Microsoft Forefront UAG - How to configure arrays in Forefront UAG

## Abstract

This is a two part article series. In the first article we created a Forefront UAG array with two array members. In this article I will show you how to implement Network Load Balancing (NLB) for the Forefront UAG array.

## Let's begin

In part I of this article series we created a Forefront UAG array with two Forefront UAG members. In this article we will provide high availability for the Forefront UAG array with integrated Windows NLB (Network Load Balancing).

To enable NLB for the Forefront UAG array start the Forefront UAG management console, click *Admin – Network Load Balancing*.



Figure 1: Start the NLB wizard

Define a virtual IP address (VIP) for the networks for which you want to enable NLB. For this article we would like to enable NLB for the external interface of the Forefront UAG Server. Each Forefront UAG Server has one or more dedicated IP address(es) (DIP) which must be in the same IP subnet as the VIP. Depending on your network environment you are able to use Multicast – Multicast with IGMP or Unicast NLB. Each NLB mode has some pros and cons and you should get in contact with your network infrastructure department to find the right NLB operation mode.

irtual IP	Interface Type	Subnet	Address Type	In Use	Add
12.212.20.230	External	255.255.255.0	IPv4	No	
					Edit,
					Remove

Figure 2: Enable NLB on the external network card

Save and activate the configuration in the Forefront UAG console.

As you can see in the following screenshot, the NLB configuration will be activated also in the Forefront TMG management console, but we have to start NLB with the Forefront UAG Web Monitor.

📰 Forefront TMG					
File Action View Help					
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Microsoft Forefront Threat Managemei  Forefront TMG (UAG3)  Dashboard  Monitoring  Firewall Policy  Web Access Policy  Foundation	Alerts Session				
<ul> <li>Intrusion Prevention System</li> <li>Remote Access Policy (VPN)</li> </ul>	🖃 🍓 Reporting	Services Group		· · · ·	
- Networking	🦚 UAG3	SQL Server (ISARS)	Running		
Logs & Reports	🍓 UAG3	SQL Server Reporting Services (ISARS)	Running		
2 Update Center	🖏 UAG3	Microsoft Forefront TMG Firewall	Running	00:06:34	
	🖏 UAG3	Microsoft Forefront TMG Job Scheduler	Running	00:06:47	
	LUAG3	Network Load Balancing	Unavailable		
	🖏 UAG3	SQL Server Express	Running		
	🖏 UAG3	Microsoft Forefront TMG Managed Control	Running		
	🖏 UAG4	Microsoft Forefront TMG Firewall	Running	00:06:39	
	🖏 UAG4	Microsoft Forefront TMG Job Scheduler	Running	00:06:51	
	UAG4	Network Load Balancing	Unavailable		
	🖏 UAG4	SQL Server Express	Running		
	🍓 UAG4	Microsoft Forefront TMG Managed Control	Running		

Figure 3: Configuring NLB

Start the Forefront UAG Web Monitor, navigate to the Array monitor, select booth Forefront UAG array members and select *Start* and hit the *Apply* button. NLB will now be activated.

🖉 Microsoft Forefront Unified Access Gateway - Web Monitor - Windows Internet Explorer						
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Signature Array Monitor						
Session Monitor	Node	s (2)		1	3	
Active Sessions    Statistics	Sia	Node Name	Node IP	NLB Status	Apply Synchronization Status	
Application Monitor Current Status	<u>ک</u>	UAG3	10.80.16.153	Stopped	Synched Synched	
<ul> <li>Active Sessions</li> <li>Statistics</li> <li>User Monitor</li> <li>Current Status</li> <li>Active Sessions</li> <li>Statistics</li> <li>DirectAccess Monitor</li> <li>Current Status</li> <li>Active Sessions</li> <li>Farm Monitor</li> <li>Current Status</li> </ul>						
Figure 4: Start NLB configuration w	vith th	e Forefront UAG Web Monitor				

It takes some time until both Forefront UAG array members are converged.

🖨 Microsoft Forefront Unified Access Gateway - Web Monitor - Windows Internet Explorer						
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Web Monitor Array Monitor						
Session Monitor	Nodes	e (2) ct an option to apply 💌				Apply 🔹
Statistics		Node Name		Node IP	NLB Status	Synchronization Status
Application Monitor		UAG3		10.80.16.153	Converging	Not Synched
Current Status		UAG4		10.80.16.154	Converging	Not Synched
The sessions Statistics					·	
Figure 5: NLB is converging						

Forefront UAG will automatically configure the NLB in the Windows NIC properties. The Windows Server feature Network Load Balancing was automatically installed during the Forefront UAG installation.

🖞 INTERNET Properties 🔀 🗶						
Networking Sharing						
Connect using:						
Microsoft Virtual Machine Bus Network Adapter #2						
Configure						
This connection uses the following items:						
<ul> <li>Client for Microsoft Networks</li> <li>Forefront TMG Packet Filter</li> <li>Network Load Balancing (NLB)</li> <li>QoS Packet Scheduler</li> <li>GoS Packet Scheduler</li> <li>File and Printer Sharing for Microsoft Networks</li> <li>✓ Internet Protocol Version 6 (TCP/IPv6)</li> <li>✓ Internet Protocol Version 4 (TCP/IPv4)</li> </ul>						
Install Uninstall Properties						
Description This component provides TCP/IP load balancing functionality. To configure use the Network Load Balancing Manager utility.						
OK Cancel						

Figure 6: NLB activated on the external network card

After some times the NLB status in the Forefront UAG Web Monitor is converged.

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Web Monitor Array Monitor						
Session Monitor	Nodes	s (2) ct an option to apply 💌				Apply 🔦
Statistics		Node Name		Node IP	NLB Status	Synchronization Status
Application Monitor		UAG3		10.80.16.153	Converged	Synched
Current Status		UAG4		10.80.16.154	Converged	Synched
Contractive Sessions						

Figure 7: NLB is converged

You can also see the running NLB configuration in the *Monitoring – Services* tab of the Forefront TMG management console as shown in the following screenshot.

🚟 Forefront TMG						
File Action View Help						
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Microsoft Forefront Threat Management Forefront TMG (UAG3) Dashboard Monitoring Firewall Policy Web Access Policy	Alerts Session	Alerts Sessions Connectivity Verifiers Services Configuration				
E-Mail Policy	Server 🔺	Service	Status	Service Uptime		
Intrusion Prevention System	🖃 🍓 Reporting	🖃 🆏 Reporting Services Group				
Remote Access Policy (VPN) Provide Access	🦚 UAG3	SQL Server (ISARS)	Running			
Logs & Reports	🦚 UAG3	SQL Server Reporting Services (ISARS)	Running			
	🍓 UAG3	Microsoft Forefront TMG Firewall	Running	00:04:05		
	🖏 UAG3	Microsoft Forefront TMG Job Scheduler	Running	00:11:59		
	🖏 UAG3	Network Load Balancing	Running			
	🖏 UAG3	SQL Server Express	Running			
	🍓 UAG3	Microsoft Forefront TMG Managed Control	Running			
	🚓 UAG4	Microsoft Forefront TMG Firewall	Running	00:04:00		
	🖏 UAG4	Microsoft Forefront TMG Job Scheduler	Running	00:12:03		
	🖏 UAG4	Network Load Balancing	Running			
	🍓 UAG4	SQL Server Express	Running			
	🖏 UAG4	Microsoft Forefront TMG Managed Control	Running			

Figure 8: NLB is running on the TMG Server

After you have checked the successful NLB implementation it is now time to enable the integrated NLB for the Portal trunk in the Forefront UAG management console.

🗟 Microsoft Forefront Unifie	d Access Gateway Management			_ & ×
File View Admin Messages	Help			
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Porefront UAG     HTTP Connections     HTTPS Connections     Portal     DirectAccess	Portal			3
	External Site Name	Applications		
	Specify the name that clients type in the browser to access the site.	Application Name	Application Type	
		S Portal	Portal	
	Public host name: portal and portal and port 443	Sharepoint	Microsoft SharePoint Server	_
	C External Cite Address	OWA	Microsoft Exchange Server	
		OA - Autodiscover	Microsoft Exchange Server	
	HTTPS Port: 443	A - Autodiscover	Microsoft Exchange Web Server	
	Virtual IP: 212 , 212 , 20 , 230 💌 Add	Certified Endpoint Enroll	Certified Endpoint Enrollment	
	C Do not use integrated NLB           Array Member         IP           UAG3 (local)         212.212.20.222	Add	Edit Remove	
	UAG4 212.212.20.225	Subnet Address	Subnet Mask	
	Initial Internal Application			
	Portal home page: Portal	Add	Edit Remove	
	Trunk Configuration			
	Configure trunk settings: Configure			
Message Time	Message Type Message			

Figure 9: Use integrated NLB for the UAG portal trunk

Save and activate the configuration in the Forefront UAG management console.

### **NLB** operations

Windows NLB provides some operation modes which can be configured with the Forefront UAG Web Monitor as shown in the following screenshot.

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🚱 🔄 🗢 🎉 http://localhost:50002/ 🔎 💌 🖗 Microsoft Forefront Unified A 🗙						
<b>Web Monitor</b>	Array Monitor					
Session Monitor	Nodes (2)			Apply *		
Statistics	select an option to apply Start	Node IP	NLB Status	Synchronization Status		
Application Monitor	Stop Drain Stop	10.80.16.1	54 Converged	Synched		
Current Status	Suspend	10.80.16.1	53 Converged	Synched		
Active Sessions     Statistics Figure 10: NLB operations	Resume					

## <u>Start</u>

The start command can be used after a stop or suspend command. It restarts NLB operations, but it does not enable the use of cluster control commands which have been disabled by a previous suspend command

### <u>Stop</u>

The Stop command stops NLB on the host but does not affect the other NLB cluster control commands.

#### Drain Stop

Drain disables new traffic handling for the NLB rule that contains the specified port in the port range. New connections to the specified NLB hosts are not allowed, but all active connections are maintained

#### Suspend

The suspend command stops NLB on the host and suspends all NLB cluster control commands on the host.

#### Resume

If you want to resume cluster operations on all NLB cluster hosts, click Resume in the Forefront UAG Web Monitor.

### Conclusion

In this second article configured the Forefront UAG array with NLB (Network Load Balancing) to provide high availability.

# **Related links**

Array deployment guide <u>http://technet.microsoft.com/en-us/library/dd857305.aspx</u> Configuring NLB for a Forefront UAG DirectAccess array <u>http://technet.microsoft.com/en-us/library/ee191502.aspx</u> Configuring NLB for a Forefront UAG array <u>http://technet.microsoft.com/en-us/library/dd903059.aspx</u> UAG Array and Network Load Balancing <u>http://blogs.technet.com/b/edgeaccessblog/archive/2009/06/29/array-and-network-load-balancing.aspx</u> Microsoft Forefront UAG – Overview of Microsoft Forefront UAG <u>http://www.isaserver.org/tutorials/Microsoft-Forefront-UAG-Overview-Microsoft-Forefront-UAG.html</u> Forefront UAG technical overview <u>http://technet.microsoft.com/en-us/library/ee690443.aspx</u>