

HP Integrity Servers with Microsoft Windows Server 2003 for Itanium-based systems HP Networking Utilities User's Guide

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Table of Contents

1 Replicate Agent Settings tool.....	9
Introduction.....	9
Overview of NICs.....	9
Using HP SIM.....	10
Viewing the Task Results page.....	13
2 SetLACState Utility.....	15
Tool usage.....	15
Command-line syntax.....	15
Command-line arguments.....	15
Command-line examples.....	15
3 Network Adapter Scripting Utility.....	17
Overview.....	17
Order of NICs on target systems.....	17
Teams on target systems.....	17
The CQNICCMD scripting utility.....	18
Script conversion issues.....	18
Using the CQNICCMD utility.....	18
Command-line syntax.....	19
Command-line arguments.....	19
Command-line examples.....	19
Command-line help.....	20
Configuration properties.....	20
NIC configuration properties.....	20
Team configuration properties.....	21
XML data file.....	22
Error handling and reporting.....	24

List of Figures

1-1	All Systems window	10
1-2	Step 1: Verify Target Systems window	10
1-3	Step 2: Choose Source System window	11
1-4	Step 3: Choose Source Configuration Settings window	12
1-5	Task Results page.....	13

List of Tables

1-1	Status information messages.....	13
2-1	SetLACState command line arguments.....	15
3-1	cqniccmd command-line arguments.....	19

1 Replicate Agent Settings tool

Introduction

The HP Network Configuration Utility (NCU) enables configuration of network adapters and teams of network adapters installed on an HP Integrity server. To better support server management, the NCU has been enhanced using the Replicate Agent Settings tool of HP Systems Insight Manager (HP SIM). The replication tool enables HP SIM to retrieve Web Agent configuration settings from a source server and distribute that configuration remotely to one or more target servers.

To use the information in this chapter, you need a basic familiarity with HP SIM. This chapter provides step-by-step instructions to replicate network configuration settings from one server to a group of target servers using the Replicate Agent Settings tool of HP SIM.

Overview of NICs

You can use the Replicate Agent Settings tool to configure target servers based on configuration information transferred from a source server. The target system does not have to be identical to the source system. You can configure both network interface cards (NICs) and teams of NICs on the target system. The Replicate Agent Settings tool modifies the configuration of the NICs on the target system according to the NIC properties specified on the source system.

When the Replicate Agent Settings tool runs, it identifies NICs by their relative order in the system. The relative order is determined by the slot and port order in the system. NICs embedded on the system board are assigned the lowest numbers, followed by NICs ordered by their slot numbers with the lowest slot number listed first. Multiport NICs are ordered by ascending port number within each slot.

NICs on the target system are configured to match the corresponding NIC numbers on the source server using the following conventions:

- The first NIC on the target system is configured using data from the first NIC on the source server.
- The second NIC on the target system is configured according to the saved data for the second NIC on the source server, and so on.
- If the target system has more NICs than the source server, the extra NICs retain their current settings.
- If the target system has fewer NICs than the source server, data for additional NICs on the source server is ignored.

Teams are created on the target system. Each team consists of the same relative NICs that are teamed on the source server. For example, if NICs 3 and 5 are teamed on the source server, then the same teaming information is transferred to the target server, and NICs 3 and 5 are teamed on the target system during the replication operation. In general, the NICs on the target system team do not have to be the same type of NICs that are teamed on the source server. However, some NICs cannot be teamed and an error is returned if an attempt to form a team is made with invalid combinations of NICs. For example, NICs without common speed capabilities cannot be teamed on a load-balancing team.

An error is returned if the NICs forming the team on the source server are not present on the target system. For example, if NICs 3 and 5 are teamed on the source server but the target system has only four NICs, an error is reported and the configuration is not applied.

When teams are configured on the target system, the team properties are set to the values transferred from the corresponding team on the source server. Properties not transferred (and properties specified with invalid data values) are configured using their default settings.

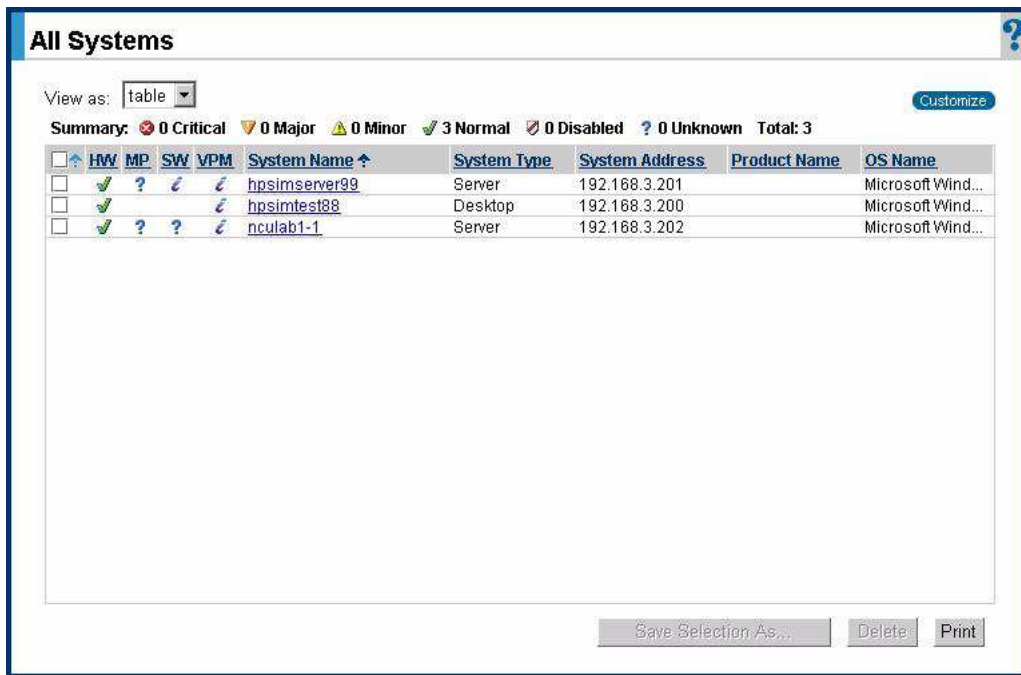
If no teams are configured on the source server, no teaming information is transferred, and configuration of the target system consists of configuring individual NICs only.

Using HP SIM

To replicate network configuration settings from source server to target server, complete the following steps:

1. From the HP SIM home page, select **All Systems** to display all servers in the All Systems window [Figure 1-1](#).

Figure 1-1 All Systems window



2. Select the desired target systems from the list.
3. Select **Configure > Replicate Agent Settings** from the menu. The Step 1: Verify Target Systems page appears with the selected targets listed [Figure 1-2](#).

Figure 1-2 Step 1: Verify Target Systems window

Replicate Agent Settings

Description: Copy configurations from one system to groups of systems.

Step 1: Verify Target Systems

System Name	OS	Type	Tool launch OK? ↑	Keep?
nculab1-1	Microsoft Windows 2000 Advance	Server	Yes	[Remove]

[Change Targets](#)
[Next >](#)



NOTE: If the systems selected are not compatible with the Replicate Agent Settings tool, the Tool launch OK? column provides a brief explanation of the problem. To change the targeted list, click **Change Targets**. To remove the selected system, click **Remove** in the Keep? column.

4. Click **Next**. The Step 2: Choose Source System window appears [Figure 1-3](#).

Figure 1-3 Step 2: Choose Source System window

Replicate Agent Settings

Target: nculab1-1

Step 2: Choose Source System

You know the name of the system:

Pick the system from a list

Last update: Wed, 10/20/2004, 10:50 AM

Name	Status	Product Name	Trusted?	Web Agents
hpsimserver99	✓		yes [configure]	HP Management Agents for Servers (NIC component), HP Management Agents for Servers (Server component), HP Management Agents for Servers (foundation component), HP Management Agents for Servers (storage component), HP Network Configuration Utility, HP PMP Tools, HP System Management Homepage, Performance Management Pack, Version Control Repository Manager Configuration History Reports (Survey Utility), HP Management Agents for Servers (NIC component), HP Management Agents for Servers (Server component), HP Management Agents for Servers (foundation component).

< Prev

Next >

5. Select the specific server with a configured network to replicate on the target servers (the Web Agent that supports network configuration is labeled HP Network Configuration Utility).
6. Click **Next**. The Step 3: Choose Source Configuration Settings page appears [Figure 1-4](#).

Figure 1-4 Step 3: Choose Source Configuration Settings window

eplicate Agent Settings
 rget: nculab1-1

ep 3: Choose Source Configuration Settings

ter changes to the source systems settings do not affect the values saved and set by this tool.

ource system: hpsimserver99

Last update: Wed, 10/20/2004, 10:57 AM

HP System Management Homepage [\[edit\]](#)
 HP Network Configuration Utility [\[edit\]](#)
 Network Configuration
 Networking Properties
☐ Adapter Configuration (value is Teams= 0 Team VLANs= 0 Adapters= 6 Adapter VLANs= 0 Version= 7.80.0.8)

Wake target systems from low power mode before configuring

< Prev Schedule Run Next

7. Expand the HP Network Configuration Utility tree to view the networking components that can be replicated. These components are located under Networking Properties.

The Network Properties view provides the following networking configuration information:

- **Teams** — Number of teams in the configuration
- **Team VLANs** — Number of team VLANs defined (multiple teams can use the same VLAN)
- **Adapters** — Number of adapters in the configuration
- **Adapter VLANs** — Number of adapter VLANs defined (multiple adapters can use the same VLAN)
- **Version** — Version of the teaming utility



NOTE: Currently, the **edit** function is not operational for network configuration settings.

8. Select **Adapter Configuration**.



NOTE: You also can select **Wake target systems from low power mode** before configuring the target servers. This option initiates the Wake-on LAN (WOL) feature to remotely power on the target servers, if they are equipped with a WOL-enabled NIC or if they have ACPI support in the operating system. See the “Replicate Agent Settings - Reference” section in the HP SIM online help file for more information.

9. Select one of the following options to execute the task:
 - Click **Schedule** to specify when the task will run. For more information, see the “Scheduling a Task” section in the HP SIM online help file.
 - Click **Run Now** to run the task immediately. The Task Results page appears. See the “Task Results List” section in the HP SIM online help file for more information.
 - Click **Prev** to return to the previous page.



NOTE: The Replicate Agent Settings task in HP SIM uses Secure Task Execution (STE) to issue its commands to the system. STE enables an HP SIM system to securely request execution of the task from a managed system. It ensures that the user requesting the task has the appropriate rights to perform it. For more information, see the “About Secure Task Execution” section in the HP SIM online help file.

Viewing the Task Results page

The Task Results page displays the task instance results of each targeted server [Figure 1-5](#).

Figure 1-5 Task Results page

Task Results			
Description: View status and results of task instances			
Status:	Complete	Target:	nculab1-1
Task ID:	2201	Run by:	hpsimtest88\guest
Task name:	Replicate Agent Settings	Start time:	10/20/04 - 11:08 AM PDT
Tool:	Replicate Agent Settings	End time:	10/20/04 - 11:09 AM PDT
Owner:	hpsimtest88\guest	Duration:	10 sec
Command:	N/A		
Successes: 1; Failures: 0			
System	Result	Web Agent	Details
nculab1-1	Complete	HP Network Configuration Utility	Agent Configured Successfully.

Status information messages indicate the success or failure of the configuration and can include any of the messages listed in [Table 1-1](#).

Table 1-1 Status information messages

Status	Message
Agent Configured Successfully	Network Configuration — Agent Configured Successfully.
Networking Configuration Replication Error	Network Configuration Replication Error — Error retrieving system model. Insure that network configuration utilities are not executing on this target.
	Network Configuration Error — Adapter configuration version mismatch.
	Network Configuration Error — Adapter configuration error; see log file for additional details.
	Network Configuration Error — Another Networking application is executing.
	Network Configuration Error — Unidentified error; see log file for additional details.
	Network Configuration Error — Number or type of adapter mismatch.
HP SIM Connecting VLAN Error	Network Configuration Replication Error — Processing HP SIM connection.



NOTE: For additional error details, see `CPQSYSTEM\log\remnetcfg.log`.

2 SetLACState Utility

If a server contains more than one server adapter, and at least one of those adapters is not connected, the server can display as failed on some network management consoles. SNMP traps can also be triggered. Use the SetLACState utility (SetLACState) to disable the Local Area Connection containing the unused adapter. This stops the server from displaying as failed and prevents the SNMP traps.



NOTE: The server adapter identified by the local area connection must be an adapter supported by HP. Also, you cannot use this utility to enable or disable adapter teams.

The SetLACState utility is installed as part of the Network Configuration Utility (NCU) component package for Windows Server 2003. Upon installation, SetLACState.exe is copied into the %SystemRoot%\System32\ directory.

Tool usage

You can run the SetLACState utility from the command prompt use it during RDP installations. You can also add it to the [GuiRunOnce] section of unattend.txt for use in unattended installations.

Command-line syntax

Use the following format at the command line:

```
SetLACState <Local Area Connection> [Enable | Disable] [/l  
<logfile>] [LINEBREAK] [/? | /help]
```

Command-line arguments

Use the command line arguments listed in Table 2-1.

Table 2-1 SetLACState command line arguments

Argument	Function
<Local Area Connection>	Specify the name or ID of the LAN connection (for example, Local Area Connection or 1, 2, or 3). NOTE: If you use this utility in the [GuiRunOnce] section of unattend.txt, specify the ID of the local area connection. Specifying just the name of the local area connection results in an error. For example, Local Area Connection has an ID of 1. Local Area Connection 2 has an ID of 2, and so on. Local area connections that have been renamed no longer have an ID.
[Enable Disable]	Enables or disables the specified local area connection.
[/l <logfile>]	Lets you to specify where the logfile is saved. The default location is on the system drive at: %SystemRoot%\cpqsystem\log\setlacstate.log.
/?	Displays utility usage (optional).
/help	Displays utility usage (optional).

Command-line examples

The following valid SetLACState command-line examples achieve the same result:

```
SetLACState 2 disable
```

```
SetLACState "Local Area Connection 2" disable
```

What they do:

Both of these commands disable Local Area Connection 2.



NOTE: Specifying `enable` for a connection that is already enabled or `disable` for a connection that is already disabled, does not generate an error.

3 Network Adapter Scripting Utility

Use the Network Configuration Utility to configure network adapters (NICs) and teams of network adapters. The utility's scripting feature lets you do this using a batch process.

The scripting functionality also lets you configure target systems based on configuration information saved from a source server. When scripting runs, it uses the NIC properties specified in the data file from the source server to modify the configuration of the NICs on the target system. Target systems do not have to be identical to the source server, and the configuration of the source server does not have to be duplicated in its entirety onto the target system.

Overview

The scripting tool used to configure the target systems identified NICs by their relative order in the system. The relative order is determined by the slot and port order in the system. NICs on the system board are assigned the lowest numbers, followed by the remaining NICs, which are ordered from lowest slot number to highest. Multiported NICs are ordered by ascending port number within each slot.

Order of NICs on target systems

NICs on the target system are configured to match the corresponding NIC numbers on the source server using the following conventions:

- The first NIC on the target system is configured using data from the first NIC on the source server.
- The second NIC on the target system is configured according to the saved data for the second NIC on the source server, and so on.
- If the target system has more NICs than the source server, the extra NICs retain their current settings.
- If the target system has fewer NICs than the source server, data for additional NICs on the source server is ignored.

Teams on target systems

The target system is configured with the same number of teams present on the source server according to the following conventions:

- Teams are created on the target system consisting of the same relative NICs that were teamed on the source server. For example, if NICs 3 and 5 were teamed on the source server, then that teaming information is saved in the data file, and NICs 3 and 5 are teamed on the target system
- In general, the NICs on the team on the target system do not have to be the same type of NICs that were teamed on the source server. However, some NICs cannot be teamed, and if an attempt is made to form a team with invalid combinations of NICs, an error occurs. For example, teams with no common speed capabilities cannot be teamed on a load balancing team.
- An error occurs in the configuration if the NICs forming the team on the source server are not present on the target system. For example, if NICs 3 and 5 are teamed on the source server but the target system has only four NICs, an error is reported and the configuration is not applied.
- When teams are configured on the target system, the team properties are set to the values read from the data file for the corresponding team on the source server. Properties not

specified in the data file (and properties specified with invalid data values) are configured using their default settings.

- If no teams are configured on the source server, then no teaming information is written to the data file, and configuration of the target system consists of configuring individual NICs only.

The CQNICCMD scripting utility

CQNICCMD is a Windows Server 2003 utility that uses a script file to duplicate the NIC teaming configuration information of one Integrity source server and copy it to another Integrity target server.

Script conversion issues

Scripts created with earlier versions of the Network Configuration Utility (NCU) are supported. However, HP recommends that you recreate them using the latest version of the NCU. Several operating modes in scripts generated with NCU versions 7.7x and earlier have changed and are converted as follows:

- “Manual” is converted to “Network Fault Tolerance Only (NFT)”
- “SmartSwitch” is converted to “Network Fault Tolerance Only with Preference Order”
- For Smart Switch Teams, the existing “PreferredPrimaryNic” attribute determines which team member should be ranked higher than others within the “PreferredPrimaryRanking” attribute

All other unspecified parameters use their defaults.

Using the CQNICCMD utility

Run this utility from the command line in a Command Prompt window, or use the **Run** option on the Windows Start menu, or from a Windows command file. HP recommends that you use this utility as part of a SmartStart Scripting Toolkit (SSST) deployment. However, you can use the application outside of this environment.



NOTE: To execute the CQNICCMD utility from the command line, you must first close the HP Network Configuration Utility.

To use the scripting application, complete the following steps:

1. Configure NIC teaming on the source server.
2. Generate a script file on the source server by clicking **Save** in the HP Network Configuration Utility user interface or by running `CQNICCMD /S<filename>` in the command-line utility.
3. Modify the script file as necessary.



NOTE: If you modify the script file, HP recommends that you run `CQNICCMD /P` to check the syntax of the modified file and check the log file for errors and warnings. The default location of the log file is `\cpqsystem\log\cpqteam.log` on the system drive. The syntax of the `/P` option is: `cqniccmd /p<filename>`.

4. Install the HP Network Configuration Utility on the target system.
5. Run the Command Line utility with the following syntax:
`cqniccmd /C <filename>`
6. Check the log file for errors and warnings. The default location of the log file is `\cpqsystem\log\cpqteam.log` on the system drive.



NOTE: If you want to use this tool in combination with the Smart Setup Scripting Toolkit (SSSTK), see the SSSTK documentation found on your Smart Setup CD.

Command-line syntax

Use the following format at the command line:

```
cqniccmd [/F] [/C<filename>] [/D] [/L<filename>] [/P<filename>]
[/S<filename>] [/?]
```



NOTE: You can specify only one of the following configuration options at a time:

/S, /D, /C, or /P

You can use the /L option with any of the configuration options. You can use the /F option only with the /C option.

Command-line arguments

Use the command-line arguments listed in Table 3-1.

Table 3-1 cqniccmd command-line arguments

Argument	Function
/S	This option causes the source server configuration to be saved. You must specify the name of the XML configuration data file and the path to the data file must exist. This option is identical to saving the source server configuration by clicking Save in the HP Network Configuration Utility user interface.
/D	This configuration option causes all teams on the target server to be dissolved, all VLANs to be removed, and 802.1p/q Packet Tagging to be disabled for all NICs that have VLANs. No additional arguments are required or allowed with this option.
/C	This configuration option applies the configuration specified in the data file to the target system. You must specify an existing XML configuration data file following the target switch. A space following the switch is optional. NOTE: Any teams that exist on the target system are dissolved before the configuration is applied. Therefore, any VLAN that exists on the team is removed, and 802.1p/q Packet Tagging is disabled. If any VLANs are defined for non-teamed NICs, all existing NIC VLANs are removed and 802.1p/q Packet Tagging is disabled.
/P	This option is identical to the /C option except that the configuration options are not applied to the target system. This is useful for syntax checking the XML data file.
/L	Use this option to change the name and location of the cpqteam.log default log file that is created in \cpqsystem\log on the system drive. The supplied path must exist. An invalid log file name causes the configuration to terminate with no changes. HP recommends this option only in batch files.
/F	This option causes all errors, including those errors normally treated as nonfatal errors, to be treated as fatal errors. You can use this option only with the /C option.

Command-line examples

The following are valid cqniccmd command-line examples:

Example 1:

```
/S
```

```
cqniccmd /Sc:\HP\teamcfg.xml
```

```
cqniccmd /S c:\HP\teamcfg.xml
```

```
cqniccmd /S"c:\HP\teamcfg.xml"
```

Example 2:

```
/D
cqnccmd /D
```

Example 3:

```
/C
cqnccmd /Cc:\HP\teamcfg.xml
cqnccmd /C c:\HP\teamcfg.xml
cqnccmd /C"c:\HP\teamcfg.xml"
```

Example 4:

```
/P
cqnccmd /Pc:\HP\teamcfg.xml
cqnccmd /P c:\HP\teamcfg.xml
cqnccmd /P"c:\HP\teamcfg.xml"
```

Example 5:

```
/L
cqnccmd /Cc:\HP\teamcfg.xml /Lc:\HP\config.log
cqnccmd /C c:\HP\teamcfg.xml /L c:\HP\config.log
cqnccmd /C"c:\HP\teamcfg.xml" /L" c:\HP\config.log"
```

Command-line help

Use the following option to display usage information:

```
c/?
```

For example:

```
cqnccmd /?
```

This displays detailed usage information for the command.

Configuration properties

The XML data file contains configuration properties for individual NICs and for NIC teams.

NIC configuration properties

The properties configured on the target server NICs from the source server data are properties that are common to all HP NICs.

These properties include the following:

- **SpeedDuplex** — Determines the current speed and duplex of the NIC. Possible values include Auto/Auto, 10/Half, 10/Full, 100/Half, 100/Full, and 1000/Full. The default is Auto/Auto. The value must be valid for the NIC on the target system.
- **PreferredPrimaryRanking** — Determines the preferred primary ranking of the NIC. This value is written only for NICs that are teamed.
- **DualChannelGroup** — If dual channel teaming is used, this identifies the group to which the NIC belongs. The default is 0. This value is written only for NICs that are teamed. For non-dual channel teams, the value is always 0.
- **ConfiguredPortCost** — Defines the port cost for the NIC. The default is 0. This value is written only for NICs that are teamed.
- **DefaultVlanID** — Determines the VLAN ID used for any untagged packets received by the NIC. This applies only to NICs that have VLANs defined.

- **VlanID** — Specifies the VLAN identifier value for the device.
- **VlanName** — Specifies the descriptive name for the VLAN ID. Every VLAN must have a name assigned to it. Duplicate names are allowed if you want to use the same names for different VLAN IDs.
- **NetworkAddress** — Is written only for NICs that are not teamed. It allows the burned-in address to be overridden with a locally administered address. A null value is always written to the XML data file because locally administered addresses must be unique. A null value is valid and indicates the network address will be the burned-in address. This value must be a valid unicast address if it is edited.

Team configuration properties

Team configuration properties configured on the target server include the following:

- **TeamName** — Determines the unique identifier for the NIC team. Each team name on the target system must be unique.
- **OpMode** — Determines operating mode of the team. Possible values are Auto, StaticDualSlb, DynamicSingleSlb, StaticSingleSlb, FailOnFault, PrefPrimary, and TransmitLoadBalancing.
- **LoadBalAlgorithm** — Determines the team load balancing algorithm. Possible values are MACAddress, IPAddress, TCPConnection, RoundRobin, and Auto.
- **TeamNetworkAddress** — Establishes the MAC address for the NIC team. A value is always written to the XML data file. A null value is valid and causes a default address to be computed. This value must be a valid unicast address if it is edited.
- **TxPathValidationMode** — Enables or disables the packet signal transmitted between the team NICs. Possible values are Enabled and Disabled.
- **RxPathValidationMode** — Enables or disables the packet signal received between the team NICs. Possible values are Enabled and Disabled.
- **TxPathValidationInterval** — Determines how frequently the packet signals are transmitted. The range of acceptable values is 3 to 60. Values less than 3 are set to 3, and values greater than 60 are set to 60.
- **RxPathValidationInterval** — Determines how frequently the packet signals are received. The range of acceptable values is 3 to 60. Values less than 3 are set to 3, and values greater than 60 are set to 60.
- **RxPathValidationVlanID** — Determines the VLAN on which Receive Path Validation Heartbeat Frames are transmitted. This value is written only when a VLAN is defined for the team. The default is the VLAN on the team with the lowest VLAN ID at the time the team is created.
- **FastPathEnabled** — Enables or disables the port cost with path cost monitoring feature. Possible values are Enabled and Disabled.
- **FastPathSpanningTreeType** — Determines the spanning tree protocol. Possible values are IEEE 802.1D and Cisco PVST+. The default is IEEE 802.1D. FastPathSpanningTreeType is relevant only if FastPathEnabled is enabled.
- **FastPathVlanID** — Determines the VLAN ID used for path cost monitoring. This value is written only if a VLAN is defined for the team. FastPathVlanID is relevant only if FastPathEnabled is enabled.
- **ActivePathEnabled** — Allows the team member to send a packet to a remote node and receive a reply to determine if the team member sending the packet has a path to the echo node. The absence of a reply within the specified time period can be used to determine when a team member should be disabled. Possible values are Enabled and Disabled. The default is Disabled. If Enabled, a valid echo node IP address must be entered.

The following values are written only when the ActivePathEnabled option is used:

- **EchoNodeResponseMech** — Determines which echo node response mechanism to use: DirectedARP or CommunityAddressARP. If CommunityAddressARP is chosen,

Community Probe IP Address, Community Probe MAC Address, and Use Default fields are used.

- **EchoNodeProbeIPAddress** — Determines the IP address to which the echo node responds. This is a reserved address that all teams on a subnet can use. This must be a valid unicast IP address and is enforced by scripting. This field is used only when both Active Path and Community Address ARP response mechanism are selected.
- **EchoNodeProbeAddress** — Determines the MAC address to which the echo node responds. This is a reserved address that can be used by all teams. This must be a valid unicast address and is enforced by scripting. This field is used only when both Active Path and Community Address ARP response mechanism are selected and EchoNodeUseDefMac = No.
- **EchoNodeUseDefMac** — Determines whether to use the reserved MAC address defined in NTID or whether to allow the user to specify the address. This field is used only when both Active Path and Community Address ARP response mechanism are selected. Valid values are Yes and No: Yes = use the default MAC address, No = use the EchoNodeProbeAddress.
- **EchoNodeAddress** — (Optional) Determines the MAC address of the echo node.
- **EchoNodeIPAddress** — (Required) Determines the IP address of the echo node.
- **EchoNodeTime** — Defines the time interval between packet transfers to the echo node. The default is 3 seconds.
- **EchoNodeTimeout** — Defines the maximum time to wait for a response from the echo node before considering the team member failed. The default is 3 seconds.
- **ActivePathVlanID** — Determines the VLAN ID used for the Active Path validation. This value is written only if a VLAN is defined for the team. ActivePathVlanID is relevant only if ActivePathEnabled is enabled.
- **CriteriaRanking** — Determines the priority of the redundancy mechanisms used in selecting the next port to become the primary port. Possible values are: 2 = User Preference Order, 1 = Active Path, 0 = Fast Path. Format is 0:1:2.
- **DefaultVlanID** — Determines the VLAN ID used for any untagged packets received by the team. This applies only to teams that have VLANs defined.
- **RouterPathEnabled** — Enables or disables the router path protocol feature. Possible values are Enabled and Disabled. If RouterPathEnabled is set to Enabled, the team is using advanced teaming.
- **RouterPathProtocol** — Determines the router path protocol. Possible values are HSRPv1 and VRRP. The default is HSRPv1. RouterPathProtocol is relevant only when RouterPathEnabled is Enabled.
- **RouterPathIPAddress** — Determines the IP address for the router path. This option is written only if RouterPathEnabled is enabled.
- **RouterPathVlanID** — Determines the Vlan ID used for the router path validation. This option is written only if a VLAN is defined for the team. RouterPathVlanID is relevant only when RouterPathEnabled is Enabled.
- **CDPv1Enabled** — Enables or disables the CDPv1 discovery protocol feature. Possible values are Enabled and Disabled.
- **CDPv2Enabled** — Enables or disables the CDPv2 discovery protocol feature. Possible values are Enabled and Disabled.

XML data file

The XML data file contains the configuration properties for NICs and teams and consists of the following XML elements:

- **<teamingconfig>** — Brackets the entire data file and is required
- **<nic>** — Defines NIC properties

- **<team>** — Defines teams and their properties
- **<vlan>** — Defines VLANs and their properties

The `relnics` attribute of the `<team>` element lists the NICs to be configured on the team.

The following example is a typical NIC teaming script:

```
<teamingconfig>
<!-- The comment lines in this file make it convenient -->
<!-- to reference <nic>, <team>, and <vlan> elements -->
<!-- within the file. It is recommended that these -->
<!-- comment lines remain unchanged if the user edits -->
<!-- the file. -->

<!-- -->
<!-- Version Data -->
<!-- -->

<version UtilityVersion='8.40.0.9' ScriptVersion='3.1' />

<!-- -->
<!-- Adapter Data -->
<!-- -->

<!-- <nic> element 1 -->
<nic>
  <property id='SpeedDuplex' value='Auto/Auto' />
  <property id='NetworkAddress' value='' />
</nic>

<!-- <nic> element 2 -->
<nic>
  <property id='SpeedDuplex' value='Auto/Auto' />
  <property id='PreferredPrimaryRanking' value='0' />
  <property id='DualChannelGroup' value='0' />
  <property id='ConfiguredPortCost' value='0' />
</nic>

<!-- <nic> element 3 -->
<nic>
  <property id='SpeedDuplex' value='Auto/Auto' />
  <property id='PreferredPrimaryRanking' value='1' />
  <property id='DualChannelGroup' value='0' />
  <property id='ConfiguredPortCost' value='0' />
</nic>

<!-- <nic> element 4 -->
<nic>
  <property id='SpeedDuplex' value='Auto/Auto' />
  <property id='NetworkAddress' value='' />
</nic>

<!-- <nic> element 5 -->
<nic>
  <property id='SpeedDuplex' value='Auto/Auto' />
  <property id='NetworkAddress' value='' />
</nic>

<!-- <nic> element 6 -->
<nic>
  <property id='SpeedDuplex' value='Auto/Auto' />
  <property id='NetworkAddress' value='' />
</nic>

<!-- -->
<!-- Team Data -->
```

```

<!--          -->

<!-- <team> element 1 -->
<team relnics='2 3'>
  <property id='TeamName' value='HP Network Team #1'/>
  <property id='OpMode' value='TransmitLoadBalancing'/>
  <property id='LoadBalAlgorithm' value='Auto'/>
  <property id='RxHeartbeatInterval' value='3'/>
  <property id='TxHeartbeatInterval' value='3'/>
  <property id='RxHeartbeatMode' value='Enabled'/>
  <property id='TxHeartbeatMode' value='Enabled'/>
  <property id='TeamNetworkAddress' value='' />
  <property id='FastPathEnabled' value='Enabled'/>
  <property id='FastPathSpanningTreeType' value='IEEE 802.1D'/>
  <property id='EchoNodeTime' value='3'/>
  <property id='EchoNodeTimeout' value='3'/>
  <property id='CriteriaRanking' value='9;0;1;2'/>
  <property id='RouterPathProtocol' value='HSRPv1'/>
  <property id='ActivePathEnabled' value='Enabled'/>
  <property id='EchoNodeIPAddress' value='192.168.0.2'/>
  <property id='EchoNodeResponseMech' value='CommunityAddressARP'/>
  <property id='EchoNodeProbeAddress' value='00-01-FA-FE-FE-FE'/>
  <property id='EchoNodeProbeIPAddress' value='192.168.0.3'/>
  <property id='EchoNodeUseDefMac' value='Yes'/>
  <property id='RouterPathEnabled' value='Enabled'/>
  <property id='RouterPathIPAddress' value='192.168.0.4'/>
  <property id='CDPv1Enabled' value='Enabled'/>
  <property id='CDPv2Enabled' value='Disabled'/>
  <property id='DefaultVlanId' value='10'/>
  <property id='RxPathValidationVlanId' value='10'/>
  <property id='FastPathVlanId' value='10'/>
  <property id='ActivePathVlanId' value='10'/>
  <property id='RouterPathVlanId' value='10'/>

<!-- <vlan> element 1 -->
<vlan>
  <property id='VlanId' value='10'/>
  <property id='VlanName' value='VLAN 10'/>
</vlan>
</team>
<teamingconfig>

```

Error handling and reporting

Errors can occur for a variety of reasons, including differences between the source and target system NICs or errors introduced by editing the XML data file. The software performs extensive error checking as the XML data file is read and processed.

When invalid property values are detected, a WARNING error message is written to the log file and configuration continues with either default or existing values.

When you run `cqniccmd` from a command line or a Windows command file, a completion code is written as an error-level code to both a log file and the screen. The Windows command file can use this error code to determine how to proceed. The error level codes are as follows:

- Successful start of the action returns an error level zero (0).
- Nonfatal errors return error-level one (1).
- An invalid log file returns error-level two (2).
- Other fatal errors return error-level three (3) or greater.

For specific information about all errors, see the log file.