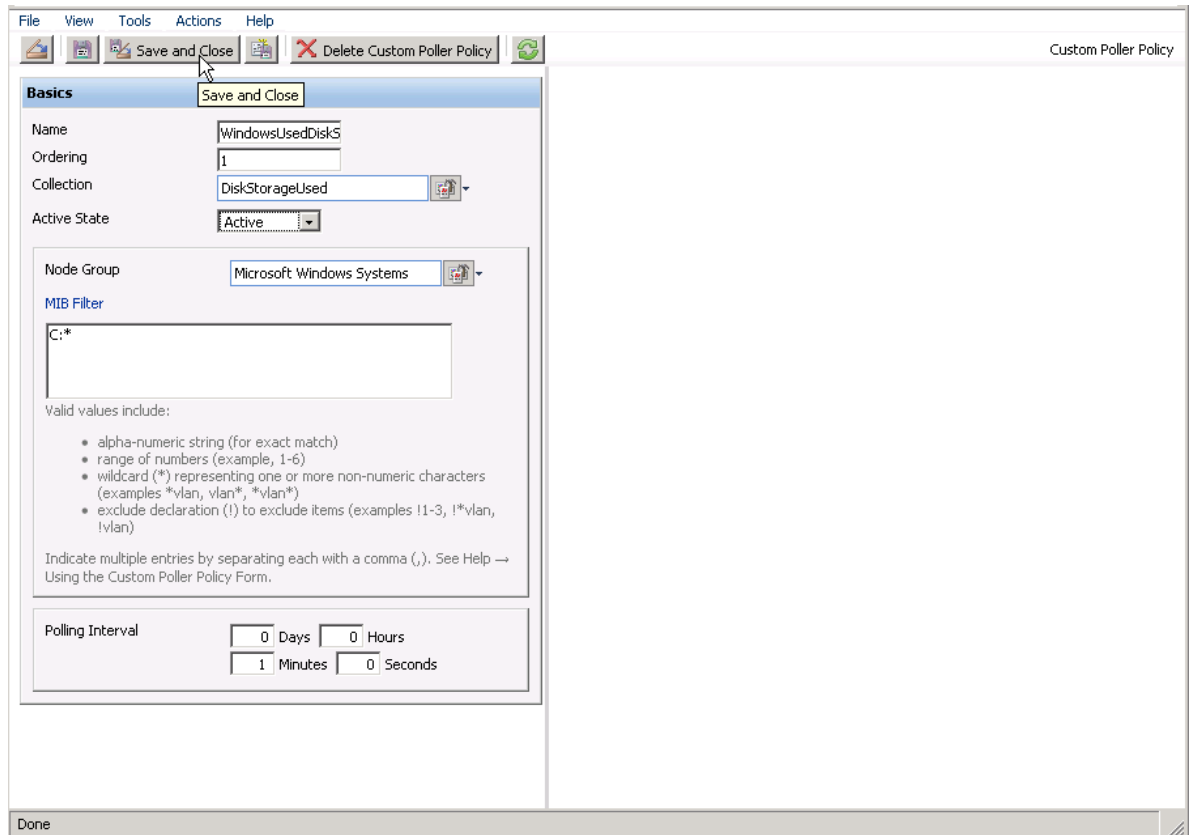
In NNMi, you cannot force a Custom Poll. (The Status Poll or Configuration Poll options from the Actions menu do not include the Custom Poller.) Therefore, while initially setting up your Custom Polls, you might want to set the Polling Interval fairly short, so you do not have to wait a long time for each poll cycle.

8. Set the Polling Interval attribute to **1** minute for easier testing.

TIP: As a best practice, after you have set up your Custom Polls as desired, select a longer Polling Interval. Using short Polling Intervals can adversely affect NNMi Custom Poller performance.

9. Click **Save and Close** to save your Policy.

TIP: If you make a change to a Custom Poller Collection configuration after you save it (for example, change the **High Value**), NNMi automatically changes the Active State of the associated Custom Poller Policies to Suspended. If this occurs, open the Policy configuration and change the Active State back to Active.



View the Results of Your Custom Poll

Step 1: View the Node Collections Associated with Custom Poller Policies

After you configure your Custom Poller Collections, you can view the Custom Poller objects. NNMi identifies these objects as Custom Node Collections.

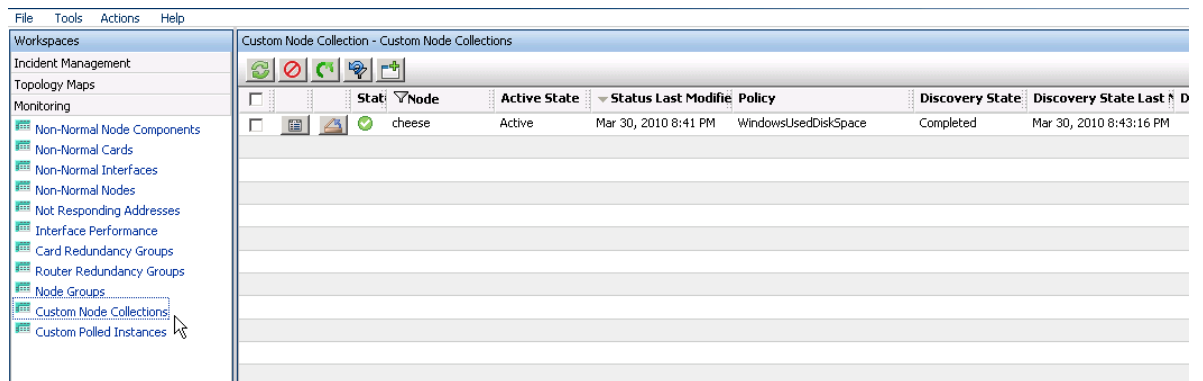
To view Custom Node Collections:

1. Navigate to the **Monitoring** workspace.
2. Select **Custom Node Collections**.

NNMi displays a table view of all Custom Node Collections that includes:

- The Custom Node Collection status.
- The topology node associated with the Custom Node Collection.
- The Active State for the associated policy.

- The date and time the Status was last modified.
- The name of each policy associated with each Custom Node Collection.
- Discovery information regarding the MIB Expression on each topology node, such as Discovery State, the time stamp when the Discovery State was last modified, and Discovery State Information.

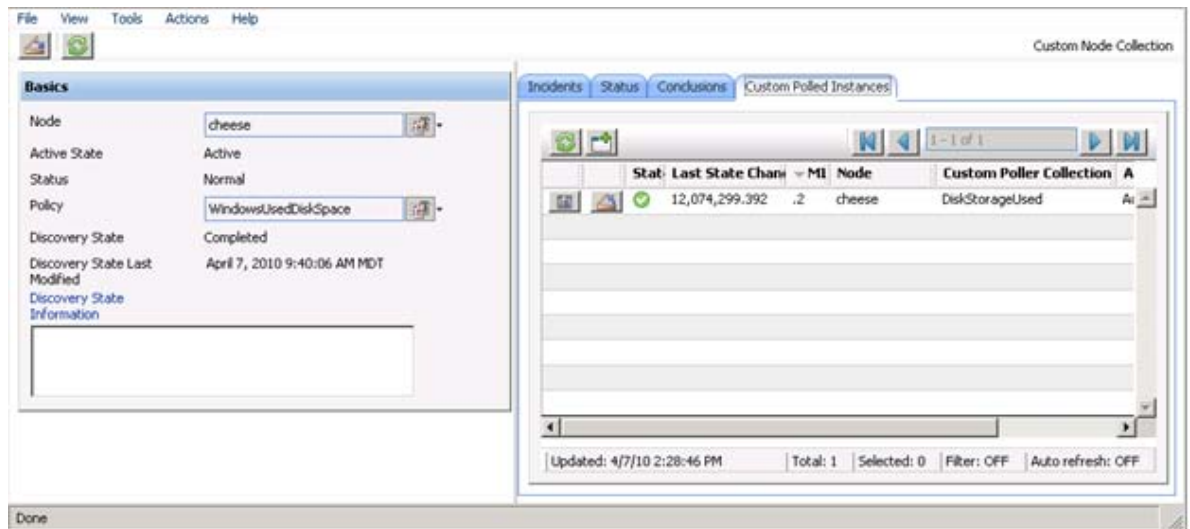


TIP: The same node name can be listed in the Custom Node Collections view multiple times if it has multiple Custom Poller Collections applied to it. These are not "Nodes" but "Node Collections".

Step 2: View the Details of a Custom Node Collection

To view the details for a specific Custom Node Collection, click the  Open icon that precedes the Node Collection of interest.

As shown in the example below, you can see any incidents that have been generated, the Status history, Conclusions, and Polled Instances.



Step 3: View Details of a Polled Instance

Another useful view is the **Custom Polled Instances** view. The first time the specified MIB variable is discovered, the results appear in a Polled Instance object. The Polled Instance object is updated whenever a change in the MIB Expression's State is detected and includes the most recent polled value that caused the State to change.

NOTE: The Custom Polled Instance value does not necessarily reflect the most recent polled value. It is the value that caused the State change.

To view Custom Polled Instances:

1. Navigate to the **Monitoring** workspace.
2. Select **Custom Polled Instances**.

This view allows you to easily see all the Polled Instances that are polled by a specific Custom Poller Collection. For example, you can sort the view based on the MIB variable to see all the Polled Instances for a particular Custom Poller Collection.

This table does not include the Custom Poller Collection Name. However, it lists the names of the MIB Variable being polled. Each collection has only one MIB Expression. Therefore, if you use a unique name for your Custom Poller Collection variables, it is easy to associate the Custom Poller Collection with the MIB Expression.

As shown in the example below, another server has the C drive mapped to MIB Suffix (or instance) .1 rather than .2.

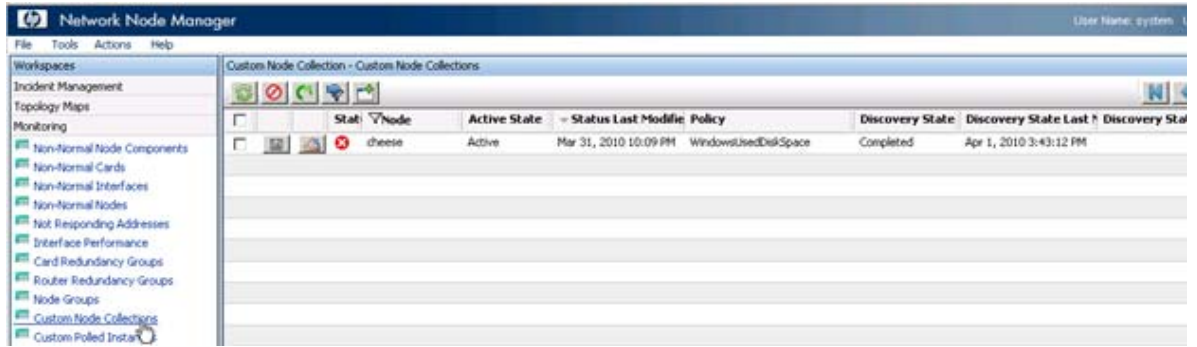
Stat	Last State Chang	MIB	Node	Custom Poller Collection	Active State	State Last Modified
✖	25,809,061.888	.1	charisma	DiskStorageUsed	Active	Apr 1, 2010 6:18:05 PM
✔	11,923,087.36	.2	cheese	DiskStorageUsed	Active	Apr 3, 2010 9:23:32 AM
✔	10,629,169.152	.2	cover	DiskStorageUsed	Active	Never
✔	5,500,579.84	.2	DEMO-OVPI	DiskStorageUsed	Active	Never
✖	42,897,698.816	.2	dewolf	DiskStorageUsed	Active	Apr 1, 2010 3:16:02 PM
✖	17,283,848.192	.1	dexterity	DiskStorageUsed	Active	Apr 1, 2010 6:21:46 PM
✖	35,255,386.112	.2	doug	DiskStorageUsed	Active	Apr 1, 2010 6:26:17 PM
✖	39,066,861.568	.2	drseattle	DiskStorageUsed	Active	Apr 1, 2010 2:20:56 PM
✖	12,042.104	.2	ENDNODE14	DiskStorageUsed	Active	Mar 30, 2010 8:38:25 PM
✖	13,277,384.704	.2	esxvc	DiskStorageUsed	Active	Apr 1, 2010 6:19:11 PM
✖	16,947,322.88	.2	etm-bpi	DiskStorageUsed	Active	Apr 1, 2010 6:18:09 PM

Step 4: Evaluate the Results of the Custom Poll

To evaluate the results of our example Custom Poll, trigger the threshold to see the changed State and the generated incident.

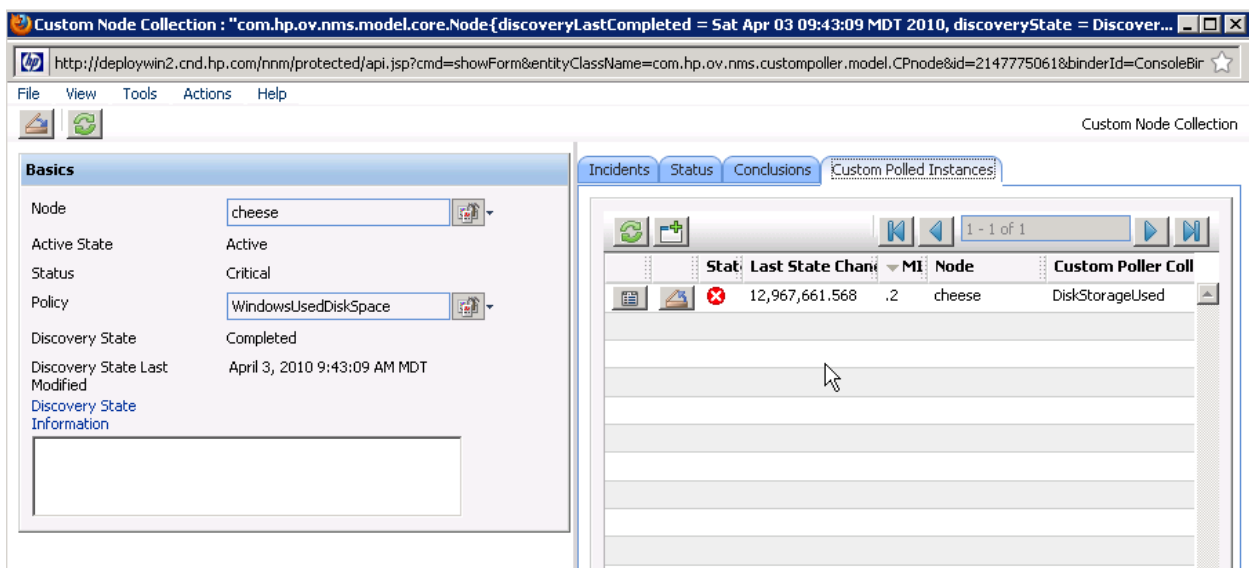
1. Copy a few large files onto the disk of the PC to increase the disk usage.

As shown in the example below, copying a few large files onto the disk of the PC causes the Status of the Custom Node Collection to change to Critical.

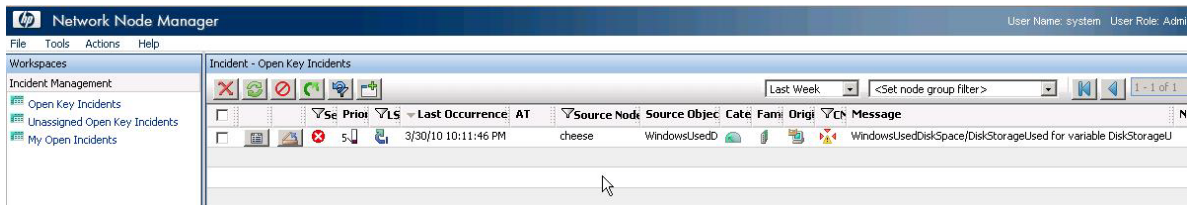


NOTE: The Custom Node Collection Status is not necessarily equivalent to the Status of the Source Node.


- Open the Custom Poller Collection to see that the value of `hrStorageUsed` is above the **High Value** threshold. (This is the value that triggered the State change.)



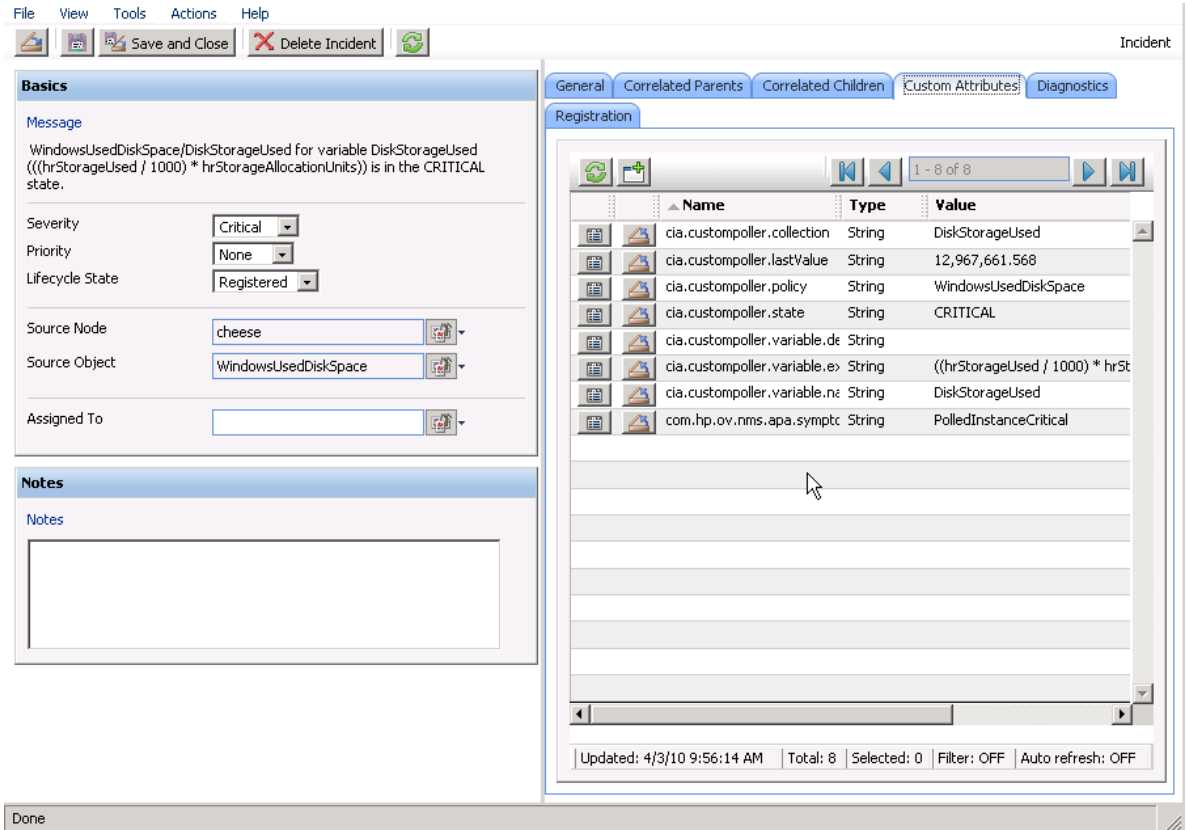
- Navigate to the Incidents tab to see that an incident was generated.



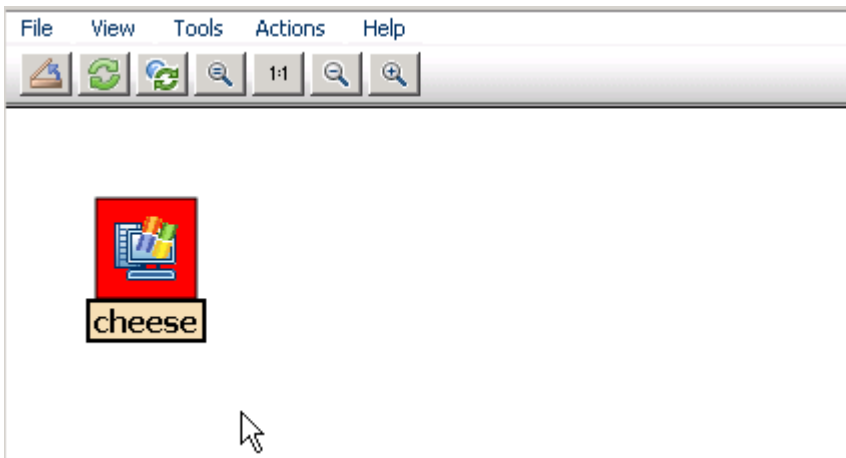
The Incident message presents the various names used in creating the Custom Poller Collection. You can change this message by editing the Incident Configuration.

- Select **Configuration > Incident Configuration**.
- Select **Management Event Configuration**.
- Click the  Open icon that precedes the `CustomPollCritical` incident configuration.

- To view the listing of possible Custom Attributes, open a Custom Poller incident and select the **Custom Attributes** tab.



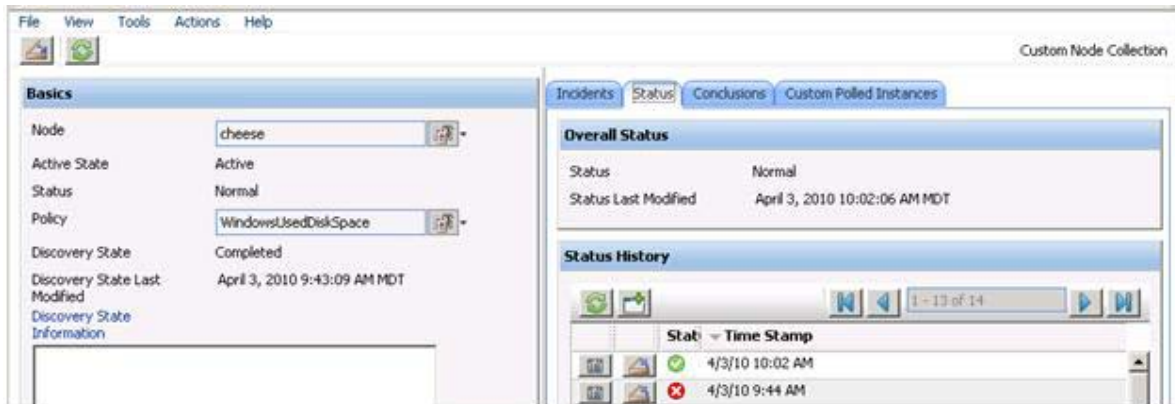
- For example, to display the most recent value that caused the Custom Node Collection Status to change, you might want to include the Custom Attribute **cia.LastValue** in your message.
- To verify that the Status of the Source Node has changed to Critical, open the Source Node or select a Node View or Map.



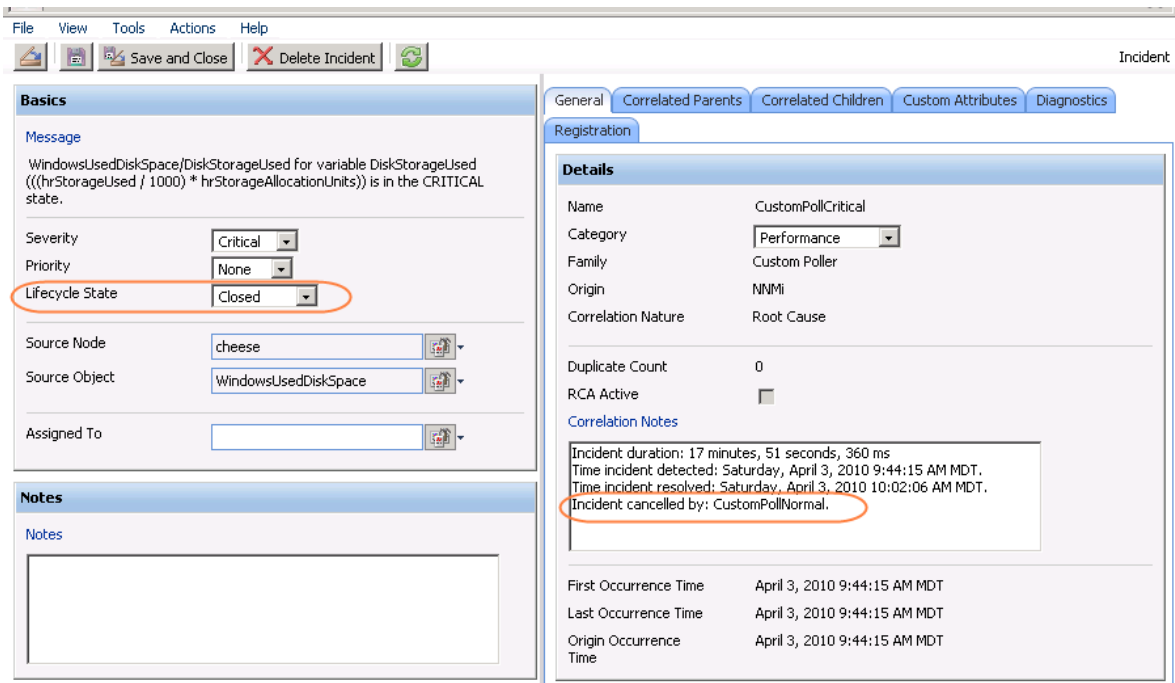
After you verify that the Custom Poll is successful and NNMi properly indicates that the disk space is Critical, return the disk to its previous State.

- Delete the large file from the PC.

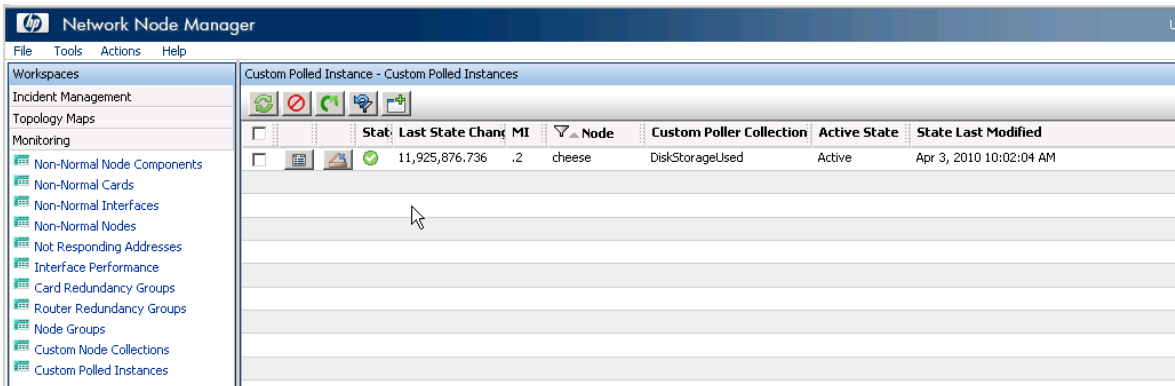
11. Verify the Custom Node Collection's Status has returned to Normal, by opening the Custom Node Collection form and navigating to the **Status** tab.



12. Verify that the incident has been closed by returning to the Incident form for the generated incident.



10. Return to the Custom Polled Instances view to verify the value of the MIB Expression is below the **High State** threshold.



11. After completing your initial testing, set the poll rate back to the desired value; for example, 5 minutes.

Export the Custom Poller Collection

NNMi enables you to store all the Custom Poller samples to a Command Separated Values (CSV) file.

To enable this feature, check to enable **Export Custom Poller Collection**. This causes NNMi to generate CSV files for each collection.

Note: The exported CSV file contains all samples, not just the samples that trigger a state change.

The CSV files are located in the following directory:

```
%NnmDataDir%/shared/nnm/databases/custompoller/export/final
```

The %NnmDataDir% location depends on your operating system:

Windows 2008

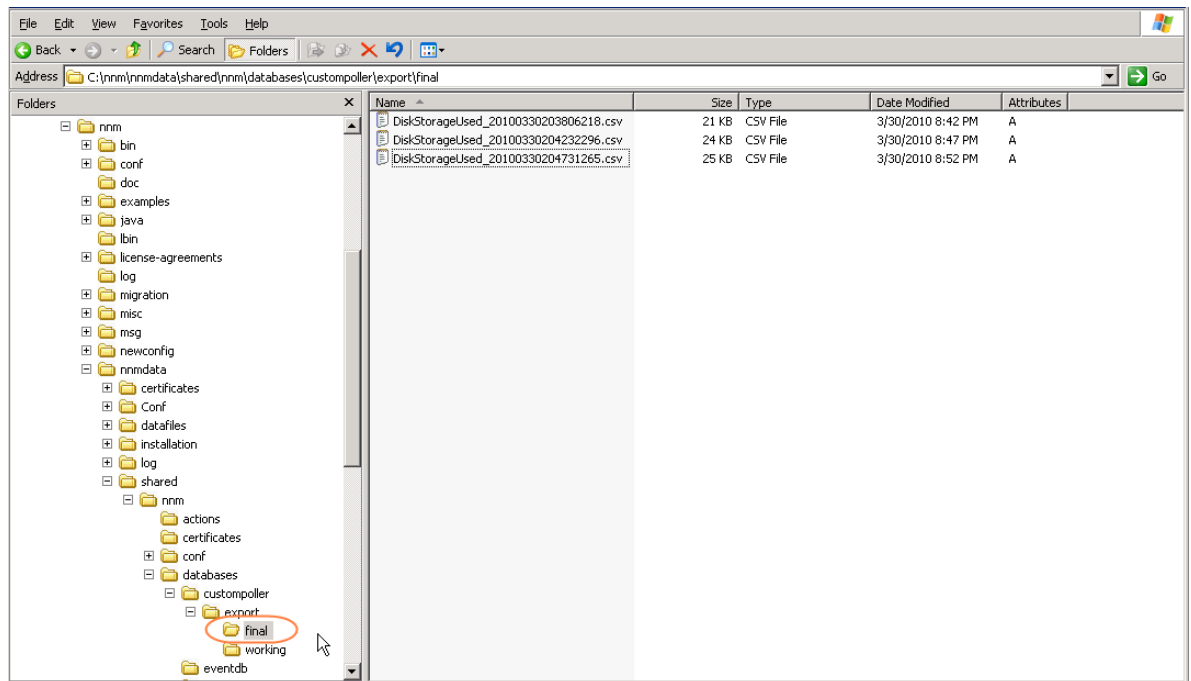
```
%NnmDataDir% =
<drive>\ProgramData\HP\HP BTO Software\
```

Windows 2003

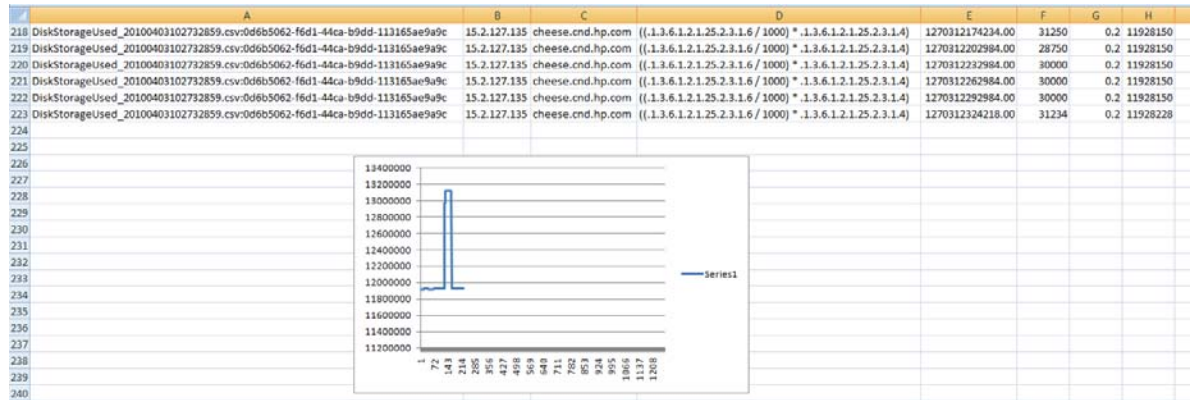
```
%NnmDataDir% =
<drive>\Documents and Settings\All Users\Application Data\HP\HP BTO
Software\
```

UNIX

```
$NnmDataDir = /var/opt/OV/
```



The CSV files can be imported into Microsoft Excel for easy viewing and graphing.

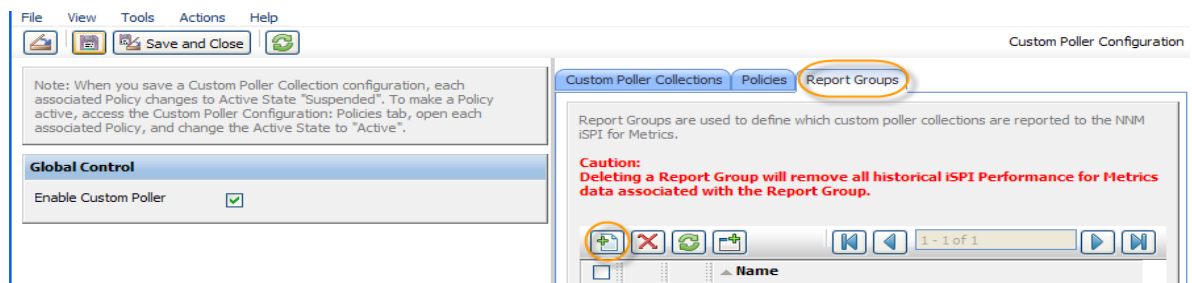


Create the Report Groups from Custom Collections

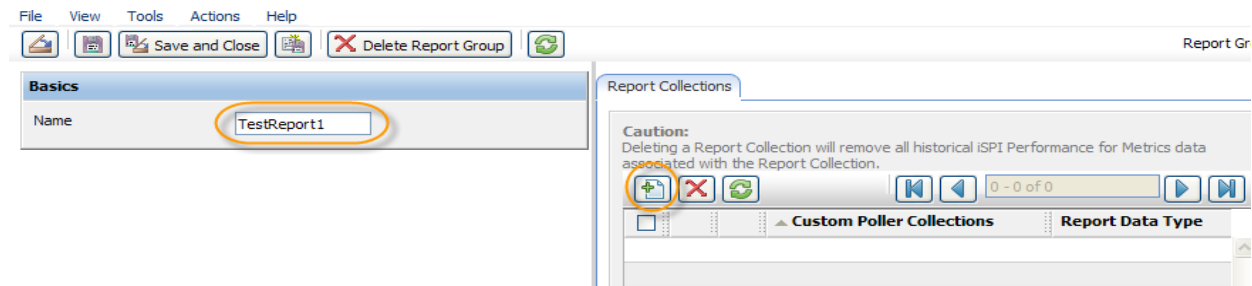
NOTE: The Report Groups feature is enabled only if you have the license for iSPI Performance for Metrics 9.00.


To create as a Report Group from a Custom Collection:

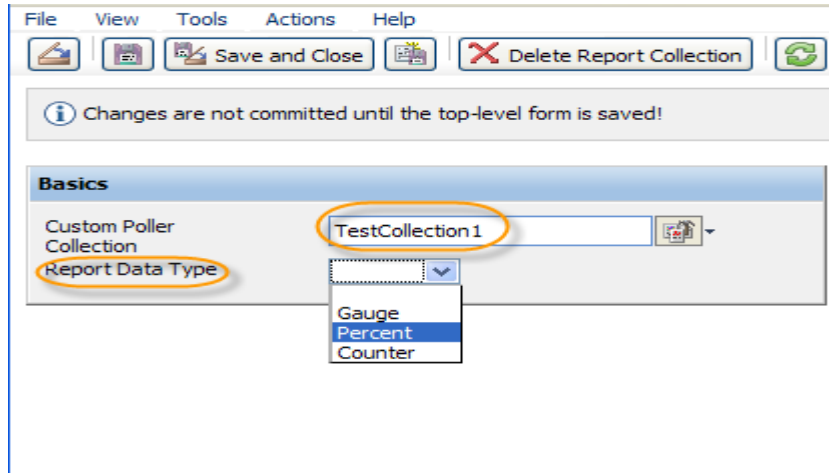
1. Navigate to the **Configuration** workspace.
2. Select **Custom Poller Configuration**.
3. Navigate to the **Report Groups** tab.



4. In the Name attribute, enter the report name that you want to appear in the iSPI Performance for Metrics reports tab.



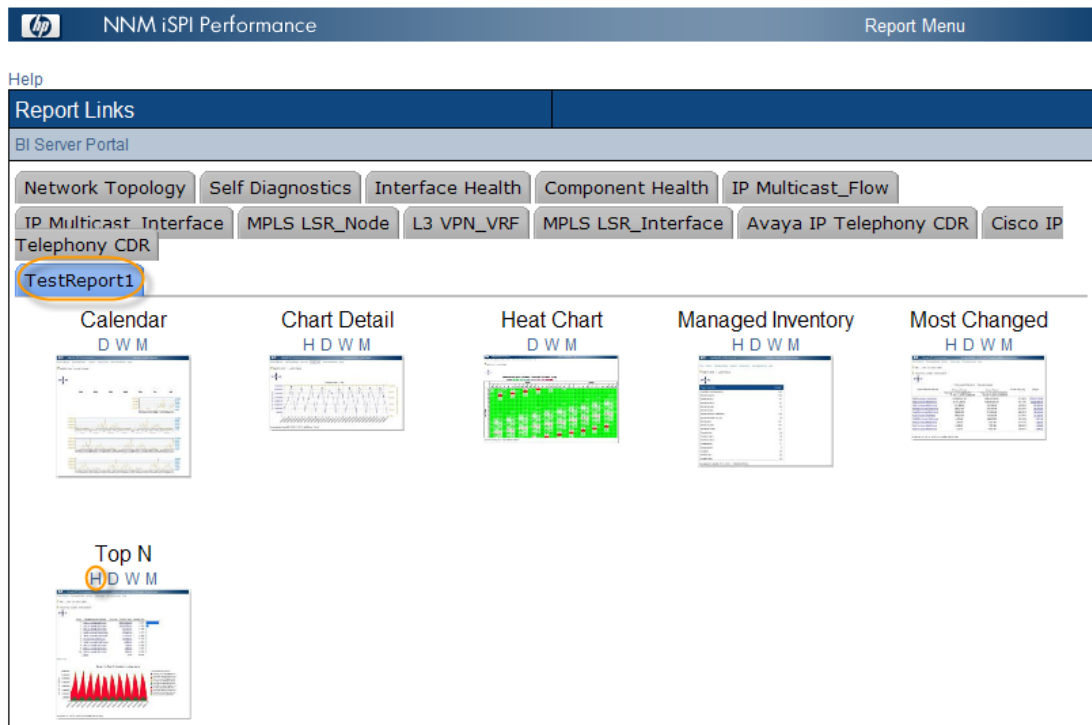
5. Click the  New icon to add a new Report Collection.
6. Select the Custom Poller Collection for which you want the data to be reported.
7. Select the type of data on which you want to report.



8. Click **Save and Close** on each of the Custom Poller configuration forms.

9. Wait for 15 to 30 mins and select **Actions** → **Reporting Menu**.

As shown in the following example, iSPI Performance for Metrics created the additional tab:



d) Select the H option (Hourly) of the Top N report to see the results.

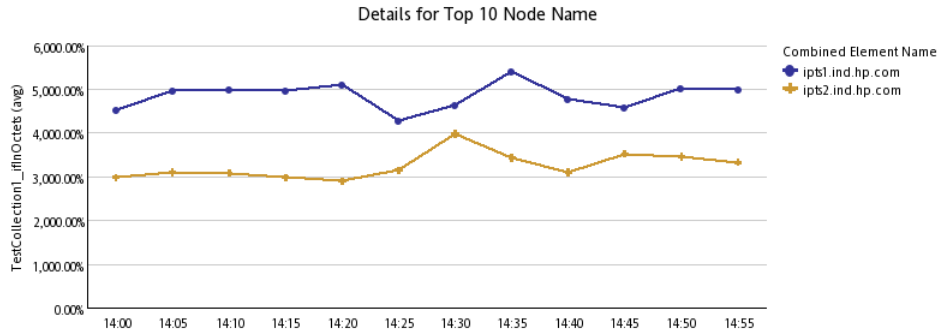
May 24, 2010 2:00:00 PM (+ Last 1 Hour)

Grouped by: Node Name



Rank	Node Name	TestCollection1_ifInOctets (avg)
1	ipts1.ind.hp.com	4,868.55%
2	ipts2.ind.hp.com	3,256.57%

[Hide Chart](#)



Troubleshooting Tips

NNMi provides feedback on common errors. This section describes some common types of feedback.

For Custom Poller Collections, NNMi supports queries of the following types (as defined in the MIB). Watch for possible aliases on the types.

Supported MIB Expression Type	Supported MIB Filter Variable Type
INTEGER, Integer32	INTEGER, Integer32
Unsigned32	Unsigned32
Counter, Counter32, Counter64	Gauge, Gauge32
Gauge, Gauge32	OCTET STRING
TimeTicks	IpAddress
OCTET STRING	

If you set up a Custom Poller Collection using a MIB Expression or MIB Filter Variable of an unsupported type, NNMi displays an error in the Discovery State. NNMi also provides some additional information about the failure in the Discovery Information attribute.

Status	Node	Active	Policy	Discovery State	Discovery Information
Completed	KSMITH32	Active	WindowsUsedDiskSpace	Completed	
Failed	KSMITH32	Active	StorageType	Failed	Custom Poller does not support MIB type found for MIB Poll variable . 1.3.6.1.2.1.25.2.1.4
Completed	fcov-wadmir	Active	WindowsUsedDiskSpace	Completed	
Failed	fcov-wadmir	Active	StorageType	Failed	Custom Poller does not support MIB type found for MIB Poll variable . 1.3.6.1.2.1.25.2.1.4

If no Polled Instances pass the defined filter, you also see a notification in the Discovery Information attribute.

Status	Node	Active	Policy	Discovery State	Discovery Information
Completed	KSMITH32	Active	WindowsUsedDiskSpace	Completed	Information: no MIB instances were found on this node with MIB Filter + J: *
Completed	fcov-wadmir	Active	WindowsUsedDiskSpace	Completed	Information: no MIB instances were found on this node with MIB Filter + J: *

Custom Poller log messages can be found in the `nnm.*.log` and `nnm-trace.*.log` files.