# **BIOS User Guide**

February 2019



#### Notes, cautions, and warnings

- () NOTE: A NOTE indicates important information that helps you make better use of your product.
- △ CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
- Marning: A WARNING indicates a potential for property damage, personal injury, or death.

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This guide provides information for using the Dell EMC baseboard management controller (BMC).

- CAUTION: To avoid electrostatic discharge (ESD) damage, wear grounding wrist straps when handling this equipment.
- WARNING: Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. This equipment contains two power cords. Disconnect both power cords before servicing.
- MARNING: This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation.



#### Figure 1. Class 1 laser product tag

WARNING: When no cable is connected, visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports. Avoid exposure to laser radiation. Do not stare into open apertures.

#### Topics:

- Information symbols
- Document revision history

### Information symbols

This book uses the following information symbols:

- () NOTE: The Note icon signals important operational information.
- CAUTION: The Caution icon signals information about situations that could result in equipment damage or loss of data.
- Marning: The Warning icon signals information about hardware handling that could result in injury.
- MARNING: The ESD Warning icon requires that you take electrostatic precautions when handling the device.

### **Document revision history**

#### Table 1. Revision history

Revision	Date	Description
A00	2018-05	Initial release
A01	2018-08	Hardware flow control addition
A02	2019-02	WIFI/LTE expansion cards, BIOS 3.41.0.9-13, DIAG OS 3.41.3.81-4

## New in this release

DIAG tools new features.



Version VEP4600\_DIAG\_OS\_3.41.3.81-4

New Features:

- 1 Support for Wifi/LTE/BT diagnostics.
- 2 Support for eepromtool for rNDC Carrier Card and WIFI/LTE card FRU (Field-replaceable unit).
- 3 Support for MC1/MC2 BT firmware update.
- 4 Support for LED of WiFI. Can turn off/on using **iwconfig wlan0 txpower** off/on.

## **DIAG Tools**

Version VEP4600\_DIAG\_OS\_3.41.3.81-15



Please see Current Released Versions in the Important Information section in Drivers and Download on https://www.dell.com/support.



### WARNING: Changing the BIOS may be detrimental to platform operations if the changes are not fully understood. Before you change the BIOS, if you have questions, contact your Dell EMC technical representative.

For the most current BIOS update information, see the VEP4600 Release Notes.

Topics:

- · BIOS setup
- · Console redirection
- Hardware flow control
- Super IO configuration
- Boot order
- Server management
- Option ROM dispatch policy
- SR-IOV support
- USB 3.0
- PXE and HTTP boot support
- Network interface configuration
- Advanced power management
- Trusted computing
- Embedded DIAGS

### **BIOS setup**

To enter the BIOS setup, press the **delete** key during the BIOS boot up.

By default, to enter the BIOS setup, you have three seconds to press the **delete** key during the BIOS boot up. To increase the time allowed, from the **BIOS setup** screen, select the **Boot** tab, then change the **Setup Prompt Timeout** number. The maximum prompt timeout is 10 seconds.

Aptio Setup Utility - Copyright (C) 2018 Am < Dell Diagnostics Server Mgmt Security Boot	erican Megatrends, Inc. Save & Exit
Boot Configuration	<pre>^ Number of 1/10 of * seconds to wait for</pre>
WARNING: More than 450 tenth of seconds will cause system timeout, and switch to the backup BIOS.	<pre>* setup activation key * 65535(0xFFFF) means * indefinite waiting.</pre>

#### Figure 2. Setup prompt timout

The **Main** screen displays the BIOS and platform details such as the processor model, amount of memory, and so forth. Use the **Main** tab to set the date and time, which is saved to the real time clock (RTC).

Aptio Setup Utilit Main Advanced Platf	y - Copyright (C) 2018 A orm Configuration Socke	merican Megatrends, Inc. t Configuration Server Mgmt
BIOS Information BIOS Vendor Core Version	American Megatrends 5.14 UEET 2.6: PT 1.4	<pre>^ Choose the system * default language *  * </pre>
Project Version Build Date and Time Access Level	0ACJF 0.20 x64 04/11/2018 02:44:05 Administrator	*
Platform Information Platform	TypeYubaCityRP	*
Processor PCH RC Revision	50654 - SKX M0 - B2-D 05D81	* ><: Select Screen * ^v: Select Item * Enter: Select
Memory Information Total Memory	32768 MB	* +/-: Change Opt. * F1: General Help + F2: Previous Values
System Language		+ F3: Optimized Defaults v F4: Save & Exit  ESC: Exit
Version 2.20.1271	. Copyright (C) 2018 Ame	rican Megatrends, Inc.

#### Figure 3. BIOS setup

## **Console redirection**

On the VEP4600, all output is through COM0, which is the console redirection default setting. The BIOS provides options to override the COM0 port default settings, including speed, parity setting, and so forth.

Access the COMO settings from the BIOS setup screen, select the Advanced tab, then select Serial Port Console Redirection.



#### Figure 4. Console redirection

### Hardware flow control

Hardware flow control is not enabled on the console port by default.

Follow the steps below in BIOS settings to enable the hardware flow control for the console port.

1 Select the **Boot** menu tab. Boot into the BIOS settings using the up and down arrow keys.

American Megatrends	* default language
	actaure ranguage
5.14	*
UEFI 2.6; PI 1.4	*
3.41.0.9-10	*
07/17/2018 03:03:37	*
Administrator	*
	*
	*
TypeYubaCityRP	*
50654 - SKX M0	<pre>* &gt;&lt;: Select Screen</pre>
- B2-D	<pre>* ^v: Select Item</pre>
05D81	* Enter: Select
	* +/-: Change Opt.
	* F1: General Help
32768 MB	+ F2: Previous Values
	+ F3: Optimized Defaults
	VIEA: Sava & Evit
	UEFI 2.6; PI 1.4 3.41.0.9-10 07/17/2018 03:03:37 Administrator TypeYubaCityRP 50654 - SKX M0 - B2-D 05D81 32768 MB

#### Figure 5. BIOS main screen

2 Select Advanced then COMO (Console Redirection Settings) and Hardware RTS/CTS in the Flow Control popup menu.

Advanced		
	The settings specify	
COMØ	how the host computer	
Console Redirection [Enabled]	and the remote compute	
	(which the user is	
	using) will exchange	
Legacy Console Redirection	data. Both computers	
Legacy Console Redirection Settings	should have the same o	
	compatible settings.	
Serial Port for Out-of-Band Management/		
Windows Emergency Management Services (EMS)		
Console Redirection [Enabled]	<pre>&gt;&lt;: Select Screen</pre>	
Console Redirection Settings	<pre>/^v: Select Item</pre>	
	Enter: Select	
	+/-: Change Opt.	
	F1: General Help	
	F2: Previous Values	
	F3: Optimized Defaults	
	F4: Save & Exit	
	ESC: Exit	

Figure 6. Advanced tab

COMØ		Flow control can
Console Redirection S	ettings	prevent data loss from
Terminal Type Bits per second Data Bits Parity Stop Bits	[VT100+] [115200] [8] [None] [1]	sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the
VT-UTF8 Combo Key Support	[Enabled]	<: Select Screen
Recorder Mode Resolution 100x31 Putty KeyPad	[Disabled] [Disabled] [VT100]	<pre>^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

Figure 7. COM0 (Console Redirection Settings)



#### Figure 8. Hardware RTS/CTS

3 Press **F4** to save and exit BIOS.

## Super IO configuration

The VEP4600 only has the serial port on the Super I/O (SIO) chip. The chip settings are preconfigured and normally do not need changing.

However, you can use the BIOS to change the Super I/O chip settings, such as the I/O Base, interrupt request line (IRQ), and direct memory access (DMA) channel. To access these settings, from the **BIOS setup** screen, select the **Advanced** tab, then select **SIO Configuration**.



Figure 9. Super I/O configuration



Figure 10. Super IO configuration

## **Boot order**

The BIOS looks for a bootable image in the Boot order setting order list. The BIOS then loads and boots the image. To access the boot order setting, from the **BIOS setup** screen, select the **Boot** tab, then select **Boot Option Priorities**.



#### Figure 11. Boot order

### Server management

VEP4600 has an on-board baseboard management controller (BMC) to monitor system health. During Boot up, the BIOS communicates with the BMC and exchanges messages with the BMC to log events, get BMC self-test results, and configure BMC network parameters. To configure BMC to use Static IP or dynamic host configuration protocol (DHCP), use the BIOS. To access BMC settings, from the **BIOS setup** screen, select the **Server Mgmt** tab, then **BMC Network Configuration**.

BWC network configuration ***********************************	Aptio Setup Utility	/ - Copyright (C) 2018 Ameri	Server Mgmt
Lan channel 1 Configuration Address source Unspecified Unspecified Station IP address Subnet mask Station MAC address Router IP address Router IP address Router IP address Configure IPV6 support Lan channel 1 IPV6 Support [Enabled] [Enabled] [Inspecified] [Inspecified	BMC network configuration Configure IPV4 support		<pre>^ Select to configure LAN * channel parameters statically * or dynamically(by BIOS or * BMC). Unspecified option will * not modify any BMC network</pre>
Station IP address       Configuration Address source	Lan channel 1 Configuration Address source Current Configuration Address source	[Unspecified] DynamicAddressBmcDhcp	<pre>* parameters during BIOS phase *  *  *  * </pre>
Configure IPV6 support Lan channel 1 IPV6 Support IPV6 Support (Enabled] Configuration Address source (Unspecified] Configuration Address source (Unspecified] Configuration Address source (Unspecified] Configuration Address source (Unspecified] Configuration Address source (Unspecified] Configuration Address source (Unspecified) Configuration Address source (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Unspecified) (Un	Station IP address     /····       Subnet mask     Unsp       Station MAC address     Stat       Router IP address     Dyna       Router MAC address     Dyna	Configuration Address source mecified tic micBmcDhcp micBmcNonDhcp	select Screen
Configure IPV6 support H+/-: Change Opt. + F1: General Help + F2: Previous Values + F3: Optimized Defaults + F4: Save & Exit + F4: Save & Exit + Configuration Address source Unspecified] +  V	*****		r: Select
Lan channel 1 + F3: Optimized Defaults + F4: Save & Exit PV6 Support [Enabled] + ESC: Exit +  Configuration Address source [Unspecified] +  v	Configure IPV6 support		+ +/-: Change Opt. + F1: General Help + F2: Previous Values
IPV6 Support [Enabled] + ESC: Exit Configuration Address source [Unspecified] +  v	Lan channel 1		+ F3: Optimized Defaults
Configuration Address source [Unspecified] + v	IPV6 Support	[Enabled]	+ ESC: Exit
	Configuration Address source	[Unspecified]	+

#### Figure 12. Server management

After an event, the BIOS logs a message to the BMC. The BMC stores these messages in nonvolatile storage. Apart from the BIOS, health monitoring software and system software also logs messages to the BMC system event log (SEL). View these messages from the **BIOS** setup screen, select the Server Mgmt tab, then select View System Event Log.



Figure 13. View system event logs

You can add, delete, access, or modify user rights. Manage the BMC user account from the **BIOS setup** screen, select the **Server Mgmt** tab, then select **BMC User Settings**.

Aptio Setup Utility - Copyright (C) 2018 Americar	Megatrends, Inc. Server Mgmt
BMC User Settings	Press <enter> to Change User</enter>
> Add User	
> Delete User	
> Change User Settings	<pre>&gt;&lt;: Select Screen ^v: Select Item Enter: Select</pre>
	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1271. Copyright (C) 2018 American M	Megatrends, Inc.

#### Figure 14. BMC user settings

## **Option ROM dispatch policy**

Option read-only memory (ROMs) contain firmware that the BIOS executes. The values listed on this screen and in the **Compatibility Support Module** screen use default values when the **Restore if Failure** setting is **true** and the BIOS fails to boot up.

() NOTE: Changing the *option ROM* settings may effect the BIOS boot up. Dell EMC recommends keeping the default value of *Restore if Failure* equals *true*.

Access the option ROM dispatch policy screen from the **BIOS setup** screen, select the **Advanced** tab, then select **Option ROM Dispatch Policy**.

Aptio Setup Utility - Copyright (C) 201 Advanced	L8 American Megatrends, Inc.
AMI ROM Dispatch Policy : A5.01.16	<pre>^ If system fails to boot  * and this option is set</pre>
Primary Video Ignore [Disabled]	<pre>* to 'Enabled', software * will reset settings of</pre>
Device Group Default ROM Policy	this page as well as
(Selected at CSM Setup Page) :	* CSM page to its default
Network Class : UEFI	* values automatically.
Mass Storage Class : Legacy	*
Display Class : Legacy	*
Other Devices : UEFI	*

#### Figure 15. Option ROM dispatch policy

### **SR-IOV support**

If VEP4600 uses Virtualization Technologies, you must enable the single root input/output virtualization (SR-IOV) **SR-IOV support** option. This option is disabled by default.

Access this option from the **BIOS setup** screen, select the **Advanced** tab, then select **PCI Subsystem Settings**. If a device supports virtual functions, you must enable **SR-IOV support** in the BIOS.



Figure 16. SR-IOV support

## USB 3.0

To support universal serial bus (USB) 3.0 in operating systems, set the extensible host controller interface (xHCI) **XHCI Hand-off** option to **enabled**. Access this setting from the **BIOS setup** screen, select the **Advanced** tab, then select **USB Configuration**.

If the BIOS must support USB 2.0 devices—legacy USB devices—leave Legacy USB Support set to enabled, shown below.

Because the box is connected using the universal asynchronous receiver-transmitter (UART) console, traditional keyboard or mouse are not connected to the USB ports.

Aptio Setup Utility - Copyright (C) Advanced	2018 American Megatrends, Inc.
 AMI ROM Dispatch Policy : A5.01.16	^ If system fails to boot
Primary Video Ignore [Disabled]	* to 'Enabled', software
Device Group Default ROM Policy	* this page as well as
(Selected at CSM Setup Page) :	<pre>* CSM page to its default</pre>
Network Class : UEFI	* values automatically.
Mass Storage Class : Legacy	*
Display Class : Legacy	•
Other Devices : UEFI	*

Figure 17. USB 3.0 option

## PXE and HTTP boot support

VEP4600 allows the platform to boot an operating system using pseudoxanthoma elasticum (PXE) boot. To enable PXE boot, set the **Network Stack** option to **enabled**. Access this setting from the **BIOS setup** screen, select the **Adanced** tab, then select **Network Stack**.

The BIOS also supports hypertext transfer protocol (HTTP) boot. Use both HTTP and PXE boot over IPv4 or IPv6.

Aptio Setup Utility - Advanced	- Copyright (C) 2018 American	Megatrends, Inc.
/ Network Stack Ipv4 PXE Support Ipv4 HTTP Support Ipv6 PXE Support Ipv6 HTTP Support IPSEC Certificate PXE boot wait time Media detect count	[Enabled] [Enabled] [Disabled] [Disabled] [Enabled] 0 1	Enable/Disable UEFI Network Stack
		<pre>&gt;&lt;: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1271. (	Copyright (C) 2018 American M	Megatrends, Inc.

#### Figure 18. PXE and HTTP boot support

### Network interface configuration

VEP4600 has two 10GbE small form-factor pluggable plus (SPF+) ports, four Gigabit ports, and one Gigabit management port.

The BIOS uses these ports for PXE boot. You can configure the **wake on LAN** setting. You can also configure the one Gigabit port to auto configure or set to a specific speed. Access these settings from the **BIOS setup** screen, select the **Advanced** tab, then select the **Intel(R) I350 Gigabit Network Connection**, **Intel(R) I210 Gigabit Network Connection**, or **Intel(R) Ethernet Connection X722 for 10GbE SFP+** settings.



#### Figure 19. Network interface options

### Advanced power management

Access the settings for power management from the BIOS setup screen, then select the Socket Configuration tab. On the Advanced Power Management Configuration screen, select Memory Power & Thermal Configuration.

By default, SpeedStep(P states) and Autonomous Core C-State are disabled.

The Software controlled T-States option is also disabled by default.

Aptio Setup	Utility - Copyright (C) 2018 America Socket Configuration	n Megatrends, Inc.
Advanced Power Management use SPT workarounds > CPU P State Control > Hardware PM State Control > Overclocking > CPU C State Control > Package C State Control > CPU Thermal Management > CPU - Advanced PM Tuning > Package Current Config > EPB Override Control > SOCKET RAPL Config > PMAX CONFIG Configuration > ACPI Sx State Control > Memory Power & Thermal Config	Configuration [Enable]	Displays and provides option to change the Memory Settings ><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.2	20.1271. Copyright (C) 2018 American	Megatrends, Inc.

Figure 20. Advanced power management options

### **Trusted computing**

The BIOS provides options to enable or disable trusted platform module (TPM) security. BIOS has two provision coverage ratio (PCR) banks and provides options to select **SHA-1** or **SHA256** for these banks. Access the TPM settings from the **BIOS setup** screen, then select the **Advanced** tab, then select **Trusted Computing BIOS settings**.

		AlEnables on Disables
TOUGO Devideo Found		* Enables of Disables
IPM20 Device Found		TBIOS Support for
Vendor: NTC		<pre>* security device. 0.S.</pre>
Firmware Version: 1.3		<pre>* will not show Securit</pre>
		* Device. TCG EFI
		<pre>* protocol and INT1A</pre>
		<pre>*linterface will not be</pre>
Active PCR banks	SHA-1, SHA256	*lavailable.
Available PCR hanks	SHA-1 SHA256	*
Available ren banks	51h-1,51h250	*
SHA-1 PCR Bank	[Enabled]	*Ix: Select Screen
SHA256 PCR Bank	[Enabled]	* Av: Select Item
	[chabied]	* Enton: Coloct
Dending enception	Etterne 1	Enter: Select
Pending operation	[None]	+ +/-: Change Opt.
Platform Hierarchy	[Enabled]	+ F1: General Help
Storage Hierarchy	[Enabled]	+ F2: Previous Values
Endorsement	[Enabled]	+ F3: Optimized Default
erarchy		v F4: Save & Exit
		ESC: Exit

#### Figure 21. Trusted computing options

### **Embedded DIAGS**

Embedded DIAGS are available in BIOS 3.41.0.9-13, DIAG\_OS\_3.41.3.81-4 release.

Embedded DIAGS in the BIOS validates and verifies all the system's components are operating nominally.

System diagnostics include:

- 1 PSU
- 2 Fan
- 3 I2C
- 4 RTC/CMOS
- 5 PCI
- 6 DIMM
- 7 IPMI
- 8 Storage
- 9 Critical Device
- 10 Temperature

#### () NOTE:

See uCPE Networking DIAG OS Guide for details at https://www.dell.com/support.

# Dell EMC support

The Dell EMC support site provides documents and tools to help you effectively use Dell EMC equipment and mitigate network outages. Through the support site you can obtain technical information, access software upgrades and patches, download available management software, and manage your open cases. The Dell EMC support site provides integrated, secure access to these services.

To access the Dell EMC support site, go to www.dell.com/support/. To display information in your language, scroll down to the bottom of the web page and select your country from the drop-down menu.

- To obtain product-specific information, enter the 7-character service tag, known as a luggage tag, or 11-digit express service code of your switch and click **Submit**.
- To view the platform service tag or express service code, pull out the luggage tag on the upper-right side of the platform or retrieve it remotely using the ipmitool -H <bmc ip address> -I lanplus -U <user name> -P password> fru command
- To receive more technical support, click Contact Us. On the Contact Information web page, click Technical Support.

To access switch documentation, go to www.dell.com/manuals/.

To search for drivers and downloads, go to www.dell.com/drivers/.

To participate in Dell EMC community blogs and forums, go to www.dell.com/community.