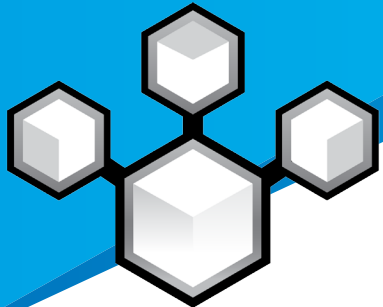


Visualize I/O Connectivity for VMware vSphere



QConvergeConsole

Cavium's QLogic QConvergeConsole® Plug-in for VMware® vCenter® simplifies and accelerates deployment and management.

KEY FINDINGS

- The QLogic adapter portfolio from Cavium™ integrates management into VMware® vCenter® with the QConvergeConsole® (QCC) Plug-in for VMware vCenter.
- The QCC Plug-in is a set of software components delivered through industry-standard CIM providers that allows for the remote management of QLogic adapters from Cavium via VMware vCenter. Administrators can centrally manage these adapters from a single-pane-of-glass.
- It provides an end-to-end visual representation of network and storage connectivity—from the physical adapter to the virtual machine (VM) for insight into storage and network infrastructure, saving hours of administration time.
- Managing VMware vSphere® servers using the QCC Plug-in and vSphere Web Client enables multi-protocol and multi-fabric management of QLogic adapters from Cavium, resulting in lower deployment times, faster troubleshooting, and reduced total cost of ownership.

CAVIUM'S QLOGIC QCONVERGECONSOLE PLUG-IN FOR VMWARE VCENTER

Cavium offers a robust set of management tools to help organizations simplify management and improve efficiency while reducing costs under the umbrella of the QLogic QCC from Cavium. The QCC Plug-in and Web Client for VMware vCenter provides a rich set of features that include not only full adapter management but key storage and network visualization maps that significantly enhance the overall value of the QLogic adapter from Cavium. In VMware virtualized environments, the QCC Plug-in significantly improves business processes, agility, deployment opportunities, and methods for troubleshooting.

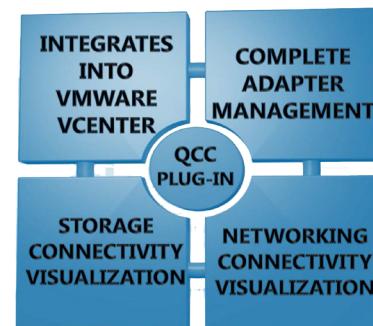


Figure 1. Key Features of the QConvergeConsole Plug-in and Web Client for VMware vCenter

INTEGRATES INTO VMWARE VCENTER

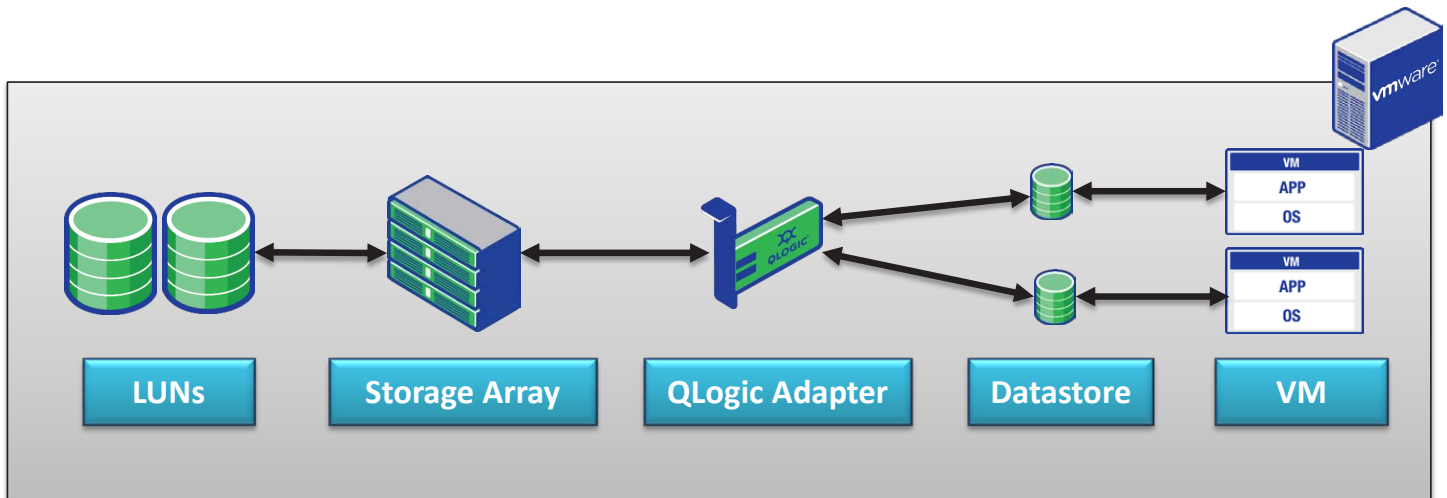
The QCC Plug-in is a set of software components delivered through industry-standard CIM providers that allows for the remote management of Cavium's QLogic adapters via VMware vCenter. This capability enables administrators to centrally manage these adapters from a single-pane-of-glass view, provided by the VMware vCenter console.

Integrates into VMware vCenter	QCC Plug-in
Manage QLogic Adapters from within VMware vCenter	✓
Heterogeneous and multi-adapter single-pane-of-glass management	✓
Manage Gen 6 and Gen 5 FC, FCoE, iSCSI, and Ethernet functions	✓

The vSphere® Web Client Plug-in configures QLogic Gen 6 and Gen 5 Fibre Channel Adapters from Cavium along with FastLinQ® Intelligent Ethernet and Converged Network Adapters by using a browser within a VMware vSphere environment.

This plug-in is part of the QLogic QCC suite of management tools from Cavium, that include the QCC Web-based GUI and CLI, which are used in operating system environments other than vSphere, such as Windows and Linux. The plug-in provides an interactive GUI that is similar to the QCC Web-based tool.

Integrates into VMware vCenter	vSphere Web Client Plug-in
Management for FC, FCoE, iSCSI, and Ethernet Adapters	✓
Storage and Network Maps with End-to-end View	✓
Dynamic Management of QLogic NIC Partitioning (NPAR) for Supported Adapters, Including the Ability to Modify Partition and Function Type	✓
Querying and Modifying Driver Parameters for All Supported Protocols	✓
Viewing and Managing Initiators, Targets, and LUNs for FC, FCoE, and iSCSI Ports	✓
Querying Statistics, Running Diagnostics, and Obtaining Transceiver Information	✓



Storage Connectivity Visualization with QConvergeConsole

Figure 2. QConvergeConsole Plug-in Storage Connectivity Maps

STORAGE CONNECTIVITY VISUALIZATION

The QCC plug-in delivers advanced technology to improve and enhance the user experience. The QCC plug-in can instantly display how data stores are related to VMs as well as which storage targets and LUNs the data stores reside on. QCC gives administrators an instantaneous view of all those relationships along with a mouse-over feature they can use to view key configuration information for each of the hardware components throughout the fabrics. So regardless of the VM mobility situation, administrators can always see where resources are allocated.

Storage Connectivity Visualization	QCC Plug-in
End-to-end Visual Representation	✓
Health Status Using Color Coding	✓
Mouse Overs Provide Key Device Attributes	✓

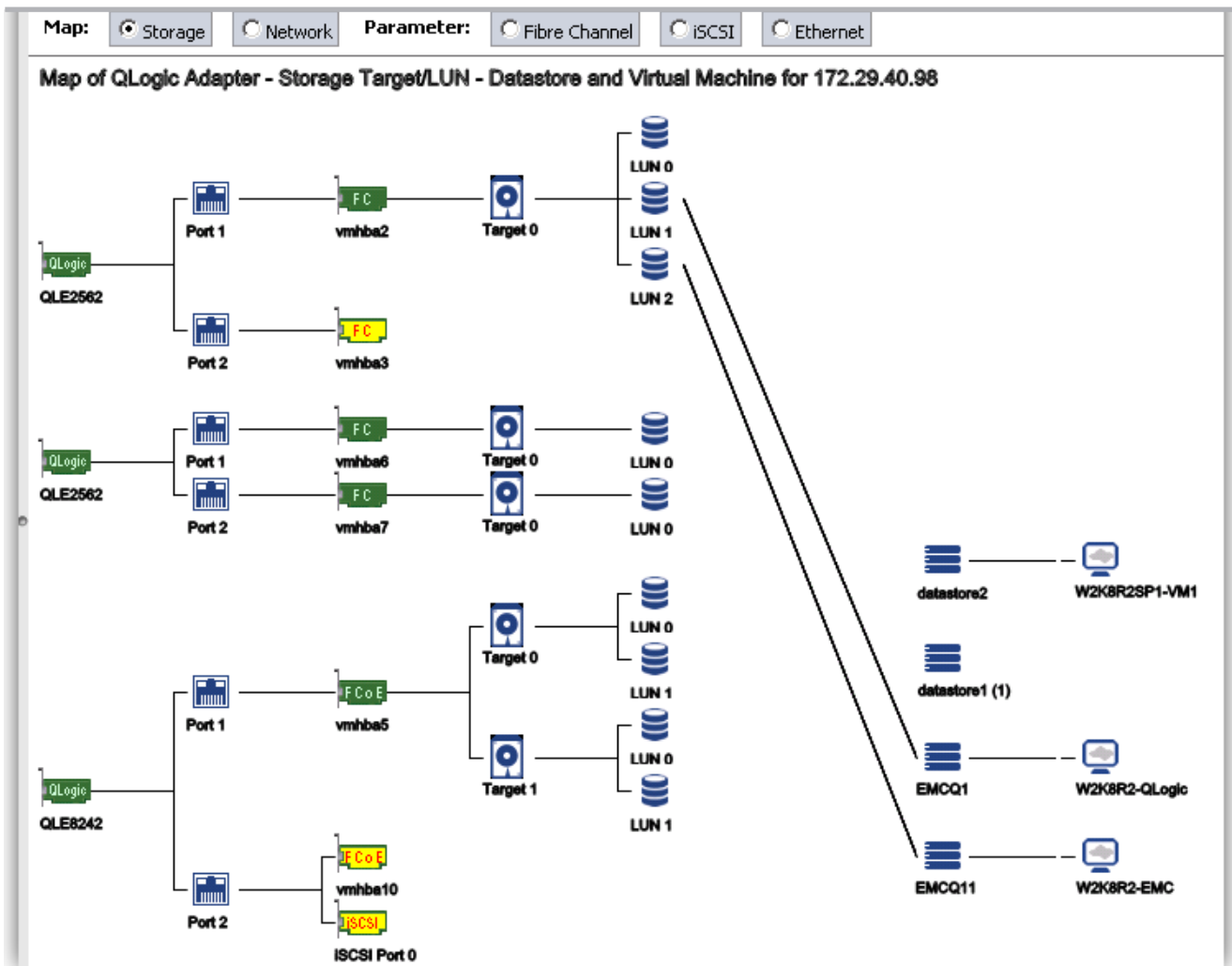


Figure 3. QConvergeConsole Plug-in Storage Connectivity Maps

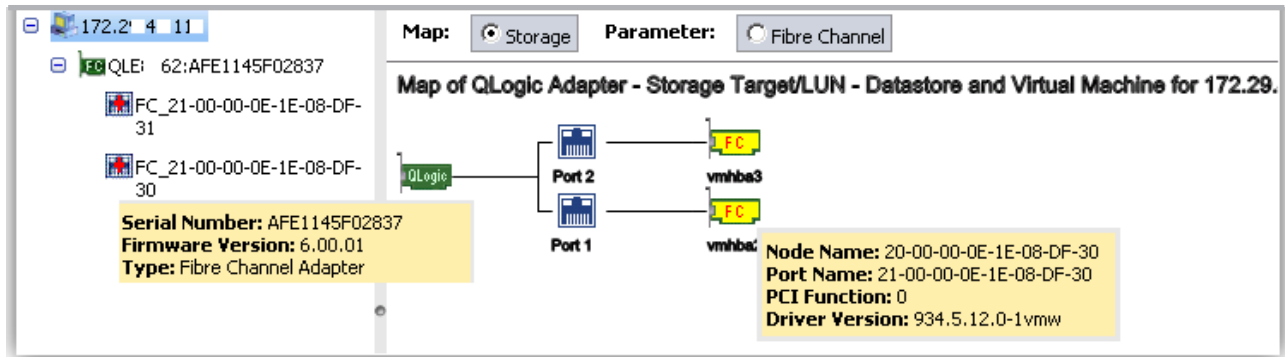


Figure 4. QConvergeConsole Plug-in Mouse Overs Provide Key Information

NETWORK CONNECTIVITY VISUALIZATION

The QCC Plug-in can instantly display how a QLogic adapter from Cavium and its ports are related to VMs, as well as the VMware vSwitch/dvSwitch and port group to which they are connected. QCC gives an instantaneous view of the relationships in the network. In addition, a mouse-over feature provides key configuration information for each of the hardware components throughout the network internal to the VMware vSphere server.

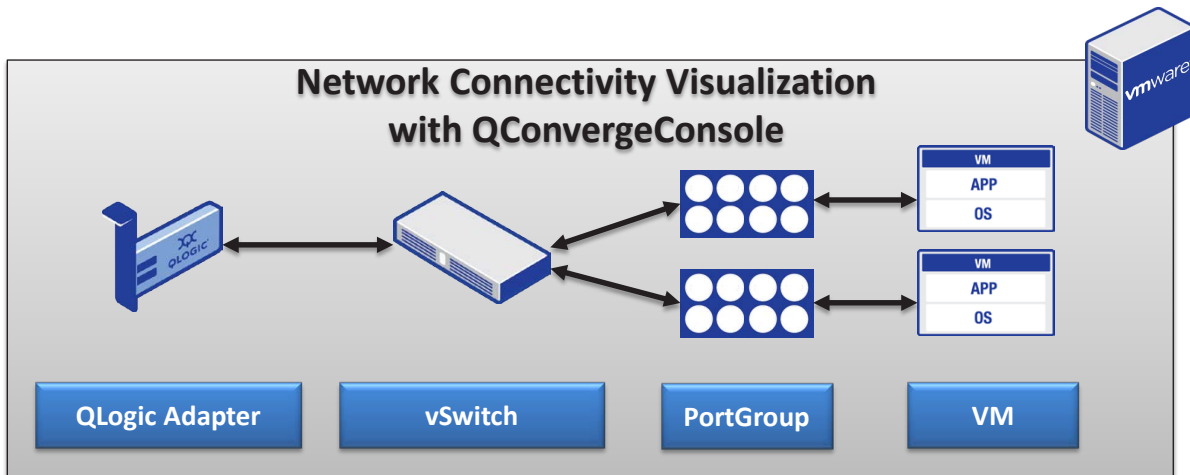


Figure 5. QConvergeConsole Plug-in Network Connectivity Maps

Network Connectivity Visualization	QCC Plug-in
End-to-end Visual Representation	✓
Health Status Using Color Coding	✓
Mouse Overs Provide Key Device Attributes	✓
VLAN and Port Group Information	✓

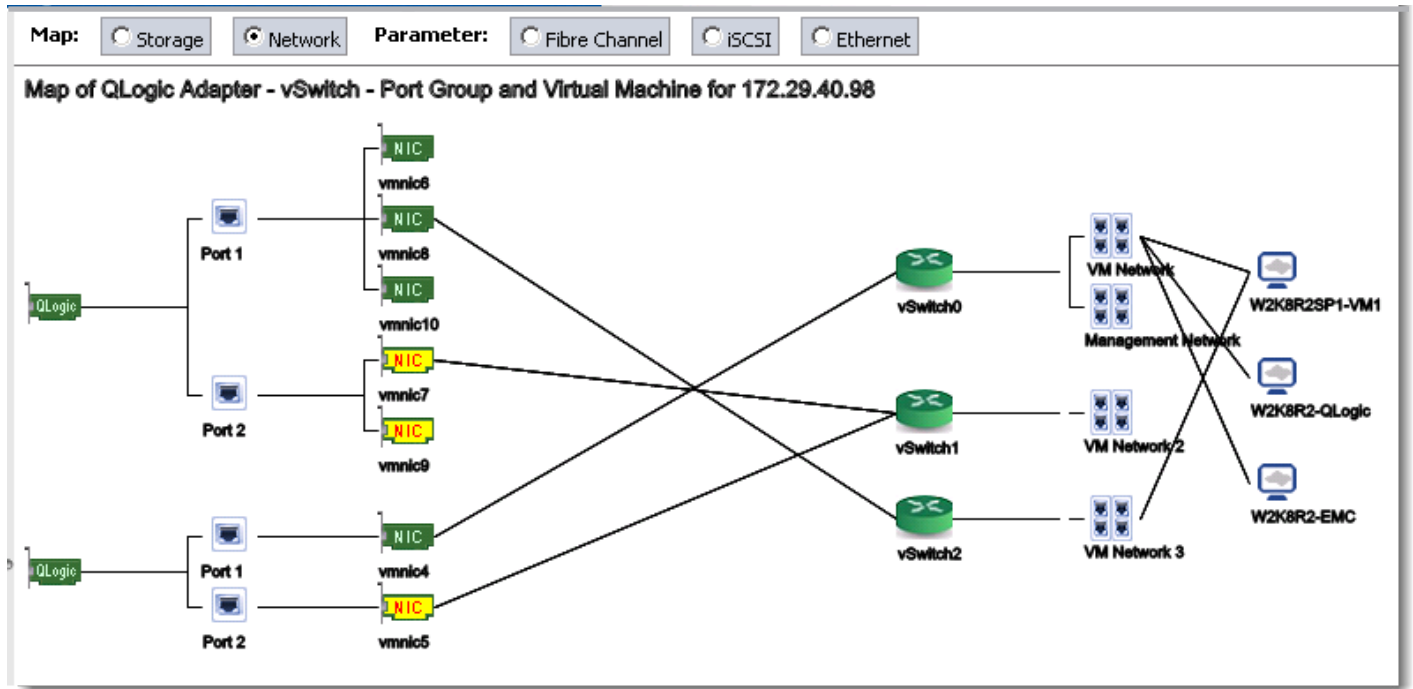


Figure 6. QConvergeConsole Plug-in Network Connectivity Maps

COMPLETE ADAPTER MANAGEMENT

The QCC Plug-in enables comprehensive management of all aspects and functions of Cavium’s QLogic Fibre Channel, Converged Network, and Intelligent Ethernet Adapters in a VMware vSphere environment. Capabilities such as the ability to deploy firmware updates remotely, full integration into VMware Update Manager (VUM), and an array of diagnostics allow for a powerful yet intuitive interface while lowering administration costs.

Complete Adapter Management	QCC Plug-in
Network Partitioning (NPAR) Configuration	✓
System-wide Firmware Updates	✓
Integrated Diagnostics	✓
Adapter Parameter Tuning	✓
Boot from SAN Configuration	✓
Transceiver (SFP+) Health Information	✓

The screenshot displays the QLogic NPAR Configuration window. On the left, a tree view shows the configuration for Adapter1: BCM578105 B0, including Port 0 and Port 1, and their respective NetXtreme II BCM578105 B0 (vmmic) functions. The main area is divided into two sections: 'Port selection' and 'Bandwidth Assignment Summary'.

Port selection: Shows 'Port 0' selected. Under 'Flow control', 'Rx ON, Tx ON' is selected. Below, four function configurations are visible:

- Function 0:** LINC Enabled, GCSI Disabled, FCoE Enabled. Minimum Bandwidth: 10%. Slider range 0-10.
- Function 2:** LINC Enabled, GCSI Enabled, FCoE Disabled. Minimum Bandwidth: 20%. Slider range 0-20.
- Function 4:** LINC Enabled, GCSI Disabled, FCoE Disabled. Minimum Bandwidth: 20%. Slider range 0-20.
- Function 6:** LINC Enabled, GCSI Disabled, FCoE Enabled. Minimum Bandwidth: 50%. Slider range 0-50.

Bandwidth Assignment Summary: Contains a pie chart titled 'Function Bandwidth Weight Assignment' and a bar chart titled 'Maximum Bandwidth Assignment'.

Function Bandwidth Weight Assignment (Pie Chart):

Function	Weight (%)
Function_6	50%
Function_4	20%
Function_2	20%
Function_0	10%

Maximum Bandwidth Assignment (Bar Chart):

Function	Maximum Bandwidth (%)
Function_0	100
Function_2	100
Function_4	100
Function_6	100

Current Active Bandwidth Assignment Table:

Function	BW Weight (%)	Maximum BW (%)
Function 0	0 (10)	100
Function 2	0 (20)	100
Function 4	0 (20)	100
Function 6	0 (50)	100

Yellow boxes in the table indicate bandwidth changes not yet saved. A note at the bottom states: 'Yellow box indicates the bandwidth has been changed but not yet saved. New value is in parenthesis.'

Figure 7. NPAR Configuration

CAVIUM'S QLOGIC ADVANTAGE

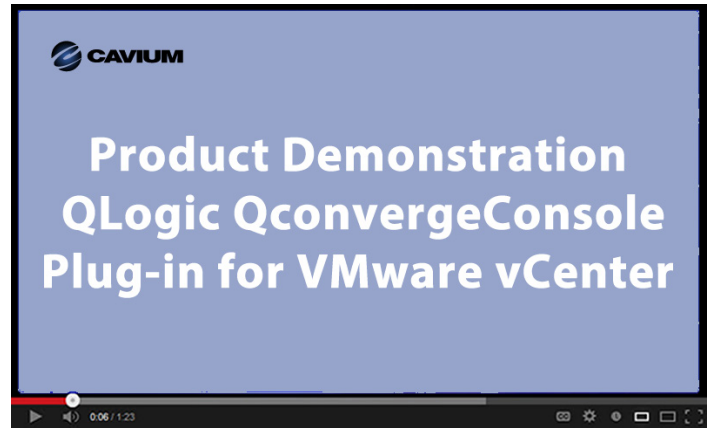
While other adapter vendors also offer a management tool to monitor and manage their adapters, their tools lack the ease of use, maturity, and feature set required for the enterprise data center. Cavium's QLogic QCC Plug-in for VMware vCenter leverages years of experience and expertise in understanding the management complexity of virtualized environments.

Adapter Management Features	QCC Plug-in	Emulex OneCommand
Adapter Management from within vCenter	✓	✓
Storage Connectivity Visualization	✓	✗
Network Connectivity Visualization	✓	✗
Discover and Display vSphere I/O Path Components – vSwitch, Data stores, and VMs	✓	✗

CONCLUSION

The Cavium's QLogic QConvergeConsole (QCC) Plug-in for VMware vCenter gives administrators insight into their virtual environments and provides a flexible and easy-to-manage infrastructure for protocol assignment, connectivity, and data flow management, enhancing the overall virtual experience.

RELATED VIDEO – PRODUCT DEMONSTRATION: QLOGIC QCONVERGECONSOLE PLUG-IN FOR VMWARE VCENTER



Click on the Image to Watch a YouTube Video

ABOUT CAVIUM

Cavium, Inc. (NASDAQ: CAVM), offers a broad portfolio of infrastructure solutions for compute, security, storage, switching, connectivity and baseband processing. Cavium's highly integrated multi-core SoC products deliver software compatible solutions across low to high performance points enabling secure and intelligent functionality in Enterprise, Data Center and Service Provider Equipment. Cavium processors and solutions are supported by an extensive ecosystem of operating systems, tools, application stacks, hardware reference designs and other products. Cavium is headquartered in San Jose, CA with design centers in California, Massachusetts, India, Israel, China and Taiwan.



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