

VSC6816, VSC6817, and VSC6819
Product Overview
Microsemi Ethernet Switch Software Features

Released
August 2019



Contents

1	Revision History	1
1.1	Revision 2019.6.0	1
1.2	Revision 1.8	1
1.3	Revision 1.7	1
1.4	Revision 1.6	2
1.5	Revision 1.5	2
1.6	Revision 1.4	3
1.7	Revision 1.3	3
1.8	Revision 1.2	3
1.9	Revision 1.1	4
1.10	Revision 1.0	4
2	Application 2019.6.0 Software Features	5
2.1	Board Support Package (BSP) and API Features	5
2.2	Port Control Features	5
2.3	Quality of Service (QoS) Features	6
2.4	L2 Switching Features	6
2.5	L3 and Routing Features	7
2.6	Security Features	8
2.7	Synchronization Features	9
2.8	OAM and Test Features	10
2.9	Robustness Features	10
2.10	Power Saving Features	10
2.11	Customization Framework Features	10
2.12	Management Features	11
2.13	Standard MIBs Features	12

1 Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

1.1 Revision 2019.6.0

Revision 2019.6.0 was published in August 2019. The following is a summary of changes in revision 2019.6.0 of this document.

- The list of supported BSP and API features was updated by removing CEServices column. For more information, see [BSP and API Features \(see page 5\)](#).
- The list of supported port control features was updated by removing CEServices column. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported port control features was updated by removing CEServices column. For more information, see [Quality of Service \(QoS\) \(see page 6\)](#).
- The list of supported L2 switching features was updated by removing CEServices column. For more information, see [L2 Switching Features \(see page 6\)](#).
- The list of supported protection features was removed.
- The list of supported L3 routing features was updated by removing CEServices column. For more information, see [L3 and Routing Features \(see page 7\)](#).
- The list of supported synchronization features was updated by removing CEServices column. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported OAM and test features was updated by removing CEServices column. For more information, see [OAM and Test Features \(see page 10\)](#).
- The list of supported Robustness features was updated by removing CEServices column. For more information, see [Robustness Features \(see page 10\)](#).
- The list of supported Power Saving features was updated by removing CEServices column. For more information, see [Power Saving Features \(see page 10\)](#).
- The list of supported customization framework features was updated by removing CEServices column. For more information, see [Customization Framework Features \(see page 10\)](#).
- The list of supported management features was updated by removing CEServices column. For more information, see [Management Features \(see page 11\)](#).
- The list of supported standard MIB features was updated by removing CEServices column. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.2 Revision 1.8

Revision 1.8 was published in June 2019. The following is a summary of changes in revision 1.8 of this document.

- The list of supported port control features was updated. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported security features was updated. For more information, see [Security Features \(see page 8\)](#).
- The list of supported management features was updated. For more information, see [Management Features \(see page 11\)](#).

1.3 Revision 1.7

Revision 1.7 was published in December 2018. The following is a summary of changes in revision 1.7 of this document.

- The list of supported L3 and Routing features was updated. For more information, see [L3 and Routing Features \(see page 7\)](#).
- The list of supported synchronization features was updated. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported customization framework features was updated. For more information, see [Customization Framework Features \(see page 10\)](#).
- The list of supported standard MIB features was updated. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.4 Revision 1.6

Revision 1.6 was published in October 2018. The following is a summary of changes in revision 1.6 of this document.

- The list of supported BSP and API features was updated. For more information, see [BSP and API Features \(see page 5\)](#).
- The list of supported port control features was updated. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported L3 routing features was updated. For more information, see [L3 and Routing Features \(see page 7\)](#).
- The list of supported security features was updated. For more information, see [Security Features \(see page 8\)](#).
- The list of supported synchronization features was updated. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported OAM and test features was updated. For more information, see [OAM and Test Features \(see page 10\)](#).
- The list of supported customization framework features was updated. For more information, see [Customization Framework Features \(see page 10\)](#).
- The list of supported management features was updated. For more information, see [Management Features \(see page 11\)](#).
- The list of supported standard MIB features was updated. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.5 Revision 1.5

Revision 1.5 was published in April 2018. The following is a summary of changes in revision 1.5 of this document.

- The list of supported BSP and API features was updated. For more information, see [BSP and API Features \(see page 5\)](#).
- The list of supported port control features was updated. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported L2 switching features was updated. For more information, see [L2 Switching Features \(see page 6\)](#).
- The list of supported protection features was updated.
- The list of supported L3 routing features was updated. For more information, see [L3 and Routing Features \(see page 7\)](#).
- The list of supported synchronization features was updated. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported OAM and test features was updated. For more information, see [OAM and Test Features \(see page 10\)](#).
- The list of supported customization framework features was updated. For more information, see [Customization Framework Features \(see page 10\)](#).
- The list of supported management features was updated. For more information, see [Management Features \(see page 11\)](#).

- The list of supported standard MIB features was updated. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.6 Revision 1.4

Revision 1.4 was published in December 2017. The following is a summary of changes in revision 1.4 of this document.

- The list of supported port control features was updated. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported L2 switching features was updated. For more information, see [L2 Switching Features \(see page 6\)](#).
- The list of supported synchronization features was updated. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported management features was updated. For more information, see [Management Features \(see page 11\)](#).
- The list of supported standard MIB features was updated. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.7 Revision 1.3

Revision 1.3 was published in September 2017. The following is a summary of changes in revision 1.3 of this document.

- The list of supported port control features was updated. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported L2 switching features was updated. For more information, see [L2 Switching Features \(see page 6\)](#).
- The list of supported synchronization features was updated. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported OAM and test features was updated. For more information, see [OAM and Test Features \(see page 10\)](#).
- The list of supported management features was updated. For more information, see [Management Features \(see page 11\)](#).
- The list of supported standard MIB features was updated. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.8 Revision 1.2

Revision 1.2 was published in June 2017. The following is a summary of changes in revision 1.2 of this document.

- The list of supported BSP and API features was updated. For more information, see [BSP and API Features \(see page 5\)](#).
- The list of supported port control features was updated. For more information, see [Port Control Features \(see page 5\)](#).
- The list of supported L2 switching features was updated. For more information, see [L2 Switching Features \(see page 6\)](#).
- The list of supported protection features was updated.
- The list of supported L3 routing features was updated. For more information, see [L3 and Routing Features \(see page 7\)](#).
- The list of supported synchronization features was updated. For more information, see [Synchronization Features \(see page 9\)](#).
- The list of supported customization framework features was updated. For more information, see [Customization Framework Features \(see page 10\)](#).

- The list of supported management features was updated. For more information, see [Management Features \(see page 11\)](#).
- The list of supported standard MIB features was updated. For more information, see [Standard MIBs Features \(see page 12\)](#).

1.9 Revision 1.1

In revision 1.1 of this document, the Synchronization Features table was updated. For more information, see [Synchronization Features \(see page 9\)](#).

1.10 Revision 1.0

Revision 1.0 was published in January 2017. It was the first publication of this document.

2 Application 2019.6.0 Software Features

The following sections list the application 2019.6.0 software features available for the various packages.

2.1 Board Support Package (BSP) and API Features

The following table lists the features supported by the BSP and API module.

Table 1 • BSP and API Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Internal CPU	•	•	•
API and application split	•	•	•
MESA layer	•	•	•
MEBA layer	•	•	•
32 MB NOR FLASH only option	•	•	•
64MB NOR FLASH only option	•	•	•

2.2 Port Control Features

The following table lists the features supported by the port control module.

Table 2 • Port Control Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Port speed/duplex mode/flow control	•	•	•
Aquantia 2.5G PHY Gen2	•	•	•
Aquantia 2.5G PHY Gen3	•	•	•
Aquantia 5G PHY Gen3	•	•	•
Aquantia 10G PHY Gen2	•	•	•
802.1Qbb per priority flow control	•	•	•
Port frame size (jumbo frames)	•	•	•
Port state (administrative status)	•	•	•
Port status (link monitoring)	•	•	•
Port statistics (MIB counters)	•	•	•
Port VeriPHY (cable diagnostics)	•	•	•
PoE/PoE+—PD69208 support	•	•	•
PoE/PoE+ with LLDP	•	•	•
PoE IEEE802.3bt w/o LLDP	•	•	•
NPI port	•	•	•
PCIe	•	•	•
On-the-fly SFP detection	•	•	•

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
DDMI		•	•
UDLD		•	•

2.3 Quality of Service (QoS) Features

The following table lists the features supported by the QoS module.

Table 3 • QoS Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Traffic classes (8 active priorities)	•	•	•
Port default priority	•	•	•
User priority	•	•	•
Input priority mapping		•	•
QoS control list (QCL Mode)	•	•	•
Global storm control for UC, MC, and BC	•	•	•
Random early discard (RED)	•	•	•
Port policers	•	•	•
Queue policers		•	•
Global/VCAP (ACL) policers	•	•	•
Port egress shaper	•	•	•
Queue egress shapers	•	•	•
DiffServ (RFC2474) remarking		•	•
Tag remarking		•	•
Scheduler mode	•	•	•

2.4 L2 Switching Features

The following table lists the features supported by the L2 switching module.

Table 4 • L2 Switching Feature

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Auto MAC address learning/ageing	•	•	•
MAC addresses static	•	•	•
Virtual LAN	•	•	•
Bidirectional VLAN translation		•	•
Unidirectional VLAN translation (ingress/egress)		•	•
Private VLAN static	•	•	•
Port isolation static	•	•	•
MAC-based VLAN		•	•

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Protocol-based VLAN		•	•
IP subnet-based VLAN		•	•
VLAN trunking	•	•	•
iPVLAN Trunking		•	•
GARP VLAN registration GVRP		•	•
Multiple registration protocol MRP		•	•
Multiple VLAN registration protocol MVRP		•	•
IEEE 802.1ad provider bridge (native or translated VLAN)	•	•	•
MSTP		•	•
Rapid spanning tree RSTP, STP	•	•	•
Loop guard	•	•	•
Link aggregation static	•	•	•
Link aggregation LACP	•	•	•
AGGR/LACP user interface alignment with Industry standard	•	•	•
UNI LAG (LACP) 1:1 Active/Standby	•	•	•
LACP Revertive/Non-revertive	•	•	•
LACP loop free operation	•	•	•
BPDU guard and restricted role		•	•
Error disable recovery		•	•
IGMPv2 snooping	•	•	•
IGMPv3 snooping		•	•
MLDv1 snooping		•	•
MLDv2 snooping		•	•
IGMP filtering profile		•	•
IPMC throttling, filtering, and leave proxy		•	•
MVR		•	•
MVR profile		•	•
Voice VLAN		•	•
DHCP snooping		•	•
ARP inspection		•	•
Port mirroring	•	•	•
Flow mirroring		•	•
Rmirror		•	•

2.5 L3 and Routing Features

The following table lists the features supported by the L3 and routing module.

Table 5 • L3 and Routing Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
DHCP option 82 relay		•	•
UPNP		•	•
Software-based IPv4 L3 static routing with Linux kernel integration	•	•	•
Hardware-based IPv4 L3 static routing with Linux kernel integration	•	•	•
RFC2992 (ECMP) support for HW based L3 static routing	•	•	•
Software-based IPv6 L3 static routing		•	•
Hardware-based IPv6 L3 static routing		•	•
RFC-1812 L3 checking (version, IHL, checksum, and so forth)	•	•	•

2.6 Security Features

The following table lists the features supported by the security module.

Table 6 • Security Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Port-based 802.1X	•	•	•
Single 802.1X		•	•
Multiple 802.1X		•	•
MAC-based authentication	•	•	•
VLAN assignment		•	•
QoS assignment		•	•
Guest VLAN		•	•
RADIUS authentication and authorization	•	•	•
RADIUS accounting		•	•
MAC address limit	•	•	•
Persistent MAC learning	•	•	•
IP MAC binding		•	•
IP/MAC binding dynamic to static		•	•
TACACS+ authentication and authorization		•	•
TACACS+ command authorization		•	•
TACACS+ accounting		•	•
Web and CLI authentication	•	•	•
Authorization (15 user levels)		•	•
ACLs for filtering/policing/port copy	•	•	•
IP source guard		•	•

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Secure FTP Client	•	•	•

2.7 Synchronization Features

The following table lists the features supported by the synchronization module.

Table 7 • Synchronization Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
SyncE with SSM			•
SyncE nomination for 2 interfaces			•
1 ns accuracy timing support			
Microsemi one-step TC PHY solution			•
1588v2 PTP with two-step clock			•
1588v2 PTP with one-step clock			•
Peer-to-peer transparent clock over Ethernet/IPv4			•
End-to-end transparent clock over Ethernet/IPv4			•
End-to-end transparent clock over Ethernet/IPv6			•
Boundary Clock			•
Redundant masters and multiple timing domains			•
PTP over IPv4			•
Unicast/multicast			•
TC internal master/slave with PDV filtering and no modulation or latency feedback from modems			•
TC internal master/slave with reduced PDV filtering and modem provides feedback on modulation or latency (MSCC ZLS30384 and MSCC ZLS30380 only)			•
Combined SyncE and 1588			•
MSCC timing BU servo algorithm integration (MSCC ZLS30387)			•
MSCC timing BU DPLL API integration			•
G.8265.1 BMCA (MSCC ZLS30384 and MSCC ZLS30380 only)			•
ITU G.8263 filtering (MSCC ZLS30380 only)			•
PTP profile (MSCC ZLS30384 and MSCC ZLS30380 only)			•
Clock quality (MSCC ZLS30384 and MSCC ZLS30380 only)			•
G.781 compliant clock selection algorithm for the platform as a PTP slave (MSCC ZLS30384 and MSCC ZLS30380 only)			•
G.8275.1 BMCA (MSCC ZLS30384 and MSCC ZLS30380 only)			•
G.8275 compliant filter (MSCC ZLS30384 and MSCC ZLS30380 only)			•
PTP time interface			•
NTPv4 client		•	•

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
IEEE802.1AS-2011/IEEE802.1AS rev D4.2			•

2.8 OAM and Test Features

The following table lists the features supported by the OAM and test module.

Table 8 • OAM and Test Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
802.3ah: Variable, request, response			•
802.3ah: Discovery process, information. Event notification, loopback			•
802.3ah: Dying gasp			•
802.3ah: Dying gasp enhanced			•
802.3ah: Dying gasp SNMP Trap			•

2.9 Robustness Features

The following table lists the features supported by the robustness module.

Table 9 • Robustness Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Cold start	•	•	•
Cool start	•	•	•

2.10 Power Saving Features

The following table lists the features supported by the power saving module.

Table 10 • Power Saving Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
ActiPHY	•	•	•
PerfectReach	•	•	•
EEE power management	•	•	•
LED power management	•	•	•
Thermal protection	•	•	•
Adaptive fan control	•	•	•

2.11 Customization Framework Features

The following table lists the features supported by the customization framework module.

Table 11 • Customization Framework Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
Separate BSP and application	•	•	•
Allow customers to append or change a binary image	•	•	•
IPC JSON-RPC socket (with notification support)	•	•	•
Overwrite default startup configuration	•	•	•
Boot and initialization of third-party daemons	•	•	•
Configuration to disable certain build-in features	•	•	•
Microsemi Ethernet board API (MEBA)	•	•	•

2.12 Management Features

The following table lists the features supported by the management module.

Table 12 • Management Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
JSON-RPC	•	•	•
JSON-RPC notifications		•	•
Dual CPU (Application variant with JSON)		•	•
RFC 2131 DHCP client	•	•	•
RFC 2131 DHCP server		•	•
DHCP Server support for DHCP relay packets		•	•
DHCP per port		•	•
RFC 3315 DHCPv6 client		•	•
RFC 3315 DHCPv6 relay agent		•	•
RFC 7610 DHCPv6-shieldprotecting against rogue DHCPv6 servers		•	•
RFC 1035 DNS client, relay		•	•
IPv4/IPv6 ping	•	•	•
IPv4/IPv6 traceroute	•	•	•
HTTP server	•	•	•
CLI - Console port	•	•	•
CLI - Telnet		•	•
Industrial standard CLI	•	•	•
Industrial standard configuration	•	•	•
Industrial standard CLI debug commands	•	•	•
Port description CLI	•	•	•
Management access filtering	•	•	•
HTTPS	•	•	•

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
SSHv2		•	•
IPv6 management		•	•
IPv6 ready logo PHASE2 (host only)		•	•
RFC4884 (ICMPv6)		•	•
System Syslog	•	•	•
Software upload through web	•	•	•
SNMPv1 / v2c / v3 Agent ¹	•	•	•
RMON (Group 1, 2, 3, and 9)		•	•
RMON alarm and event (CLI, web)		•	•
Alarm module		•	•
IEEE 802.1AB-2005 link layer discovery LLDP	•	•	•
TIA 1057 LLDP-MED		•	•
Industry standard discovery protocol - ISDP		•	•
sFlow		•	•
FTP Client	•	•	•
Configuration download/upload - industrial standard	•	•	•
Loop detection restore to default	•	•	•
Symbolic register access	•	•	•
Daylight saving		•	•
SD/MMC card slot support	•	•	•

1. No SNMPv1 trap support

2.13 Standard MIBs Features

The following table lists the features supported by the standard MIBs module.

Table 13 • Standard MIBs Features

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
RFC 2674 VLAN MIB		•	•
IEEE 802.1Q bridge MIB 2008		•	•
RFC 2819 RMON (Group 1, 2, 3, and 9)		•	•
RFC 1213 MIB II	•	•	•
RFC 1215 TRAPS MIB	•	•	•
RFC 4188 bridge MIB	•	•	•
RFC 4292 IP forwarding table MIB		•	•
RFC 4293 management information base for the internet protocol (IP)		•	•
RFC 5519 multicast group membership discovery MIB		•	•
RFC 4668 RADIUS authentication client MIB		•	•

Feature	WebStaX VSC6819	SMBStaX VSC6816	IStaX VSC6817
RFC 4670 RADIUS accounting MIB		•	•
RFC 3635 Ethernet-like MIB	•	•	•
RFC 2863 interface group MIB using SMI v2		•	•
RFC 3636 802.3 MAU MIB		•	•
RFC 4133 entity MIB version 3		•	•
RFC 4878 link OAM MIB			•
RFC 3411 SNMP management frameworks	•	•	•
RFC 3414 user-based security model for SNMPv3		•	•
RFC 3415 view-based access control model for SNMP		•	•
RFC 2613 SMON VLAN statistics		•	
RFC 2613 SMON - PortCopy		•	•
IEEE 802.1 MSTP MIB	•	•	•
IEEE 802.1AB LLDP-MIB (LLDP MIB included in a clause of the STD)	•	•	•
IEEE 802.3ad (LACP MIB included in a clause of the STD)		•	•
IEEE 802.1X (PAE MIB included in a clause of the STD)		•	•
TIA 1057 LLDP-MED (MIB is part of the STD)		•	•
RFC 3621 LLDP-MED Power (POE) (No specific MIB for POE+ exists)	•	•	•
Private MIB framework		•	•

**Microsemi Headquarters**

One Enterprise, Aliso Viejo,
CA 92656 USA

Within the USA: +1 (800) 713-4113

Outside the USA: +1 (949) 380-6100

Sales: +1 (949) 380-6136

Fax: +1 (949) 215-4996

Email: sales.support@microsemi.com

www.microsemi.com

© 2019 Microsemi. All rights reserved. Microsemi and the Microsemi logo are trademarks of Microsemi Corporation. All other trademarks and service marks are the property of their respective owners.

Microsemi makes no warranty, representation, or guarantee regarding the information contained herein or the suitability of its products and services for any particular purpose, nor does Microsemi assume any liability whatsoever arising out of the application or use of any product or circuit. The products sold hereunder and any other products sold by Microsemi have been subject to limited testing and should not be used in conjunction with mission-critical equipment or applications. Any performance specifications are believed to be reliable but are not verified, and Buyer must conduct and complete all performance and other testing of the products, alone and together with, or installed in, any end-products. Buyer shall not rely on any data and performance specifications or parameters provided by Microsemi. It is the Buyer's responsibility to independently determine suitability of any products and to test and verify the same. The information provided by Microsemi hereunder is provided "as is, where is" and with all faults, and the entire risk associated with such information is entirely with the Buyer. Microsemi does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other IP rights, whether with regard to such information itself or anything described by such information. Information provided in this document is proprietary to Microsemi, and Microsemi reserves the right to make any changes to the information in this document or to any products and services at any time without notice.

Microsemi, a wholly owned subsidiary of Microchip Technology Inc. (Nasdaq: MCHP), offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defense, communications, data center and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions; setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions; security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, California, and has approximately 4,800 employees globally. Learn more at www.microsemi.com.

VPPD-04301