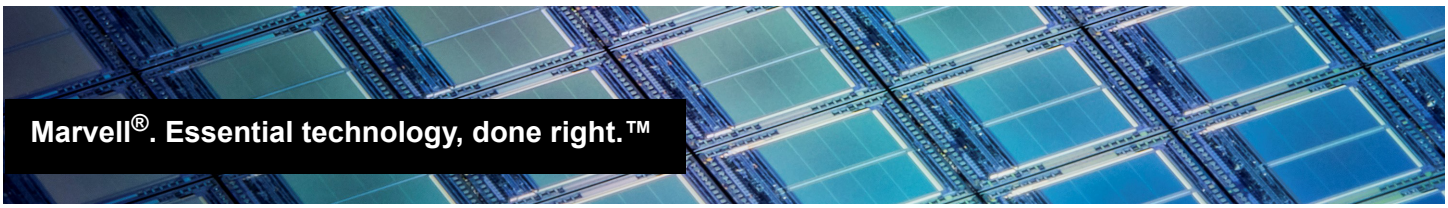

Configuring Marvell SmartAN for HPE Ethernet 10/25GbE Adapters

Products Affected

Adapter Model	Part Number
HPE 10/25GbE 2p SFP28 QL41401 Adapter (621SFP28)	867328-B21
HPE 10/25GbE 2p FLR-SFP28 QL41401 Converged Network Adapter (622FLR-SFP28)	867334-B21
Marvell QL41232HLCU 10/25GbE 2p SFP28 Adapter	P22702-B21
Marvell QL41232 10/25GbE 2p SFP28 OCP3 Adapter	P10118-B21

1 Introduction

New high-performance adapters from HPE® and Marvell support 10-Gigabit Ethernet (GbE) and 25GbE bandwidth. Unlike 1GbE/10GbE, there is no standard for autonegotiation when transitioning between the two different speeds. When running at 25GbE (depending on the type of physical connection), additional forward error correction (FEC) may be needed, of which there are two different types that can be implemented. To use 25GbE reliably, both ends of the link must be set correctly for both bandwidth and FEC.

To use these new adapters, network architects must understand the dependencies and make sure the adapter and switch configurations are set appropriately. To address part of this complexity, Marvell has created smart autonegotiation (SmartAN™) technology. Marvell FastLinQ® SmartAN technology, available in the HPE 10/25Gb adapters listed in the *Products Affected* table, eliminates the need for any configuration changes at the host side of the link. With SmartAN enabled, the network administrator only needs to configure the switch for a successful link at 25Gbps speeds.

2 FEC Types

For any device, as the bandwidth increases, there are always more uncorrected bit errors in the data stream. Using FEC reduces the number of these errors.

The 25GbE standards define two different types of error correction: Base-R FEC (also known as Fire Code or FC-FEC) and Reed-Solomon FEC (RS-FEC). When FEC is enabled in any adapter, latency is induced. The penalty (latency) for error correction is as follows:

FC-FEC ~80ns

RS-FEC ~250ns

Doc. No. AH2051400-00 Rev. E
Copyright © 2021 Marvell

These latency numbers are not Marvell-specific.

Depending on the application, architects may chose specific cable types to eliminate the need for FEC.

3 SmartAN Operation

When enabled, Marvell FastLinQ SmartAN first checks the physical connection type (direct-attach copper (DAC), active optical cable (AOC), or optical transceiver), and then polls the connected link for the supported speed (10Gbps or 25Gbps). Once enabled, no other configuration changes are required on the host side of a connection to establish reliable network link status.

SmartAN can be enabled on the HPE Ethernet 10/25Gb adapters from Marvell using the human interface infrastructure (HII) setup utilities on HPE ProLiant® Gen10 and Gen10 Plus servers (DL, ML, Apollo). See Section 4 for instructions.

For 25GbE connections, if link is not established with SmartAN enabled, troubleshooting can be focused on the switch port settings and configuration. Once the switch port settings are properly configured to meet the 25GbE standards, the link will be established. The 25GbE requirements (per IEEE) are based on connection type, a shown in Table 3-1.

Table 3-1. 25GbE Connection Requirements

Cabling Connection Type	25GbE FEC Setting
1-meter DAC	No FEC required
2-meter DAC	FC-FEC required
3-meter DAC	RS-FEC required
AOC	RS-FEC required
25G SFP28 SR-optics	RS-FEC required

Best practice for 25GbE connectivity with most applications is to set the 25Gb Ethernet switch port to RS-FEC, which works with any cabling connection type.

For latency-sensitive applications like High Frequency Trading, a cabling approach that requires no FEC (for example, 1-meter DAC) should be considered.

For more details, see the SmartAN™ Technology Brief.

Copyright © 2021 Marvell

4 Enabling SmartAN on HPE ProLiant, Apollo Gen10 Servers

To enable Marvell FastLinQ SmartAN on your HPE Ethernet 10/25Gb adapters from Marvell:

1. Power-on or reboot the server.
2. When prompted, select **F9** to enter System Utilities.
3. Select **System Configuration** (Figure 4-1).

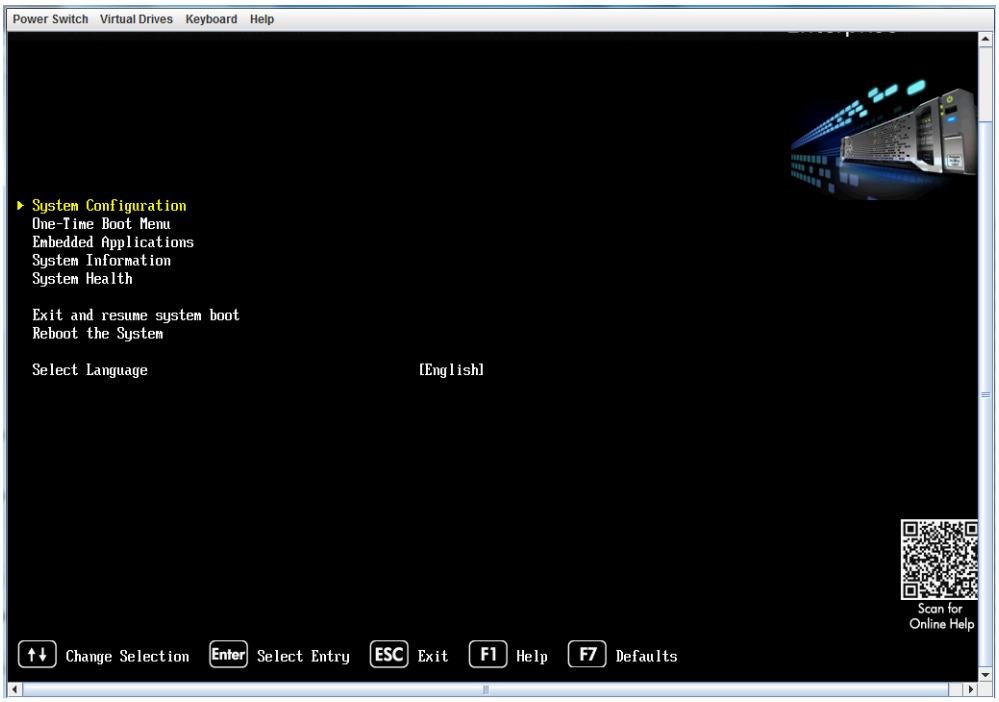

Figure 4-1. System Configuration

Copyright © 2021 Marvell

4. Select the port of the adapter on which you want to enable SmartAN.
   Figure 4-2 shows an example.

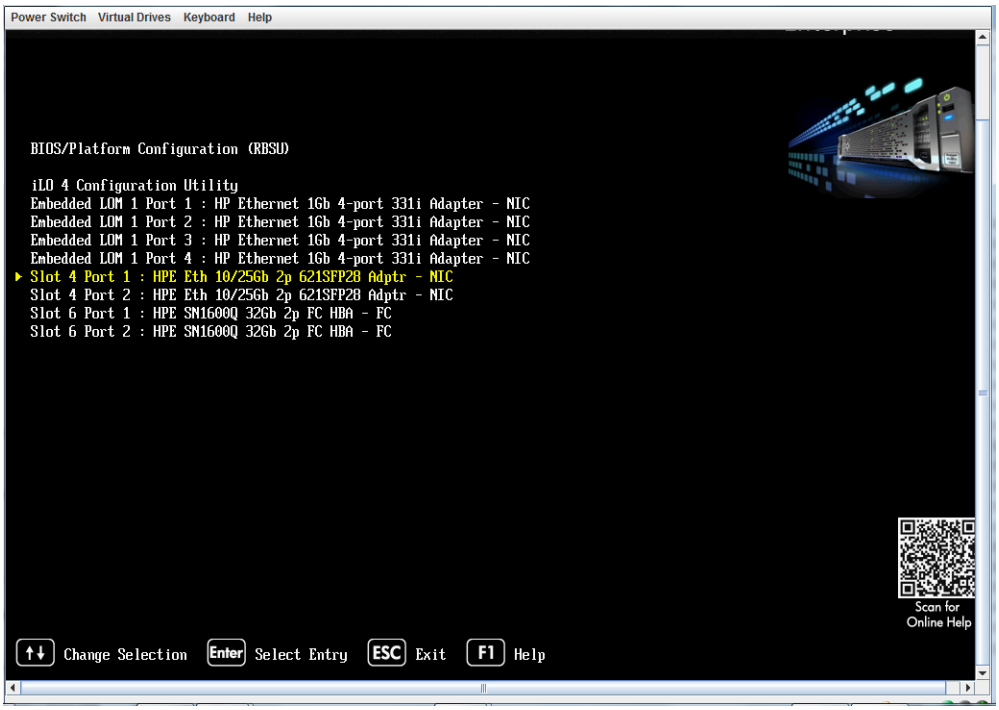

Figure 4-2. Adapter Port Selection

Copyright © 2021 Marvell

5. From the Main Configuration Page, select **Port Level Configuration** (Figure 4-3).

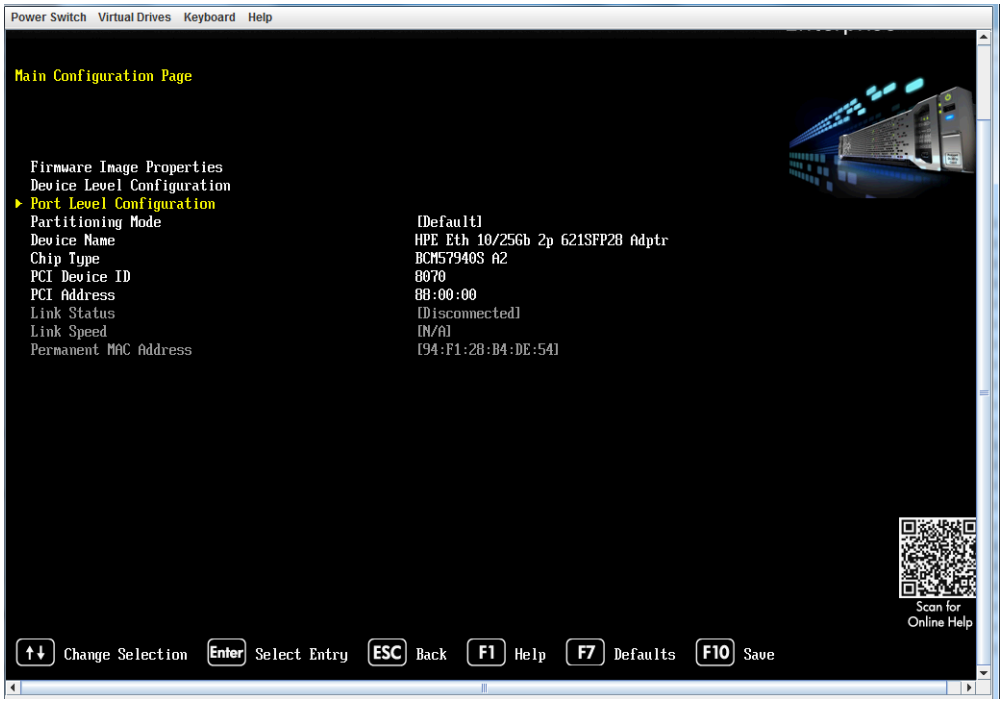

Figure 4-3. Port Level Configuration

6. From the Port Level Configuration page, select **Link Speed**, and then select **SmartAN** (Figure 4-4).

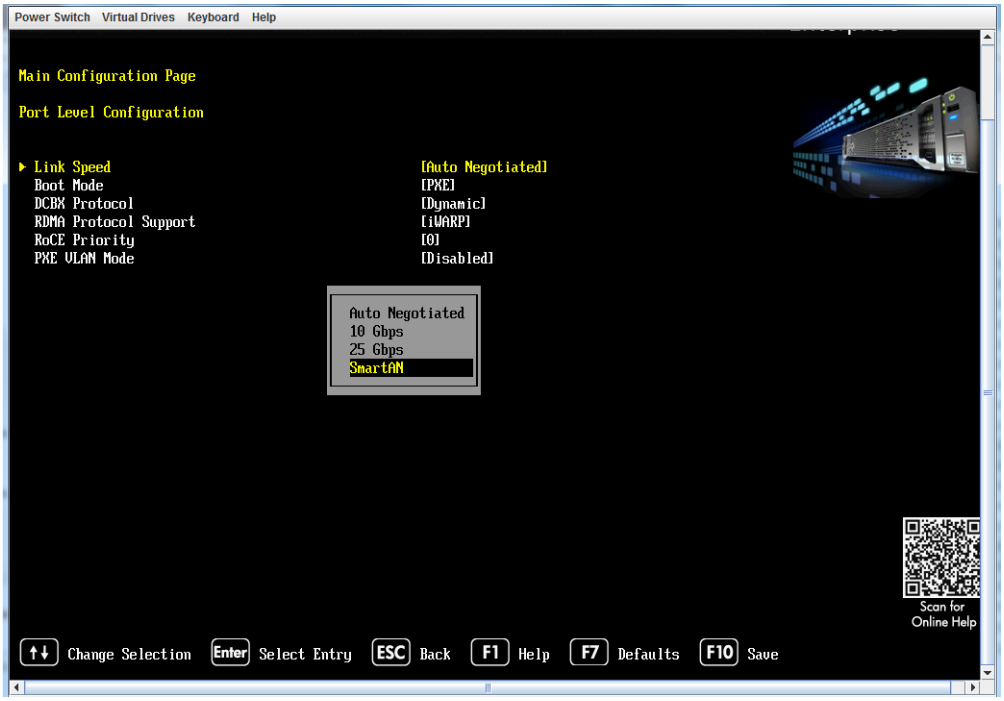

Figure 4-4. Link Speed Selection

Copyright © 2021 Marvell

7. Verify that the Link Speed is **SmartAN** (Figure 4-5).

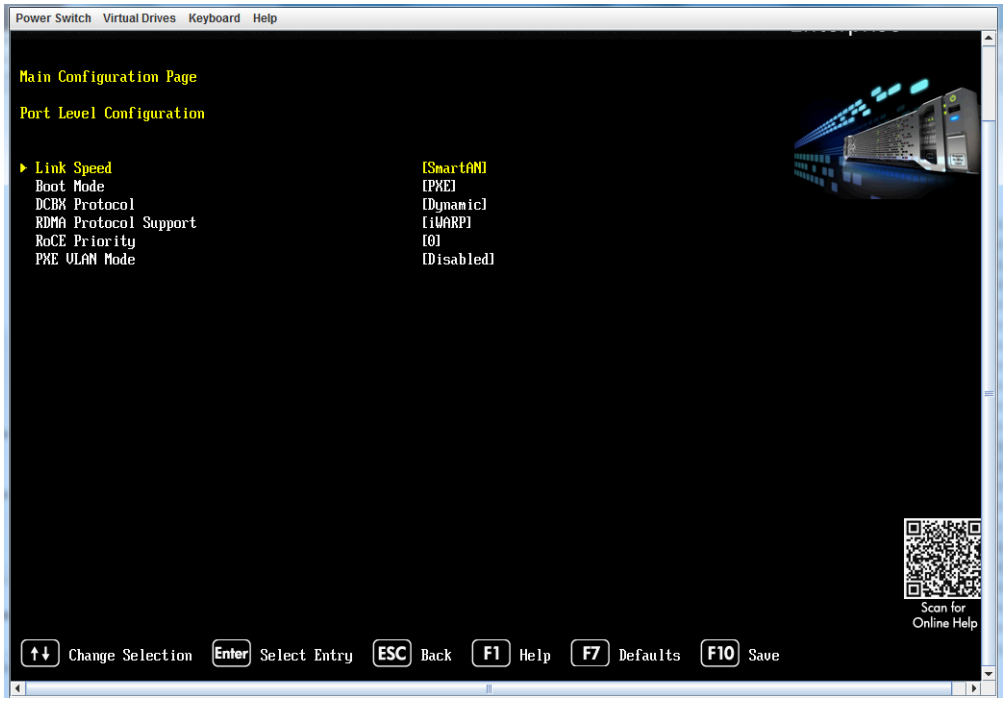

Figure 4-5. SmartAN Link Speed Verification

8. Press **F10** to save the configuration changes, and then press ESC return to the System Utilities page (Step 3).
9. Do one of the following:
   - ❑ Repeat Steps 4 though 8 for each port for which you want to enable SmartAN.
   - ❑ Press **ESC** to exit and continue the server boot process.

Copyright © 2021 Marvell

Document Revision History
Revision A, April 27 2018
Revision B, March 7, 2019
Revision C, July 20, 2019
Revision D, February 8, 2021
Changes
Update to new Marvell logo.
Updated Products Affected list.
In "SmartAN Operation" on page 2, updated the second paragraph to indicate that the HII setup utilities can be on HPE ProLiant Gen10 and Gen10 Plus servers.

Copyright © 2021 Marvell

THIS DOCUMENT AND THE INFORMATION FURNISHED IN THIS DOCUMENT ARE PROVIDED “AS IS” WITHOUT ANY WARRANTY. MARVELL AND ITS AFFILIATES EXPRESSLY DISCLAIMS AND MAKES NO WITHOUT ANY WARRANTY. MARVELL AND ITS AFFILIATES EXPRESSLY DISCLAIMS AND MAKES NO WARRANTIES OR GUARANTEES, WHETHER EXPRESS, ORAL, IMPLIED, STATUTORY, ARISING BY OPERATION OF LAW, OR AS A RESULT OF USAGE OF TRADE, COURSE OF DEALING, OR COURSE OF PERFORMANCE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT.

This document, including any software or firmware referenced in this document, is owned by Marvell or Marvell's licensors, and is protected by intellectual property laws. No license, express or implied, to any Marvell intellectual property rights is granted by this document. The information furnished in this document is provided for reference purposes only for use with Marvell products. It is the user's own responsibility to design or build products with this information. Marvell products are not authorized for use as critical components in medical devices, military systems, life or critical support devices, or related systems. Marvell is not liable, in whole or in part, and the user will indemnify and hold Marvell harmless for any claim, damage, or other liability related to any such use of Marvell products.

Marvell assumes no responsibility for the consequences of use of such information or for any infringement of patents or other rights of third parties that may result from its use. You may not use or facilitate the use of this document in connection with any infringement or other legal analysis concerning the Marvell products disclosed herein. Marvell and the Marvell logo are registered trademarks of Marvell or its affiliates. Please visit www.marvell.com for a complete list of Marvell trademarks and guidelines for use of such trademarks. Other names and brands may be claimed as the property of others.

Copyright

Copyright ©2021. Marvell and/or its affiliates. All rights reserved.