

# Monitoring Windows 2008 Failover Cluster With Argent Guardian

**A R G E N T**  
ENCYCLOPEDIA

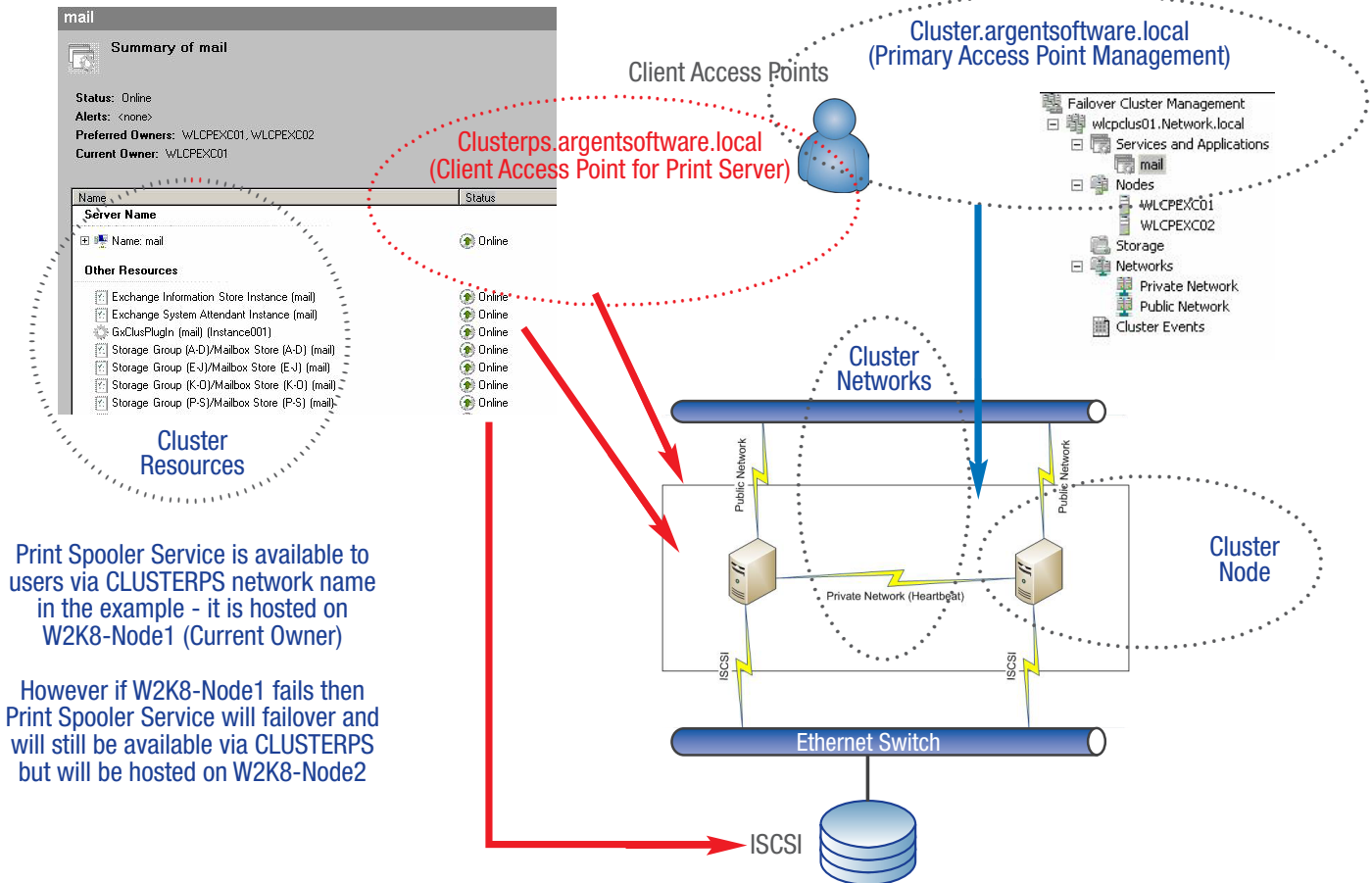


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## Windows 2008 Failover Clustering Overview

A failover cluster is a group of independent computers that work together to increase the availability of applications and services. If one of the clustered servers fails, another server begins to provide service (a process known as failover). The following diagram shows some of the primary terms of reference for monitoring a failover cluster.

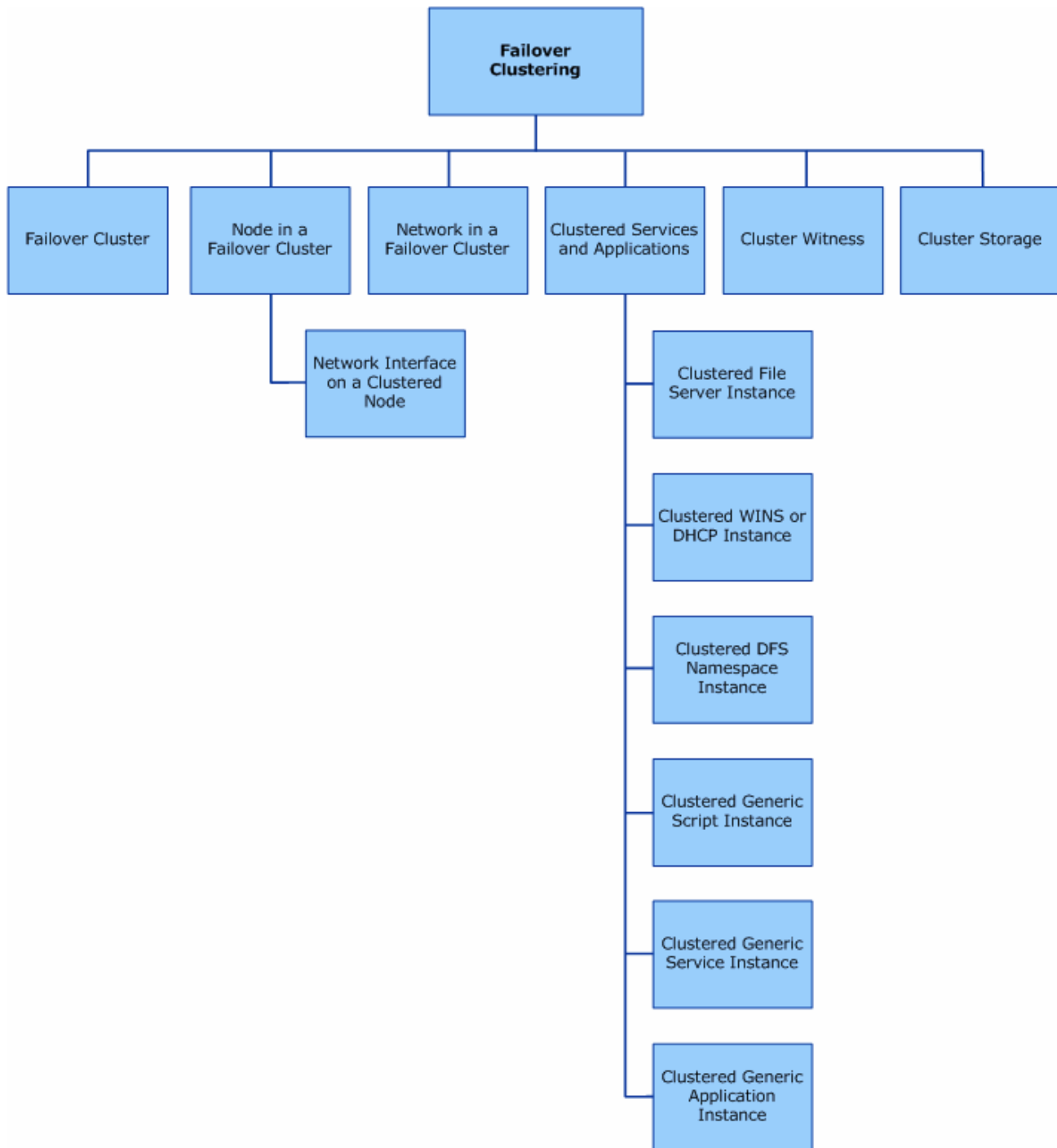


It is important to be aware that to access and test resources that are hosted within each Cluster Group – that these must be configured to use a Master Catalog object using the Client Access Point (CAP) name.

That is to access a SQL Server Instance we must use the CAP associated with the SQL Server Cluster Group.

The following section will describe how to configure these components within Argent Guardian.

The following diagram shows the Hierarchy of Managed Entities that make up any Failover Cluster:



All of these components can be modeled and tested within the Argent Guardian using the following cluster objects – Nodes, Groups, Networks, Network Interfaces and Resources.

## Argent Guardian Cluster Licensing

Properties Of Cluster Node 'W2K8-NODE1' (Product: G)

Use Other Credential | Contact Information | Installed Applications | Time Zone | Advanced

Cluster Object | TCP/IP & SNMP | Maintenance Schedule

Cluster Name:

Object Type:

Object Name:

Internal Name:

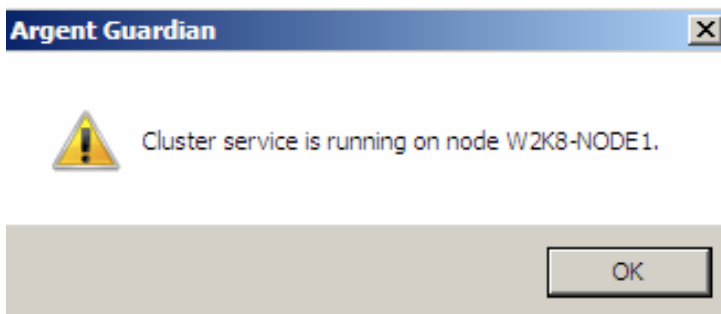
(Leave blank if internal name is same as object name)

Each Cluster Name that is used a Cluster Resource License is used.

The first cluster object added will consume a Cluster resource license for this cluster (CLUSTER).

Product/Object	Licensed Domain	Licensed	Used
Argent Console	argentsoftware		
Argent Predictor	argentsoftware		
Argent Guardian And Argent WMI Monitor	argentsoftware		
W200X/NT		100	1
Cluster Resource		1	1

The Connectivity and Accessibility Test provides the following result for the Nodes.



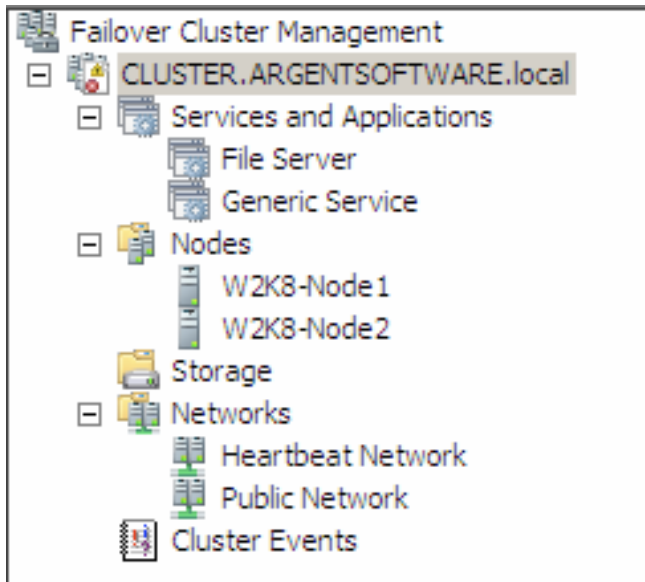
However the Connectivity and Accessibility Test fails for groups, networks and resources with the following.



This test is only used for Standard or Cluster Nodes to check availability.

## Argent Guardian Cluster Configuration For NODES

Add Cluster Nodes First



Primary Cluster name (Quorum resources).

Identify the Cluster Nodes.

### Known Servers And Devices In The Master Catalog

Node	Domain	Type	Alias	Network Group
W2K8-NODE1	CLUSTER	Cluster Node	W2K8-NODE1	First Network Group
W2K8-NODE2	CLUSTER	Cluster Node	W2K8-NODE2	First Network Group

**Properties Of Cluster Node 'W2K8-NODE1' (Master Catalog)**

Installed Applications	Time Zone	Advanced
Cluster Object	TCP/IP & SNMP	Contact Information
<b>N14A</b>		
Cluster Name: <input type="text" value="CLUSTER"/>		
Object Type: <input type="text" value="Cluster Node"/>		
Object Name: <input type="text" value="W2K8-NODE1"/>		
Internal Name: <input type="text" value="W2K8-NODE1"/>		
(Leave blank if internal name is same as object name)		

The cluster name will have the DNS name listed at the top of the Cluster Management Tree.

For this example it is CLUSTER.ARGENTSOFTWARE.LOCAL (NetBIOS Name: CLUSTER).

The following command can be used to show the cluster nodes and state using CLUSTER name:

**CLUSTER.exe CLUSTER node /status**

```
C:\Users\Administrator.W2K8-AD>cluster CLUSTER node /status
Listing status for all available nodes:

Node           Node ID Status
-----
W2K8-Node1     1 Up
W2K8-Node2     2 Up
```

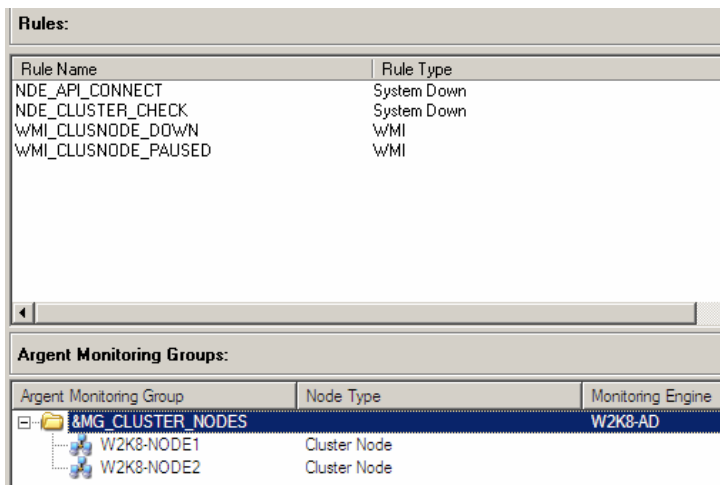
### Relator Configuration to Monitor these Nodes

The Rules include API\_CONNECT to test availability of the nodes

NDE\_CLUSTER\_CHECK to test cluster service  
running on nodes

WMI\_CLUSNODE\_DOWN check if node is running

WMI\_CLUSNODE\_PAUSED check if node is paused



A Monitoring Group should be created which contains both nodes (&MG\_CLUSTER\_NODES).

## Rule Testing Trace Logs:

Server W2K8-NODE1 is alive. Rule NDE\_API\_CONNECT is NOT broken

=====

Cluster service is running on node W2K8-NODE1

Server W2K8-NODE1 is alive. Rule NDE\_CLUSTER\_CHECK is NOT broken

=====

Successfully run rule WMI\_CLUSNODE\_DOWN on server W2K8-NODE1

Node W2K8-NODE1 in Cluster CLUSTER is not down.

Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSNODE\_DOWN of

Relator REL\_CLUSTER\_NODES of server W2K8-NODE1

=====

Successfully run rule WMI\_CLUSNODE\_PAUSED on server W2K8-NODE1

Node W2K8-NODE1 in Cluster CLUSTER is not paused.

Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSNODE\_PAUSED of

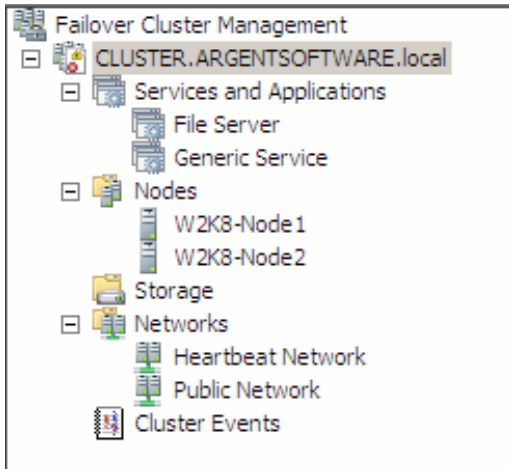
Relator REL\_CLUSTER\_NODES of server W2K8-NODE1

=====



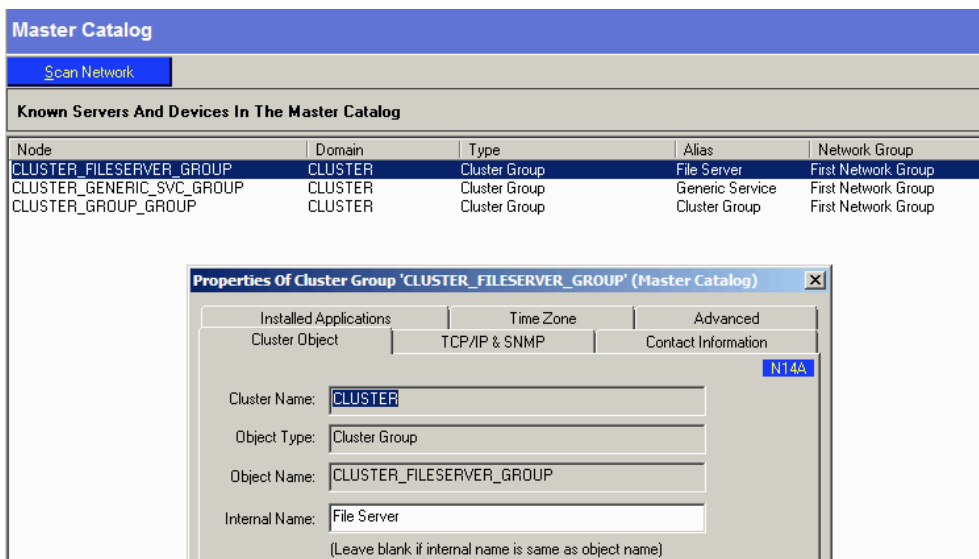
## Argent Guardian Cluster Configuration For GROUPS

### Add Cluster Groups



Primary Cluster object has the default name of Cluster Group.

The service and applications are the Group Names.



The object name here is used by Argent to identify what this object represents.

Internal Name is the Group Name in the Cluster.

## Argent Guardian Cluster Configuration For Services And Applications (GROUPS)

The following command can be used to show the groups and state using CLUSTER name:

**CLUSTER.exe CLUSTER group /status**

```
C:\Users\Administrator.W2K8-AD>cluster CLUSTER node /status
Listing status for all available nodes:

Node           Node ID Status
-----
W2K8-Node1      1 Up
W2K8-Node2      2 Up
```

### Relator Configuration to Monitor the Groups

The Rules include NDE\_CLUSTER\_CHECK to test if group is available  
 WMI\_CLUSGROUP\_FAILED check if group has failed  
 WMI\_CLUSGROUP\_OFFLINE check if group is offline  
 WMI\_CLUSGROUP\_FAILED check is partial online

Rules:	
Rule Name	Rule Type
NDE_CLUSTER_CHECK	System Down
WMI_CLUSGROUP_FAILED	WMI
WMI_CLUSGROUP_OFFLINE	WMI
WMI_CLUSGROUP_PARTIAL_ONLINE	WMI

Argent Monitoring Groups:	
Argent Monitoring Group	Node Type
&MG_CLUSTER_GROUPS	
CLUSTER_FILESERVER_GROUP	Cluster Group

A Monitoring Group should be created which contains both nodes (&MG\_CLUSTER\_NODES).

## Rule Testing Trace Logs:

All of the resources are online for group CLUSTER\_FILESERVER\_GROUP of cluster CLUSTER  
Server CLUSTER\_FILESERVER\_GROUP is alive. Rule NDE\_CLUSTER\_CHECK is NOT  
broken

=====  
Successfully run rule WMI\_CLUSGROUP\_FAILED on server  
CLUSTER\_FILESERVER\_GROUP

Cluster Group File Server in Cluster CLUSTER is not failed.

Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSGROUP\_FAILED of  
Relator REL\_CLUSTER\_GROUPS of server CLUSTER\_FILESERVER\_GROUP

=====  
Successfully run rule WMI\_CLUSGROUP\_OFFLINE on server  
CLUSTER\_FILESERVER\_GROUP

Cluster Group File Server in Cluster CLUSTER is not Offline.

Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSGROUP\_OFFLINE of  
Relator REL\_CLUSTER\_GROUPS of server CLUSTER\_FILESERVER\_GROUP

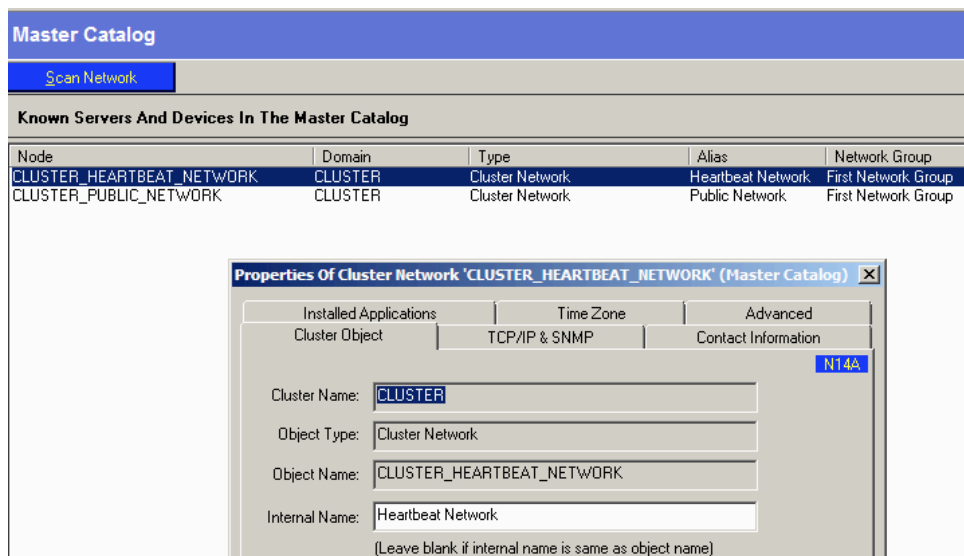
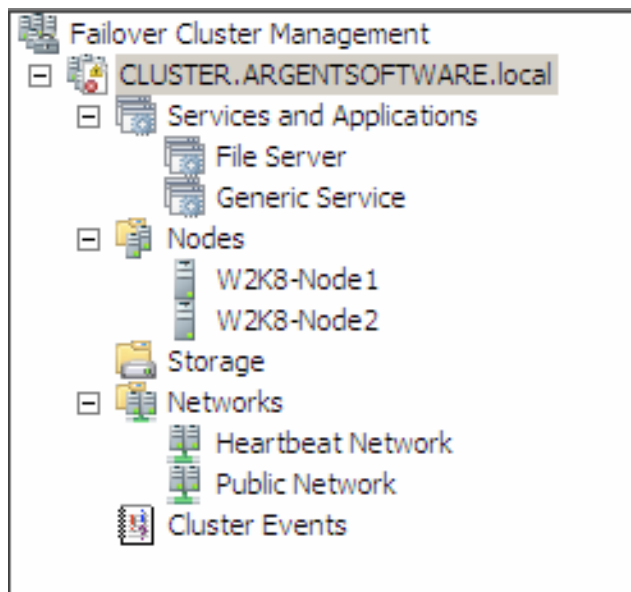
=====  
Successfully run rule WMI\_CLUSGROUP\_PARTIAL\_ONLINE on server  
CLUSTER\_FILESERVER\_GROUP

Cluster Group File Server in Cluster CLUSTER is not partial online.

Total 0 alerts and 0 predictor data items are returned for rule  
WMI\_CLUSGROUP\_PARTIAL\_ONLINE of Relator REL\_CLUSTER\_GROUPS of server  
CLUSTER\_FILESERVER\_GROUP

## Argent Guardian Cluster Configuration For NETWORKS

Add Cluster Networks



The object name here is used by Argent to identify what this object represents.

Internal Name is the Network Name in the Cluster.

The following command can be used to show the networks and state using CLUSTER name:

**CLUSTER.exe CLUSTER group /status**

```
C:\Users\Administrator.W2K8-AD>cluster CLUSTER network /status
Listing status for all available networks:
```

Network	Status
Public Network	Up
Heartbeat Network	Up

## Relator Configuration to Monitor the Networks

The Rules include

- NDE\_CLUSTER\_CHECK to test cluster service running on nodes
- WMI\_CLUSNETWORK\_DOWN check if group
- WMI\_CLUSNETWORK\_NOTAVAILABLE check if node is paused
- WMI\_CLUSNETWORK\_PARTITIONED check if node is paused

Rules:	
Rule Name	Rule Type
NDE_CLUSTER_CHECK	System Down
WMI_CLUSNETWORK_DOWN	WMI
WMI_CLUSNETWORK_NOTAVAILABLE	WMI
WMI_CLUSNETWORK_PARTITIONED	WMI

Argent Monitoring Groups:	
Argent Monitoring Group	Node Type
&MG_CLUSTER_NETWORK_GROUPS	
CLUSTER_HEARTBEAT_NETWORK	Cluster Network
CLUSTER_PUBLIC_NETWORK	Cluster Network

## Rule Testing Trace Logs:

The network is operational; all of the nodes in the cluster can communicate for network

CLUSTER\_PUBLIC\_NETWORK of cluster CLUSTER

Server CLUSTER\_PUBLIC\_NETWORK is alive. Rule NDE\_CLUSTER\_CHECK is NOT broken

=====

Successfully run rule WMI\_CLUSNETWORK\_DOWN on server

CLUSTER\_PUBLIC\_NETWORK

Network Public Network in Cluster CLUSTER is not down.

Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSNETWORK\_DOWN of

Relator REL\_CLUSTER\_NET\_GROUPS of server CLUSTER\_PUBLIC\_NETWORK

=====

Successfully run rule WMI\_CLUSNETWORK\_NOTAVAILABLE on server

CLUSTER\_PUBLIC\_NETWORK

Network Public Network in Cluster CLUSTER is available.

Total 0 alerts and 0 predictor data items are returned for rule

WMI\_CLUSNETWORK\_NOTAVAILABLE of Relator REL\_CLUSTER\_NET\_GROUPS of

server CLUSTER\_PUBLIC\_NETWORK

=====

Successfully run rule WMI\_CLUSNETWORK\_PARTITIONED on server

CLUSTER\_PUBLIC\_NETWORK

Network Public Network in Cluster CLUSTER is not partitioned.

Total 0 alerts and 0 predictor data items are returned for rule

WMI\_CLUSNETWORK\_PARTITIONED of Relator REL\_CLUSTER\_NET\_GROUPS of server

CLUSTER\_PUBLIC\_NETWORK

=====

## Argent Guardian Cluster Configuration For RESOURCES

Adding Argent Master Catalog Objects to represent Client Access Points (Virtual Servers).

The screenshot shows the Failover Cluster Management console. On the left, the tree view shows the hierarchy: Failover Cluster Management > CLUSTER.ARGENTSOFTWARE.local > Services and Applications > Generic Service. The main pane displays the 'Generic Service' configuration. It shows the service is 'Online' with no alerts. Preferred owners are W2K8-Node1 and W2K8-Node2, with W2K8-Node2 as the current owner. Below this, a table lists resources and their status:

Name	Status
<b>Server Name</b>	
Name: CLUSTERPS	Online
IP Address: 192.168.125.230	Online
IP Address: Address on Heartbeat Network	Online
<b>Print Spooler Service</b>	
New Print Spooler	Online
<b>Disk Drives</b>	
Cluster Disk 2	Online
Volume: (G)	File System: NTFS 253 MB (91.3% free)

Each Cluster Group (Service and Application) e.g. Generic Service has its own network Name e.g. CLUSTERPS.

This network name should be added as the Argent Object Name against one of the resources.

If this was SQL then it should be against the Primary SQL Resource.

The screenshot shows the 'Master Catalog' window with a 'Scan Network' button. Below it, a table lists 'Known Servers And Devices In The Master Catalog':

Node	Domain	Type	Alias	Network Group
CLUSTER	CLUSTER	Cluster Resource	File Share \Witness...	First Network Group
CLUSTERFS	CLUSTER	Cluster Resource	CLUSTERFS	First Network Group
CLUSTERFS_DISK1_RESOURCE	CLUSTER	Cluster Resource	Cluster Disk 1	First Network Group
CLUSTERPS	CLUSTER	Cluster Resource	New Print Spooler	First Network Group
CLUSTERPS_DISK2_RESOURCE	CLUSTER	Cluster Resource	Cluster Disk 2	First Network Group

Below the table is a 'Properties Of Cluster Resource 'CLUSTERPS' (Master Catalog)' dialog box. It has tabs for 'Installed Applications', 'Time Zone', 'Advanced', 'Cluster Object', 'TCP/IP & SNMP', and 'Contact Information'. The 'Cluster Object' tab is active, showing the following fields:

- Cluster Name: CLUSTER
- Object Type: Cluster Resource
- Object Name: CLUSTERPS
- Internal Name: New Print Spooler

(Leave blank if internal name is same as object name)

The following command can be used to show the resources and state using CLUSTER name:

**CLUSTER.exe CLUSTER res /status**

```
C:\Users\Administrator.W2K8-AD>cluster CLUSTER res /status
Listing status for all available resources:
```

Resource	Group	Node	Status
Cluster Disk 1	File Server	W2K8-Node1	Online
Cluster Disk 2	Generic Service	W2K8-Node2	Online
Cluster Heartbeat IP Address	Cluster Group	W2K8-Node1	Online
Cluster Name	Cluster Group	W2K8-Node1	Online
Cluster PUBLIC IP Address	Cluster Group	W2K8-Node1	Online
CLUSTERFS	File Server	W2K8-Node1	Online
CLUSTERPS	Generic Service	W2K8-Node2	Online
File Share Witness <\\w2k8-ad\FSW>	Cluster Group	W2K8-Node1	Online
IP Address 192.168.125.210	File Server	W2K8-Node1	Online
IP Address 192.168.125.230	Generic Service	W2K8-Node2	Online
IP Address 192.168.52.0	File Server	W2K8-Node1	Online
IP Address 192.168.52.0 <2>	Generic Service	W2K8-Node2	Online
New Print Spooler	Generic Service	W2K8-Node2	Online

## Relator Configuration to Monitor the Client Access Point Resource

The Rules include NDE\_API\_CONNECT to test the Client Access Point is available

PRF\_DISK\_ALL\_5\_G to test disk (G:) for free space

SVC\_SPOOLER\_W2K to test spooler service

**Rules:**

Rule Name	Rule Type
NDE_API_CONNECT	System Down
PRF_DISK_ALL_5_G	Performance
SVC_SPOOLER_W2K	W200x/NT Service

**Argent Monitoring Groups:**

Argent Monitoring Group	Node Type
ARG_CLUSTERPS_VIRTUAL_SERVER	Cluster Resource
CLUSTERPS	Cluster Resource

Monitoring group is used for testing any services or performance metrics associated with the Client Access Point – CLUSTERFS.



**NOTE:** the cluster resource name may sometimes be the same name as the Client Access Point Name but not always.

Rule Testing Trace Logs:

Server CLUSTERPS is alive. Rule NDE\_API\_CONNECT is NOT broken

=====

Fri Mar 05 14:07:48.171 W2K8-AD Administrator % Free Space of LogicalDisk (G:) = 91.27

Rule 'PRF\_DISK\_ALL\_5\_G' is not broken for server CLUSTERPS

=====

Query status for service 'Print Spooler' on server CLUSTERPS

Service 'Print Spooler' of server CLUSTERPS is Running

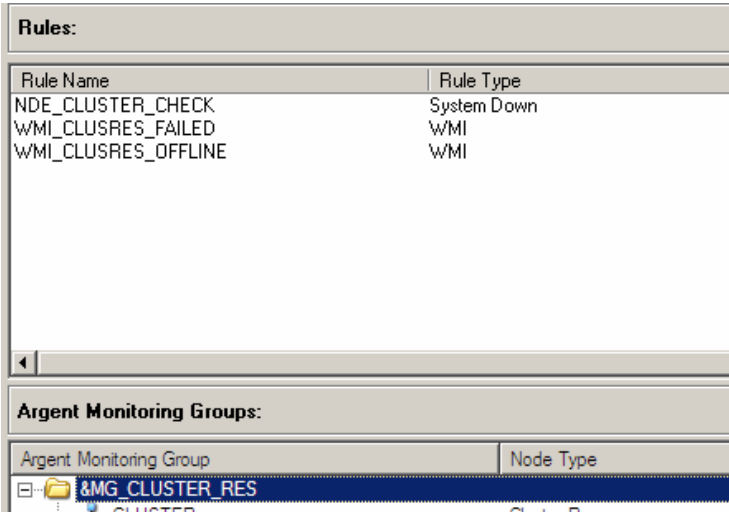
Rule SVC\_SPOOLER\_W2K is not broken for server CLUSTERPS

=====

Relator Configuration to Monitor General Resources

The Rules include

NDE_CLUSTER_CHECK	to test the resource is available
WMI_CLUSRES_FAILED	to test the resource hasn't failed
WMI_CLUSRES_OFFLINE	to test the resource isn't offline



Rule Testing Trace Logs:

The resource is operational and functioning normally for resource CLUSTERPS of cluster CLUSTER

Server CLUSTERPS is alive. Rule NDE\_CLUSTER\_CHECK is NOT broken

=====

Successfully run rule WMI\_CLUSRES\_FAILED on server CLUSTERPS

Resource New Print Spooler in Cluster CLUSTER is not failed.

Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSRES\_FAILED of Relator REL\_CLUSTER\_RES of server CLUSTERPS

=====

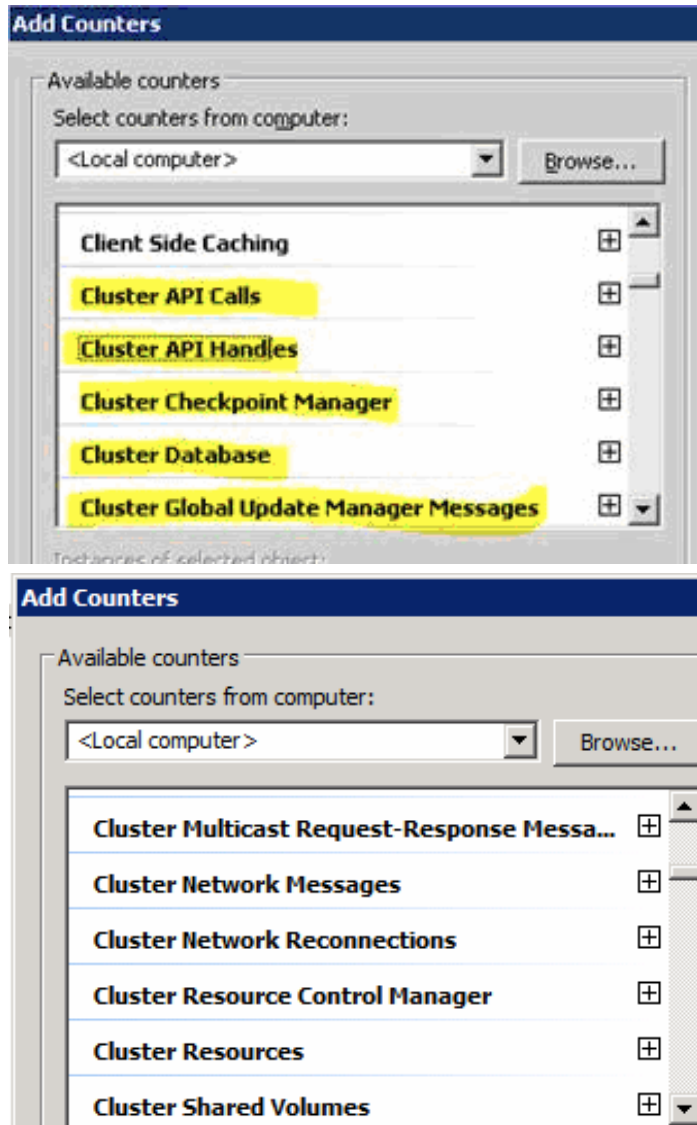
Successfully run rule WMI\_CLUSRES\_OFFLINE on server CLUSTERPS

Resource New Print Spooler in Cluster CLUSTER is not offline.

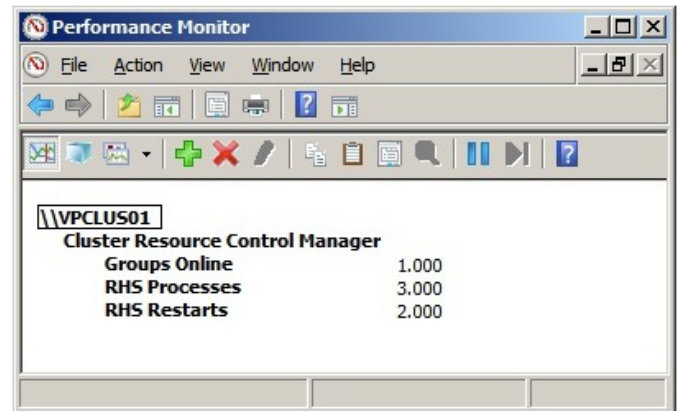
Total 0 alerts and 0 predictor data items are returned for rule WMI\_CLUSRES\_OFFLINE of Relator REL\_CLUSTER\_RES of server CLUSTERPS

=====

## APPENDIX A – Cluster Performance Counters (Windows 2008 R2 Only)



Resource Control Manager (RCM) is a component responsible for monitoring resource state and handling resource failures. This component also makes a decision about placing a resource in a separate Resource Host Monitor (RHS) if this resource is observed to be unstable and causing RHS crashes.



### Groups Online

tells you how many groups are currently online on this node – an Argent Guardian Performance rule could be used to alert when the number of groups online is less than the configured amount.

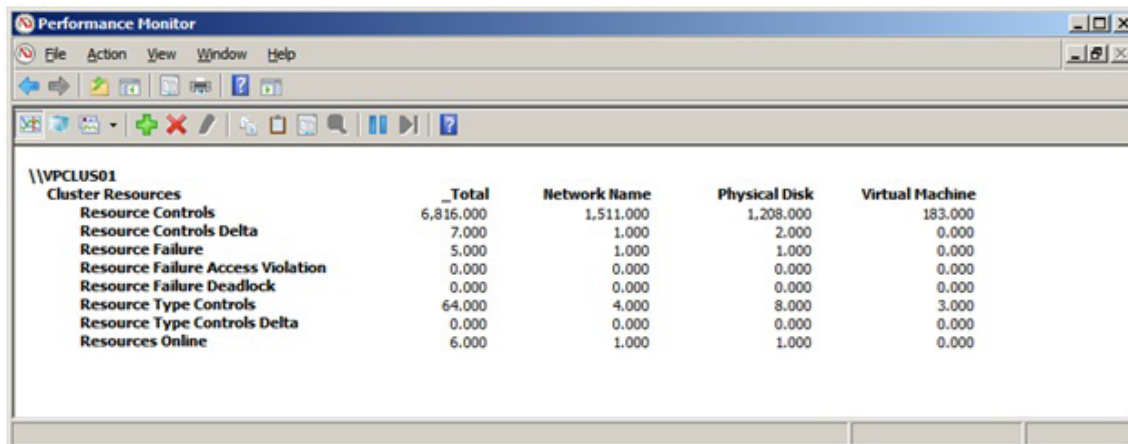
### RHS Processes

tells you how many Resource Host Monitor processes are running on this node.

### RHS Restarts

tells you how many Resource Host Monitor failures have happen on this node. A failure might be caused by one of the resources causing a crash or taking too long to perform an operation.

Cluster Resource Types - It would be great if we can expose information about every resource and/or group, but since we support thousands of them it is not practical to do this. However we do want to have some visibility into how resources behave. A sensible way to aggregate information about resources is to do that by resource type.



	<b>_Total</b>	<b>Network Name</b>	<b>Physical Disk</b>	<b>Virtual Machine</b>
<b>\\WPCLUS01</b>				
<b>Cluster Resources</b>				
Resource Controls	6,816.000	1,511.000	1,208.000	183.000
Resource Controls Delta	7.000	1.000	2.000	0.000
Resource Failure	5.000	1.000	1.000	0.000
Resource Failure Access Violation	0.000	0.000	0.000	0.000
Resource Failure Deadlock	0.000	0.000	0.000	0.000
Resource Type Controls	64.000	4.000	8.000	3.000
Resource Type Controls Delta	0.000	0.000	0.000	0.000
Resources Online	6.000	1.000	1.000	0.000

On the picture above each column represents a resource type.

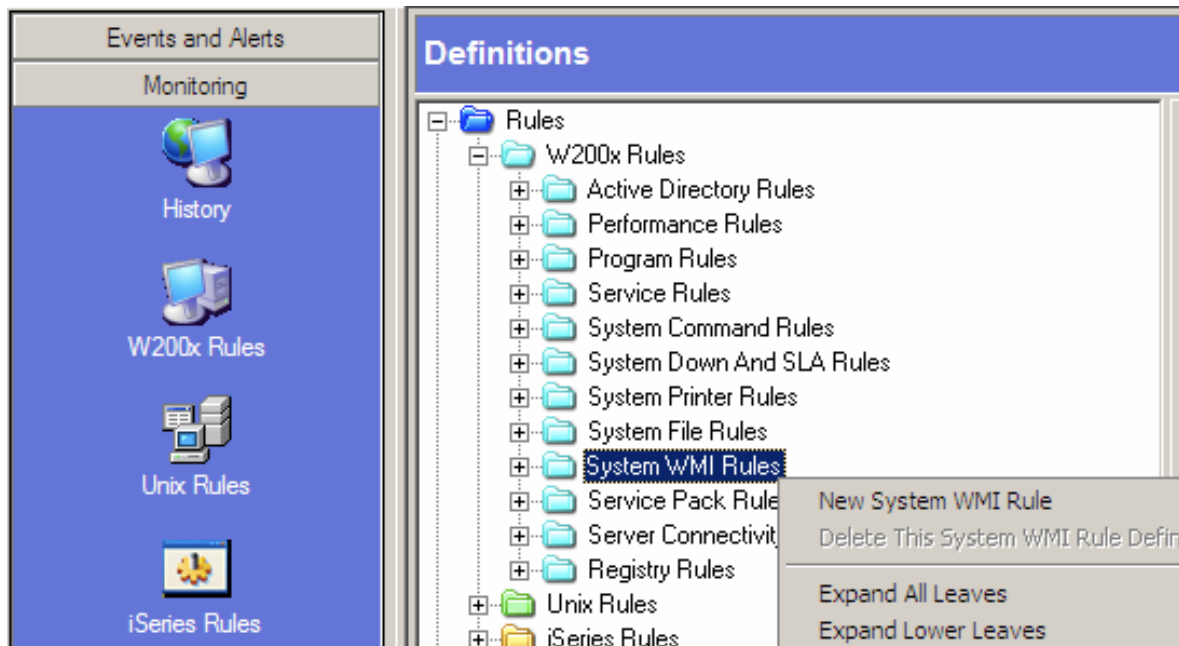
- There is one special entry **\_Total** that is an aggregation of all resource types.
- **Resource Controls** and **Resource Controls Delta** - tell you how many resource controls the resources of the given type are handling on this node.
- **Resource Failure** - tells you how many times a resource of this type caused the Resource Host Monitor to get terminated due to a failure of a resource of this type.
- **Resource Type Controls** and **Resource Types Controls Delta** - tell you how many resource type controls the resource DLL of the given type is handling on this node.
- **Resources Online** - counter tells you how many resource of the given type are online on this node.

If you see that RHS is getting restarted often, then looking at these counters can tell you what resource type is having issues.

## APPENDIX B – Cluster Performance Script (Resource Groups Change Owner)

This Script will allow an Alert to be generated when any resource group moves from one node to another.

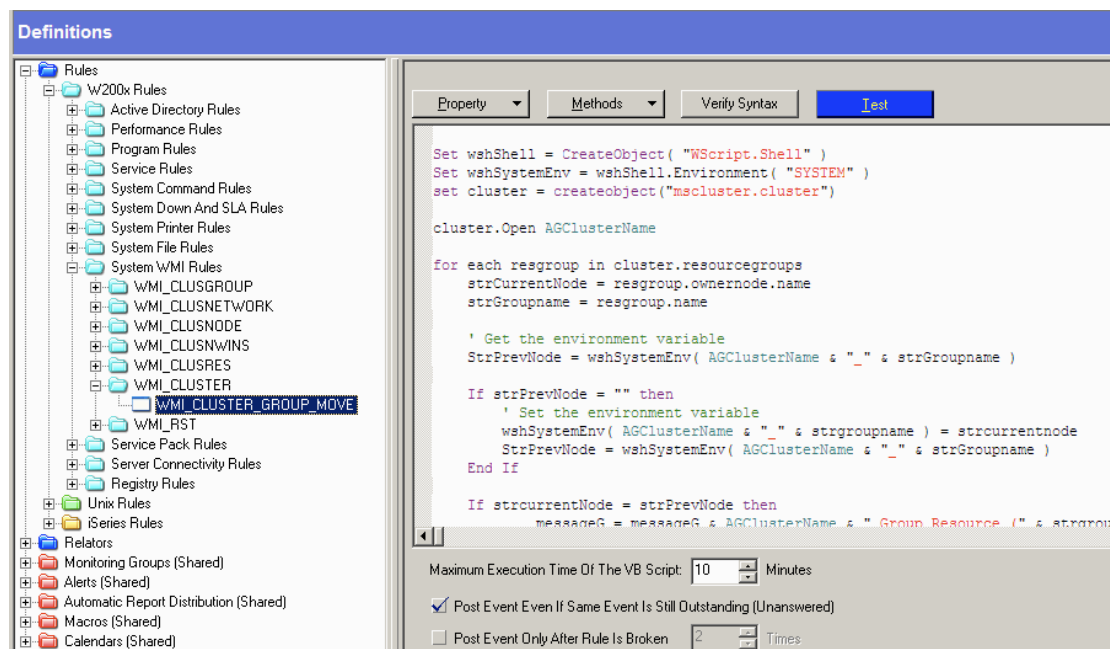
Create a New Argent Guardian System WMI Rule.Points



Give the rule a name



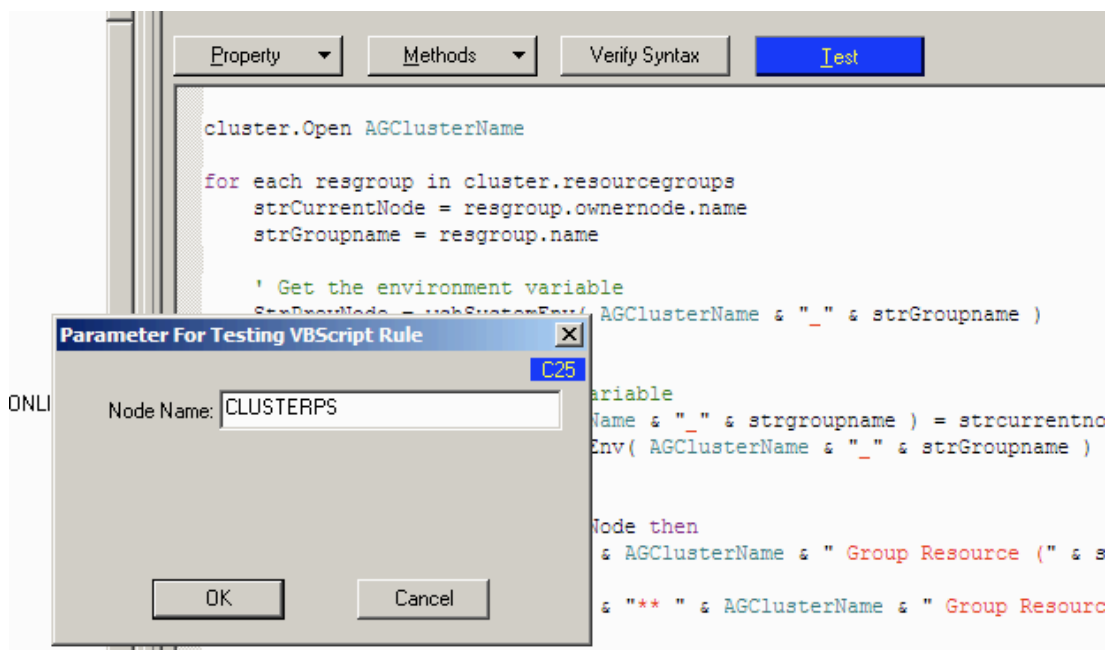
Paste the script code (see end of this Appendix) into the WMI Rule.



Ensure that 'Post Event ...' is checked.

Provide a console comment e.g. a resource group has changed owner (NODE).

Test the script – use the server name (Client Access Point name) of one of the Services or Applications.



### Test Results....

CLUSTER Group Resource (Available Storage) has not Changed Owner from: W2K8-Node2

CLUSTER Group Resource (Cluster Group) has not Changed Owner from: W2K8-Node2

CLUSTER Group Resource (File Server) has not Changed Owner from: W2K8-Node1

CLUSTER Group Resource (Generic Service) has not Changed Owner from: W2K8-Node2

### Test Results if Group has moved

Rule Broken Time: 8 Mar 2010 11:42:48

\*\* CLUSTER Group Resource (Generic Service) has Changed Owner to: W2K8-Node1\*\*

The rule need only be applied to a single resource within the cluster this will allow it to check all service and applications in the cluster – this resource will map to the Client Access Point name of one of the Group Resources.

The following is an example of the basic Relator TAB.

Rules:	
Rule Name	Rule Type
NDE_API_CONNECT	System Down
PRF_DISK_ALL_5_G	Performance
SVC_SPOOLER_W2K	W200x/NT Service
WMI_CLUSTER_GROUP_MOVE	WMI

Argent Monitoring Groups:	
Argent Monitoring Group	Node Type
&MG_CLUSTERPS_VIRTUAL_SERVER	
CLUSTERPS	Cluster Resource

**NOTE:** CLUSTERPS is the server name (Client Access Point Name) of a Service or Application in the cluster.

#### Generic Service

**Summary of Generic Service**

**Status:** Online  
**Alerts:** <none>  
**Preferred Owners:** W2K8-Node1, W2K8-Node2  
**Current Owner:** W2K8-Node1

Name	Status
Server Name	
Name: CLUSTERPS	Online

```

Set wshShell = CreateObject( "WScript.Shell" )
Set wshSystemEnv = wshShell.Environment( "SYSTEM" )
Set cluster = createobject("mscluster.cluster")
cluster.Open AGClusterName
for each resgroup in cluster.resourcegroups

    strCurrentNode    = resgroup.ownernode.name
    strGroupname      = resgroup.name

    ' Get the environment variable
    StrPrevNode       = wshSystemEnv( AGClusterName & "_" & strGroupname )

    If strPrevNode    = "" then
        ' Set the environment variable
        wshSystemEnv( AGClusterName & "_" & strgroupname ) = strcurrentnode

        StrPrevNode = wshSystemEnv( AGClusterName & "_" & strGroupname )
    End If

    If strcurrentNode = strPrevNode then
        messageG = messageG & AGClusterName & " Group Resource (" &
            strgroupname & ") has not Changed Owner from: " &
            strcurrentnode & vbCrLf

    Else
        messageF = messageF & "*** " & AGClusterName & " Group Resource (" &
            strgroupname & ") has Changed Owner to: " &
            strcurrentnode & "***" & vbCrLf
        fail = fail + 1
    End If

    ' Set the environment variable
    wshSystemEnv( AGClusterName & "_" & strgroupname ) = strcurrentnode

next

If fail = 0 then
    WriteStatus messageG
else
    FireAlert messageF, ClusOwner
End If

```



## APPENDIX C – Cluster Logging

All Windows 2008 Failover Cluster Events will use the following SOURCE:

### Microsoft-Windows-FailoverClustering

The following Link describes all of the managed entities and events that are associated with these.

[http://technet.microsoft.com/en-us/library/cc753362\(Ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc753362(Ws.10).aspx)

### How to Create the cluster.log in Windows Server 2008 Failover Clustering

Windows Server Failover Clustering logs information about cluster activities including normal operations like updates between nodes as well as errors and warnings related to problems that occurred on the cluster in a text file called cluster.log. The information in the cluster.log is very valuable when trying to troubleshoot just about any problem encountered with a cluster.

The cluster.log is a text-based file can be parsed and alerted on using the Argent Data Consolidator look for any line that contains keywords like – WARN.

### CREATING THE CLUSTER.LOG:

From one of the nodes of the cluster, open a Command Prompt with Administrator rights. The simplest command to create the log is to type “cluster log /g”. A cluster.log file will be generated and stored in the %windir%\Cluster\Reports directory on each node of the cluster.

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