
Application Note

Setting the QL41xxx Link Speed Using QCS CLI

1 Products Affected

This application note applies to QLogic® FastLinQ® QL41xxx adapters from Cavium™ that need to have a fixed link speed.

2 Prerequisites

To set a fixed link speed, you need:

- One or more QL41xxx adapters
- The latest version of the firmware (Flash kit)
- The operating system (OS) driver
- QLogic® Control Suite CLI (QCS CLI), located on the QLogic Web site at: <http://www.qlogic.com/OEMPartnerships/hp/Pages/HPOEMPartnership.aspx>
Click the **Utility Software** tab to download QCS CLI.

3 Overview

Following is a high-level description of two ways to set the link speed; see [Sections 4](#) and [5](#) for detailed instructions.

Method 1 (MBA Config File)

1. Save the adapter's *MBA config* structure to an XML file.
2. In the XML file, edit the link speed setting.
3. Upload the adapter with the new *MBA config* file.
4. Disable smart autonegotiation (SmartAN) mode (vendor-enhanced speed negotiation).
5. Reboot your system.

Method 2 (QCS CLI)

Issue commands in QCS CLI noninteractive mode to disable SmartAN mode and set a fixed link speed.

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Setting the Link Speed with the MBA Config File

To set a fixed link speed on the QL41xxx adapter:

1. Use the available utilities to identify the QL41xxx adapters in the system. Note the PCIe® address.

For example, issue the Linux® `#lspci` command. Following is a sample output.

```
80:03.2 PCI bridge: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 PCI Express Root Port 3 (rev 02)
80:03.3 PCI bridge: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 PCI Express Root Port 3 (rev 02)
80:04.0 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 0 (rev 02)
80:04.1 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 1 (rev 02)
80:04.2 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 2 (rev 02)
80:04.3 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 3 (rev 02)
80:04.4 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 4 (rev 02)
80:04.5 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 5 (rev 02)
80:04.6 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 6 (rev 02)
80:04.7 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 DMA Channel 7 (rev 02)
80:05.0 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 Address Map, Vtd_Misc, System Management (rev 02)
80:05.1 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 Hot Plug (rev 02)
80:05.2 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 RAS, Control Status and Global Errors (rev 02)
80:05.4 PIC: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 I/O APIC (rev 02)
84:00.0 Ethernet controller: QLogic Corp. Device 8070 (rev 02)
84:00.1 Ethernet controller: QLogic Corp. Device 8070 (rev 02)
ff:08.0 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 QPI Link 0 (rev 02)
ff:08.3 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 QPI Link 0 (rev 02)
ff:09.0 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 QPI Link 1 (rev 02)
ff:09.3 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 QPI Link 1 (rev 02)
ff:0b.0 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 R3 QPI Link 0 & 1 Monitoring (rev 02)
ff:0b.1 Performance counters: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 R3 QPI Link 0 & 1 Monitoring (rev 02)
ff:0b.2 Performance counters: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 R3 QPI Link 0 & 1 Monitoring (rev 02)
ff:0c.0 System peripheral: Intel Corporation Xeon E7 v3/Xeon E5 v3/Core 17 Unicast Registers (rev 02)
```

The PCIe addresses for the QL41xxx adapters at location 84:00 are 84:00.0 and 84:00.01.

2. Issue a command in QCS CLI noninteractive mode to save MBA Config to an XML file. For example:

```
# cd /opt/Qlogic_Corporation/QCS
# ./QCScli -t phyports -f BDF -i 84:00.00 "bootcfg -t MBA -o
save defaultbcfg.xml"
```

This command uses `Bus:Device.Function` PCIe addressing to select the adapter.

The PCIe adapter address is 84:00.00.

The name of the XML file is not important.

3. Copy the original XML file to one that will be modified. For example:

```
# cp defaultbcfg.xml 25Gbcfg.xml
```

- Use your editor of choice to modify the `.xml` file. For example:

```
# Open gedit 25Gbcfg.xml
```

Following is a sample output.



```
<?xml version="1.0" encoding="UTF-8"?>
<MBAConfiguration><QCScli><Version>30.0.75.0</Version></QCScli><OptionROM>Enabled</
OptionROM><BootProtocol>PXE</BootProtocol><HideSetupPrompt>Disabled</
HideSetupPrompt><SetupKeyStroke>Ctrl_S</SetupKeyStroke><BannerMessageTimeout>15</
BannerMessageTimeout><LinkSpeed>AutoNeg</LinkSpeed><Pre-bootWakeonLAN>Disabled</Pre-
bootWakeonLAN><VLANmode>Disabled</VLANmode><VLANID>0</VLANID><BootRetryCount>0</
BootRetryCount></MBAConfiguration>
```

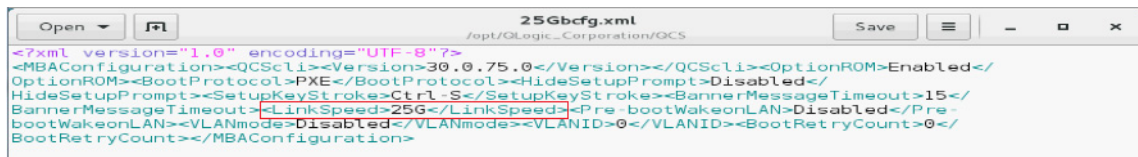
- Change the adapter parameter `<LinkSpeed>AutoNeg</LinkSpeed>` to the desired fixed speed.

Do not set a value that is not supported by the adapter model.

To configure the adapter for fixed 10Gbps: `<LinkSpeed>10G</LinkSpeed>`

To configure the adapter for fixed 25Gbps: `<LinkSpeed>25G</LinkSpeed>`

Following is a sample output.



```
<?xml version="1.0" encoding="UTF-8"?>
<MBAConfiguration><QCScli><Version>30.0.75.0</Version></QCScli><OptionROM>Enabled</
OptionROM><BootProtocol>PXE</BootProtocol><HideSetupPrompt>Disabled</
HideSetupPrompt><SetupKeyStroke>Ctrl_S</SetupKeyStroke><BannerMessageTimeout>15</
BannerMessageTimeout><LinkSpeed>25G</LinkSpeed><Pre-bootWakeonLAN>Disabled</Pre-
bootWakeonLAN><VLANmode>Disabled</VLANmode><VLANID>0</VLANID><BootRetryCount>0</
BootRetryCount></MBAConfiguration>
```

- Save the file.
- In QCS CLI noninteractive mode, program the adapter's flash device with the contents of the new MBA Config file. For example:

```
# ./QCScli -t phyports -f BDF -i 84:00.00 "bootcfg -t MBA -o
restore 25Gbcfg.xml"
```

For the 25Gbps setting, the default forward error correction (FEC) mode should be RS-FEC. If that is the mode you want, no further action is needed. Check the link partner to confirm that both sides have the same FEC mode configured. RS-FEC is the preferred FEC mode for 25G links.

At forced 10G mode, default FEC mode is disabled.

- (Optional) Repeat [Step 7](#) for additional ports on the adapter. For example:

```
./QCScli -t phyports -f BDF -i 84:00.01 "bootcfg -t MBA -o
restore 25Gbcfg.xml"
```

9. Disable the adapter's SmartAN mode.

a. Do one of the following:

- Issue a command in QCS CLI to display all the active advanced parameters where SmartAN mode is enabled. For example:


```
# ./QCScli -t phyports -f BDF -I 84:00.00 "cfg advanced"
```

Following is a sample output.

```
QLogic Control Suite Command Line Interface Utility
for Linux v30.0.75.0
..
Advanced
-----
Smart An Mode:      1
```

- Issue a command in QCS CLI to display only the current SmartAN mode. For example:

```
# ./QCScli -t phyports -f BDF -i 84:00.00 "cfg advanced \"Smart An Mode\""
```

Following is a sample output.

```
QLogic Control Suite Command Line Interface Utility
for Linux v30.0.75.0
..
Smart An Mode
-----
Current setting: 0
Valid settings: value between 0 and 1
                  0 (Default)
```

b. Issue a command to disable SmartAN mode. For example:

```
# ./QCScli -t phyports -f BDF -i 84:00.00 "cfg advanced \"Smart An Mode=0\""
```

Following is a sample output.

```
QLogic Control Suite Command Line Interface Utility for
Linux v30.0.75.0
..
You must restart your computer for the new settings to
take effect.
```

10. Reboot your system.

5

Setting the Link Speed with QCS CLI Noninteractive Mode Commands

To set a fixed link speed on the QL41xxx adapter:

1. Issue commands in QCS CLI noninteractive mode to disable SmartAN mode and set the adapter's link speed. Following are some examples:

```
# ./QCScli -t phyports -f BDF -i 84:00.00 "cfg advanced \"Smart An Mode=0\""
```

```
# ./QCScli -t phyports -f BDF -i 84:00.00 "cfg advanced \"NVM Speed=10G\""
```

```
# ./QCScli -t phyports -f BDF -i 84:00.01 "cfg advanced \"Smart An Mode=0\""
```

```
# ./QCScli -t phyports -f BDF -i 84:00.01 "cfg advanced \"NVM Speed=10G\""
```

2. Reboot the system.

Document Revision History	
Revision A, October 31, 2017	
Changes	
Initial release of new application note.	



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