

Configuring NIC teaming

NIC teaming, also known as Load Balancing and Failover (LBFO) is a new feature included in Windows Server 2012 that enables multiple network adapters on a server to be grouped into a team. NIC teaming has two purposes:

- Ensuring the availability of network connectivity if one adapter fails
- Aggregating network bandwidth across multiple network adapters

Before Windows Server 2012, implementing network adapter teaming on Windows Server required using third-party solutions from independent hardware vendors. However, network adapter teaming is now built into the Windows Server operating system and can therefore work across different NIC hardware types and manufacturers.

Windows NIC teaming supports up to 32 network adapters in a team and runs in three modes:

- **Static Teaming** Also called Generic Teaming, this mode is based on IEEE 802.3ad draft v1 and is supported by most server-class Ethernet switches. It requires manual configuration of the switch and the server to identify which links form the team.
- **Switch Independent** This mode allows each NIC in a team to connect to different switches.
- **LACP** Also called Dynamic Teaming, this mode is based on IEEE 802.1ax and is supported by most enterprise-class switches. It allows teams to be automatically created through the Link Aggregation Control Protocol (LACP). LACP dynamically identifies links between the server and a specific switch. To use this mode, you generally need to enable LACP manually on the port of the switch.

NIC teaming can be enabled from Server Manager or by using Windows PowerShell. In Server Manager, you can begin by right-clicking the server you want to configure and selecting Configure NIC Teaming, as shown in Figure 1-12.

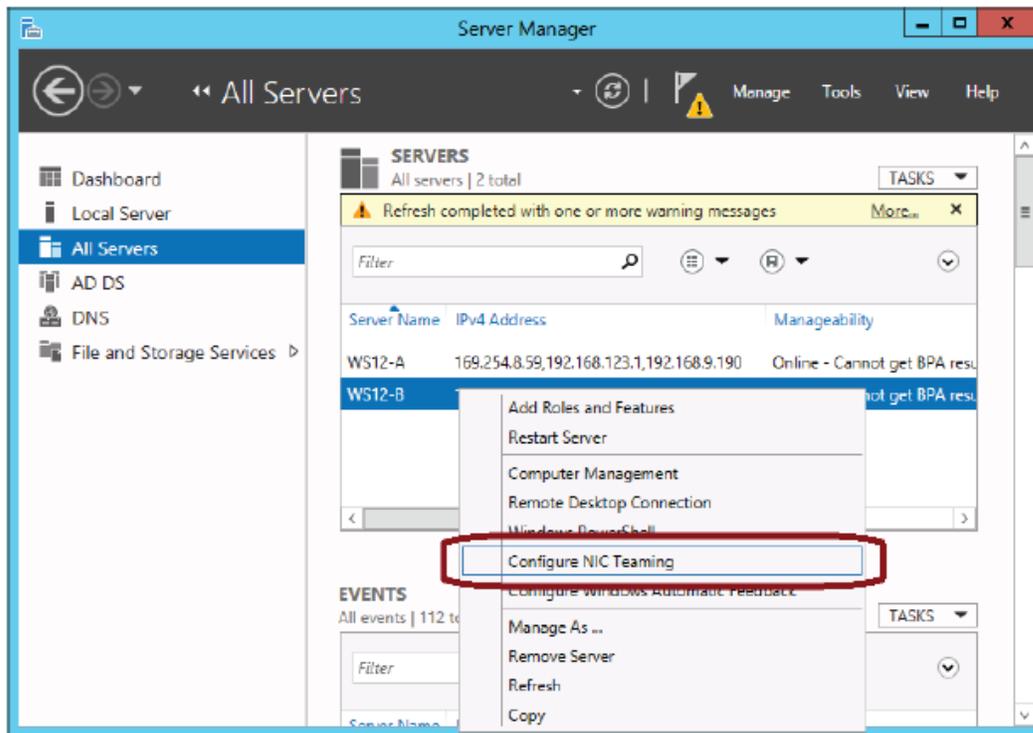


FIGURE 1-12 Configuring NIC teaming in Server Manager.

In the NIC Teaming dialog box that opens, select the network adapters you want to team and then right-click and select Add To New Team, as shown in Figure 1-13.

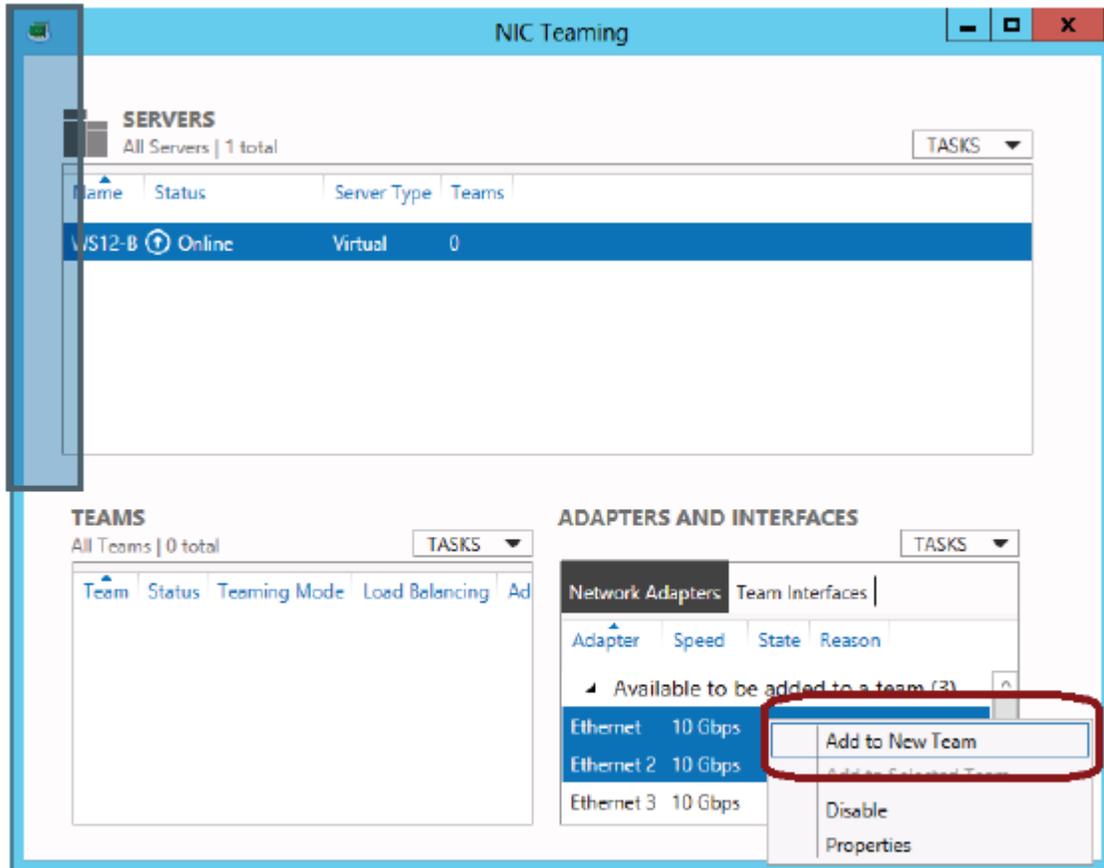


FIGURE 1-13 Adding network adapters to a new team.

In the New Team dialog box, shown in expanded mode in Figure 1-14, you can configure the teaming mode and other settings.

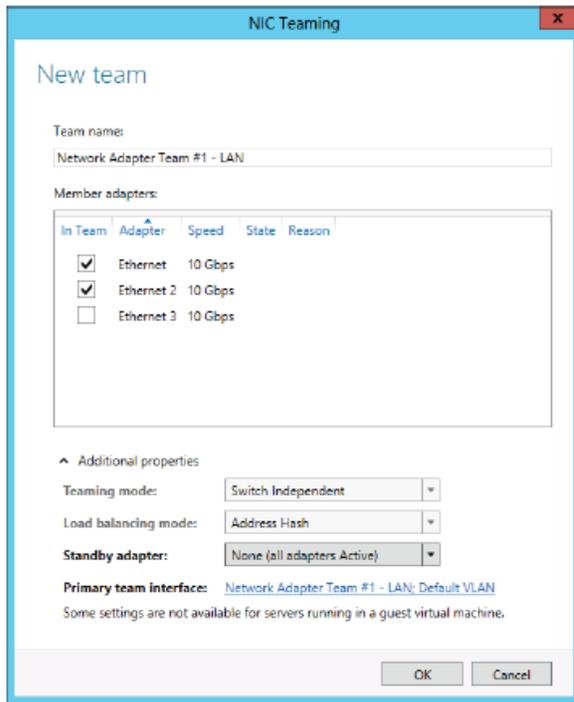


FIGURE 1-14 Configuring team properties.

Clicking OK completes the process and, if the process is successful, the new team will be displayed in both the Teams area and the Adapters And Interfaces area of the NIC Teaming dialog box, shown in Figure 1-15.

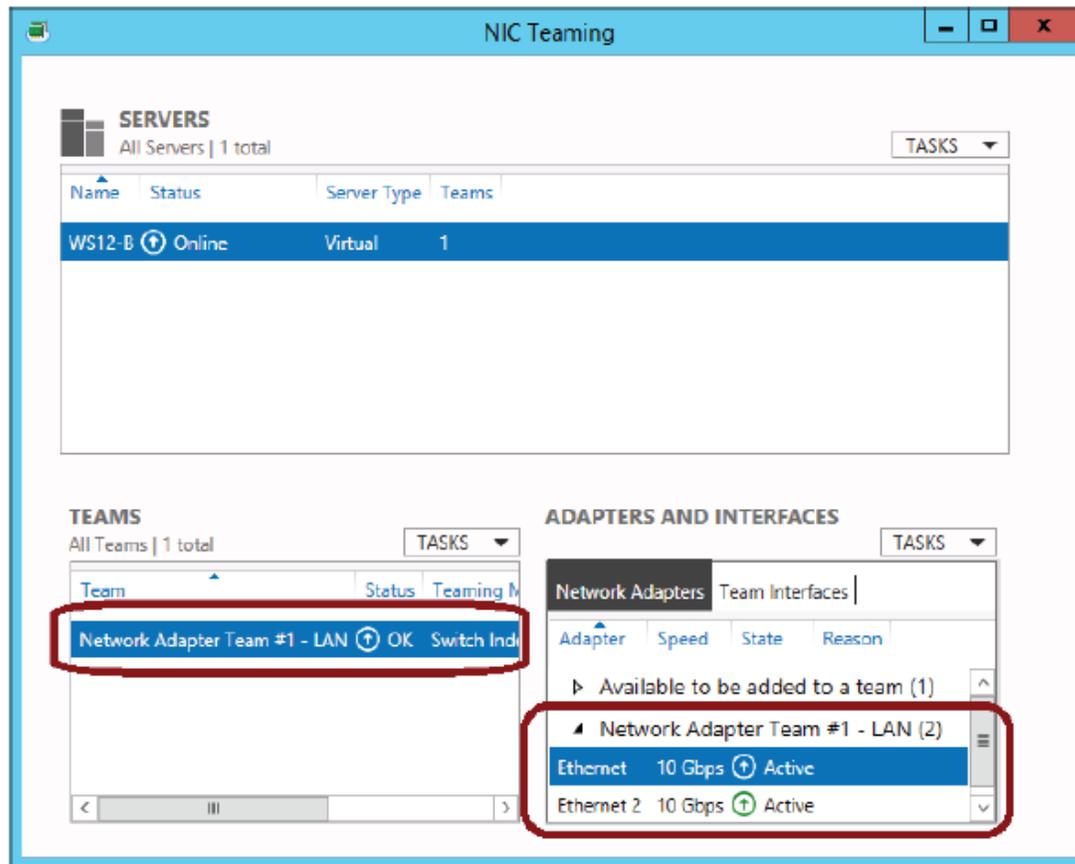
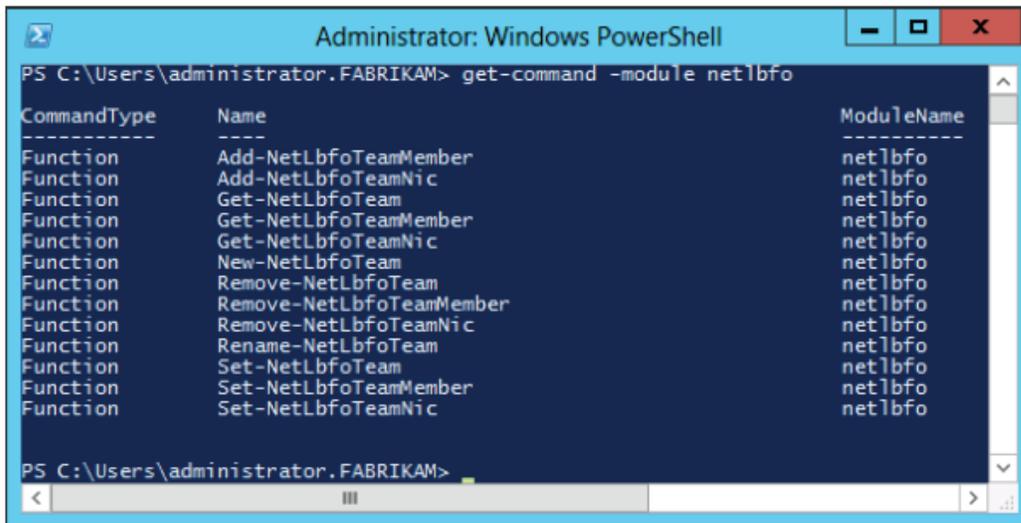


FIGURE 1-15 A newly configured network team.

To configure and manage NIC teaming in Windows PowerShell, use cmdlets such as `New-NetLbfoTeam` to add a new team or `Get-NetLbfoTeam` to display the properties of a team. The cmdlets for managing NIC teaming are defined in the Windows PowerShell module named `NetLbfo`. As Figure 1-16 shows, you can use the `Get-Command` cmdlet to display all the cmdlets defined in this module. You can then use the `Get-Help` cmdlet to learn the syntax for any of the functions displayed. For example, type **Get-Help New-NetLbfoTeam** to find out more about the `New-NetLbfoTeam` cmdlet.



```
Administrator: Windows PowerShell
PS C:\Users\administrator.FABRIKAM> get-command -module netlbfo

CommandType      Name                                     ModuleName
-----
Function         Add-NetLbfoTeamMember                 netlbfo
Function         Add-NetLbfoTeamNic                   netlbfo
Function         Get-NetLbfoTeam                      netlbfo
Function         Get-NetLbfoTeamMember                netlbfo
Function         Get-NetLbfoTeamNic                   netlbfo
Function         New-NetLbfoTeam                       netlbfo
Function         Remove-NetLbfoTeam                   netlbfo
Function         Remove-NetLbfoTeamMember              netlbfo
Function         Remove-NetLbfoTeamNic                 netlbfo
Function         Rename-NetLbfoTeam                   netlbfo
Function         Set-NetLbfoTeam                       netlbfo
Function         Set-NetLbfoTeamMember                 netlbfo
Function         Set-NetLbfoTeamNic                   netlbfo

PS C:\Users\administrator.FABRIKAM>
```

FIGURE 1-16 Cmdlets for NIC teaming.

MORE INFO For more information about NIC teaming in Windows Server 2012, see the NIC teaming overview at <http://technet.microsoft.com/en-us/library/hh831648.aspx>. For more in-depth information, search for the white paper titled "NIC Teaming (LBFO) in Windows Server 8 Beta" on <http://technet.microsoft.com>.

