

Dell CXL Memory Expansion AIC

User's Guide

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.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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Introduction

Dell now offers CXL Memory Expansion AIC. It is a full-height, half-length, and single-width AIC.

CXL Memory Expansion AIC which has four RDIMMs populated, supports 384 GB per AIC.

CXL Memory Expansion AICs are installed in the x16 sized physical CEM riser slots of the server. Memory Expansion AIC can be configured in two modes:

Conventional Memory Mode (General Purpose Memory Mode):

- Users can select Conventional Memory to directly map CXL memory and add it to the system's physical memory, making it visible in the UEFI memory map. CXL memory and standard DDR memory appear as a unified resource within the SRAT data structure.
- All CXL memory is now accessible to the operating system kernel, and applications can access it using standard system kernel calls or library functions.

Special Purpose Memory Mode:

- Special Purpose Memory causes CXL memory to be mapped separately from physical memory. In this scenario, BIOS sets the EFI_MEMORY_SP memory attribute and CXL memory shows up as a separate resource under the SRAT data structure.
- The SPM attribute serves as a hint to the operating system to avoid allocating this memory for core operating system data or code that cannot be relocated. Operating Systems must support this attribute in order to treat it separately from standard conventional memory.
- The user may choose to reconfigure memory from device DAX mode to system RAM mode before using CXL memory.

This document provides an overview of the Dell CXL Memory Expansion AIC solution. It is intended to help the user with initial set-up and configuration, providing information about system behavior when CXL Memory Expansion AICs are installed. This document helps the user to be familiar with CXL Memory Expansion AIC manageability and error handling. It also introduces the user to the basic setup of CXL Memory Expansion AIC and configuration in different supported operating systems.

Topics:

- [Acronyms](#)

Acronyms

Table 1. Acronyms

Terminology	Description
AIC – Add-in-Card	A PCIe expansion card
CEM	PCIe Card Electromechanical form factor
CXL	Compute Express Link
BIOS	Basic Input Output System
UEFI	Unified Extensible Firmware Interface
iDRAC	Integrated Dell Remote Access Controller
SRAT	System Resource Affinity Table

Change list

Table 2. Change list

Version	Changes
A00	Original Version

CXL Memory Expansion AIC Overview

The Figure below is an overview of the CXL Memory Expansion AIC showing its main components and system interfaces.

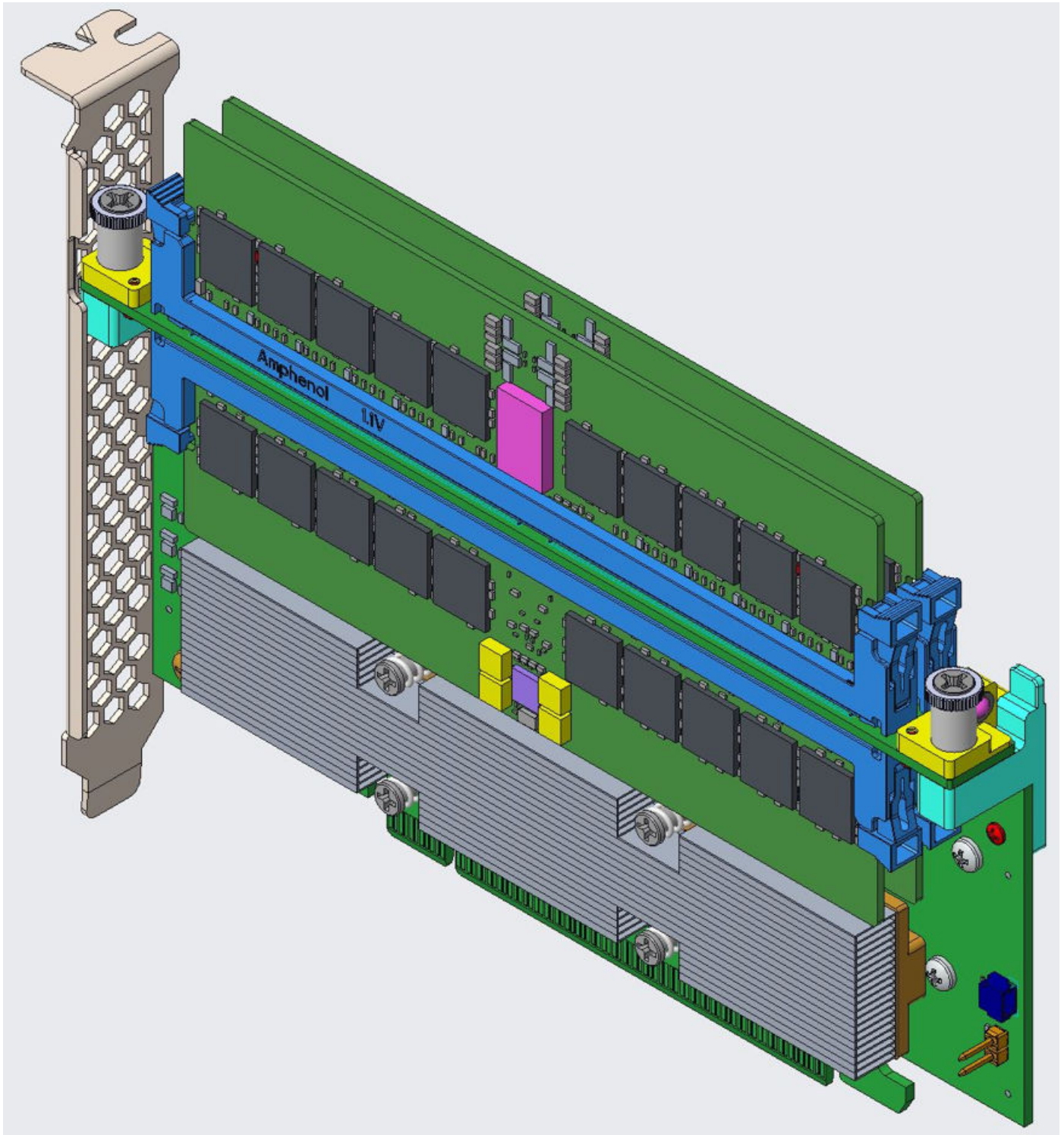


Figure 1. CXL Memory Expansion AIC

Topics:

- [Configuring CXL AIC using Dell Management Interface](#)

Configuring CXL AIC using Dell Management Interface

The management applications that are discussed in the following topics enable you to manage and configure the CXL Adapter. The applications allow you to control and monitor multiple CXL adapters and provide online maintenance.

The CXL solution supports Human Interface Infrastructure (HII) for pre-operating system device management and Integrated Dell Remote Access Controller (iDRAC) with Lifecycle Controller for local or remote device management. The CXL solution supports HII and iDRAC with Lifecycle Controller management on select PowerEdge systems only.

For detailed information, see chapters 5 and 6.

Hardware

Topics:

- [Server hardware configuration](#)

Server hardware configuration

Dell CXL Memory Expansion AICs are supported in the R770 and R7725 PowerEdge Servers. The CXL Memory Expansion AICs are only supported with Intel Xeon P-core and 5th Generation AMD EPYC 9005 Series processors.

Table 3. Server hardware configuration

Platform	Native DIMM Configuration (per CPU)	Total Native DIMM Capacity (GB)	CXL Device Configuration (per CPU)	CXL Device Configuration per System (GB)	Total CXL Device Capacity Per System (GB)	Total Memory Capacity Per System (GB)
R770	16 x 96 GB	3072	2 x AIC (96 GB DIMM*4)	4 x AIC (96 GB DIMM *4)	1536	4608
R7725	12 x 96 GB	2304	1 x AIC (96 GB DIMM*4)	2x AIC (96 GB DIMM*4)	768	3072

NOTE:

- On supported PowerEdge platforms with x8 link width, where two AICs are connected to a single CPU, the AICs must still be installed in a physical CEM slot that is x16 in size.
- Only the above Native DIMM configurations are supported.
- The RDIMM on the AIC is DDR5 6400 MT/s, the running speed is 4400 MT/s.

Dell does not recommend customers installing or removing CXL AIC/DIMMs from the system. Reach out to the Dell support team as needed.

Topics:

- BIOS Configuration Settings for CXL Memory Expansion AIC
- CXL Memory Discovery
- CXL Memory Configuration
- CXL Memory Error Reporting
- BIOS Error Messages

BIOS Configuration Settings for CXL Memory Expansion AIC

This section focuses only on the BIOS setup options that affect CXL Memory Expansion AIC operation. For a description of all setup options, see the server Installation and Service Manual. CXL Memory BIOS settings are configurable by going into BIOS System Setup.

Press F2 at the BIOS screen below to enter BIOS System Setup.



Figure 2. BIOS Screen

CXL Memory Discovery

Select `System BIOS >Memory Settings` to see the following options:

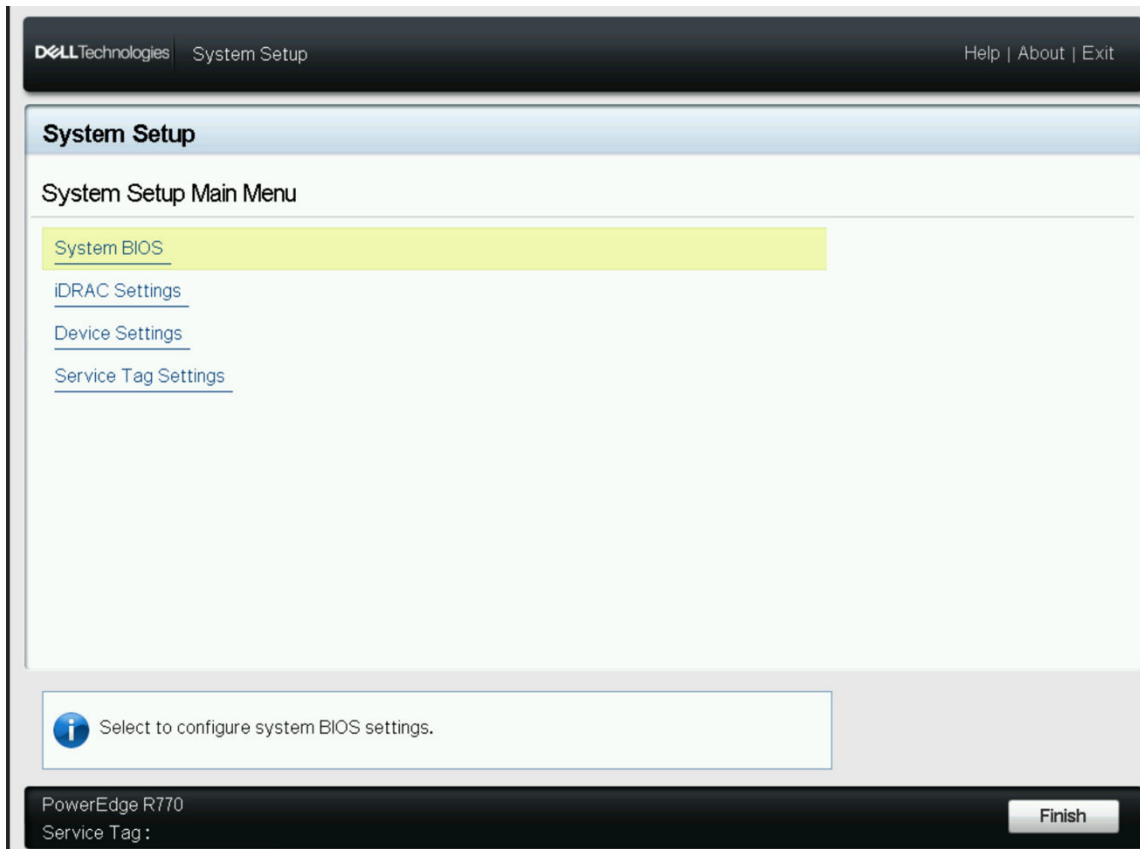


Figure 3. System Setup

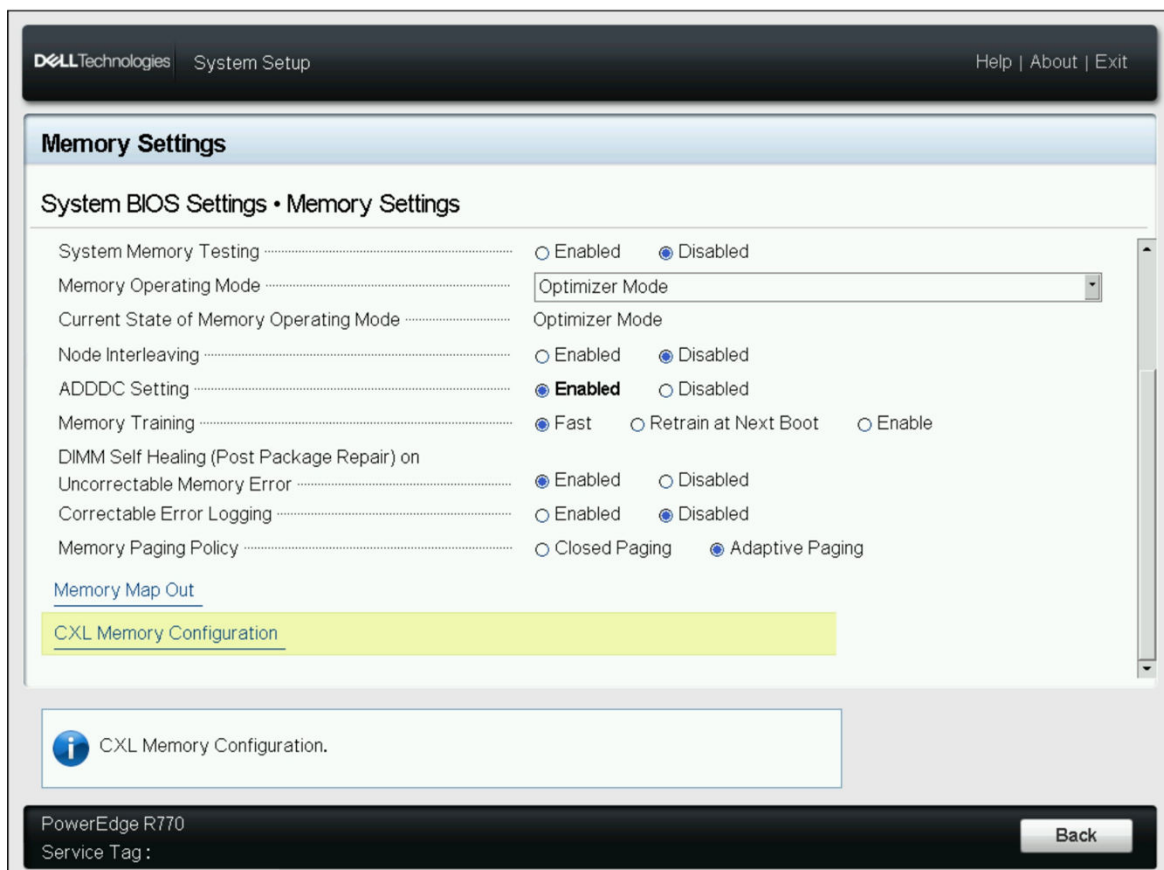


Figure 4. Memory Settings

CXL Memory Configuration

Select CXL Memory Configuration to configure CXL Memory Attribute in the setup options:

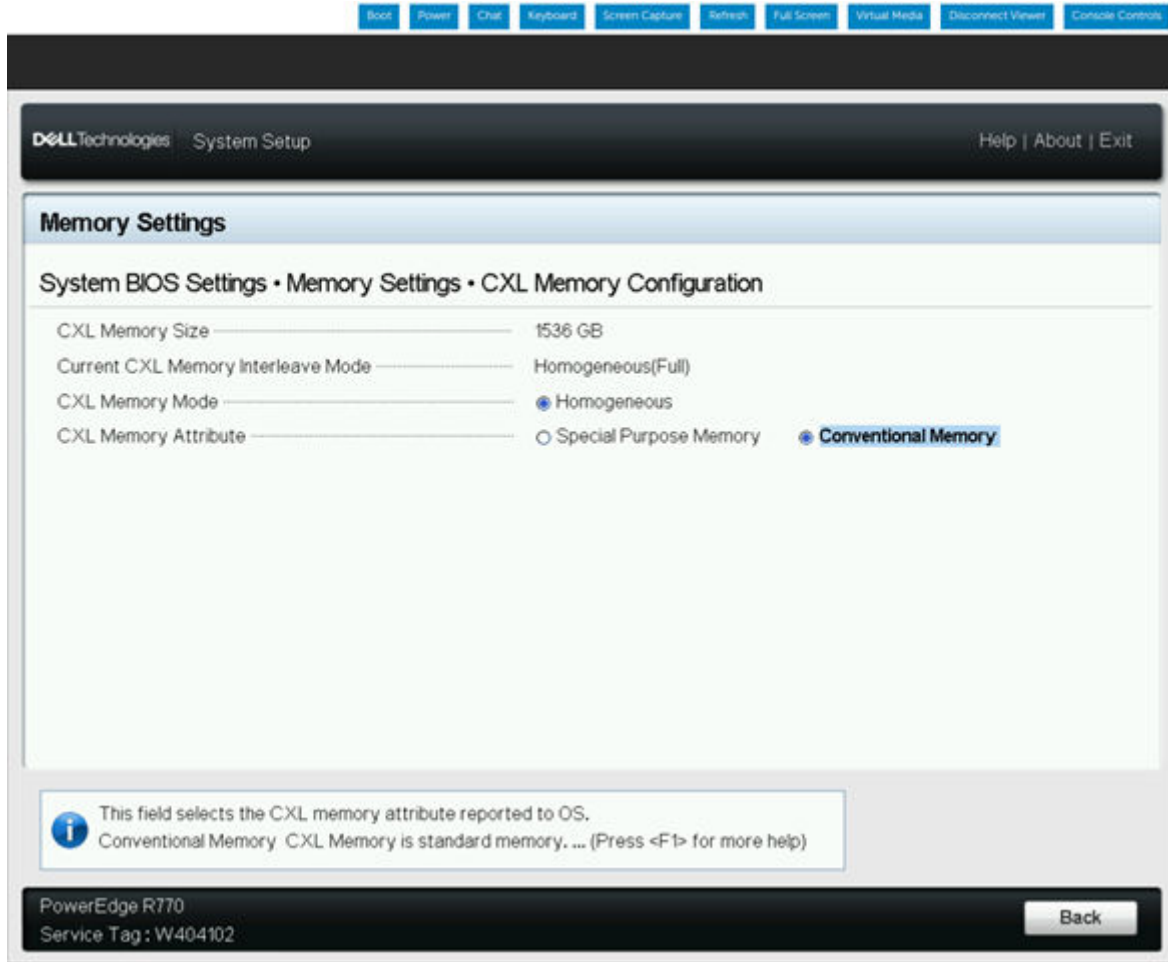


Figure 5. CXL Memory Configuration screen

NOTE: For the R7725 platform, the CXL memory attribute is limited to conventional memory only.

CXL Memory Error Reporting

CXL memory error reporting is limited to Firmware First mode only.

BIOS Error Messages

When BIOS detects a CXL Memory Expansion AIC-related error during POST, BIOS displays an F1/F2 prompt and a corresponding error message. Multiple messages appear when multiple errors are detected. BIOS will also log an event for each error in the Server System Event Log (SEL) and Life-Cycle Log (LCL).

Table 4. PCIe Link Training

ID	Description	Severity Level
UEFI0031	PCIe down train is detected on <device location>. Expected link width: <size> Actual link width: <size>.	Critical

Table 4. PCIe Link Training (continued)

ID	Description	Severity Level
UEFI0066	A PCIe link training failure is observed in <PCIe device>, and the link is disabled. The system has halted.	Critical
UEFI0067	A PCIe link training failure is observed in <PCIe device>, and device link is disabled.	Critical
UEFI0080	PCIe link speed is not optimal for <PCIe device>. Expected link speed: Gen <generation number> and actual link speed: Gen <generation number>.	Warning

Table 5. Device Initialization, Enumeration, and System Config

ID	Description	Severity Level
UEFI0448	Unable to fully homogeneously interleave Compute Express Link (CXL) memory because the CXL hardware is incorrectly configured or has issues.	Warning
UEFI0449	BIOS is unable to initialize the server to use one or more CXL hardware devices that are installed in the server. This is because an unsupported CXL hardware configuration is used in the server.	Critical
UEFI0450	BIOS is unable to initialize the server to use one or more CXL hardware devices that are installed in the server because of hardware issues.	Critical
UEFI0451	Compute Express Link (CXL) hardware is not responding via the in-band management interface.	Critical

Table 6. Link and Protocol Boot Errors

ID	Description	Severity Level
UEFI0056	One or more uncorrectable PCIe device issues have been detected during the Power-On-Self-Test (POST) operation.	Critical
UEFI0070	One or more correctable PCIe device issues have been detected during the Power-On-Self-Test (POST) operation.	Warning
UEFI0077	One or more uncorrectable PCIe device issues have been detected during the last boot operation.	Critical

Table 7. PCI Events

Description	Severity Level	
PCI3033	An Information-Only event was detected on a component at slot <number> segment <seg>.	Info
PCI3034	An Information-Only event was detected on a component at segment <seg>, bus <bus>, device <device>, and function <func>.	Info

Table 7. PCI Events (continued)

Description	Severity Level	
PCI3036	A correctable PCIe error is detected on a component at slot <number> segment <seg>.	Warning
PCI3037	A correctable PCIe error is detected on a component at the segment <seg>, bus <bus>, device <device>, and function <func>.	Warning
PCI3039	A high-severity issue is detected on a component in the slot <number> segment <seg>.	Critical
PCI3040	A high-severity issue is detected on a component at segment <seg>, bus <bus>, device <device>, and function <func>.	Critical

iDRAC CXL Memory Expansion AIC Management

Topics:

- iDRAC user interface
- iDRAC Redfish Interface
- CXL Memory Error Reporting

iDRAC user interface

The image below shows the iDRAC Web user interface Dashboard when remotely managing the server.

The screenshot displays the iDRAC Web user interface Dashboard. The top navigation bar includes the text 'iDRAC10 | Enterprise' and a search bar. Below the navigation bar, there are tabs for 'Dashboard', 'System', 'Storage', 'Configuration', 'Maintenance', and 'iDRAC Settings'. The main content area is titled 'Dashboard' and includes a 'Refresh' button. The dashboard is divided into three main sections: 'Health Information', 'System Information', and 'Task Summary'. The 'Health Information' section shows 'SYSTEM IS HEALTHY' with 'System Health' and 'Storage Health' both marked as 'Healthy'. The 'System Information' section lists various system details such as Power State (On), Model (PowerEdge R770), Host Name, Operating System, and IP Address. The 'Task Summary' section shows 'Pending Jobs: 0', 'In-Progress Jobs: 0', and 'Completed Jobs: 8' (0 with Errors, 0 Failed).

Figure 6. iDRAC Graphical User Interface

CXL Memory Expansion AIC Status

Select the System link on the Dashboard to get more information in Hardware Inventory and Firmware Inventory.

CXL Hardware Status

CXL Memory Expansion AIC HW information is displayed under the System->Inventory->Hardware inventory tab.

PCIe Device - CXLMemory.Slot.1-1	
BusNumber	12
CPUAffinity	1
DataBusWidth	8x or x8
Description	STXPLXXXGMC4RD5
DeviceDescription	CXLMemory.Slot.1-1
DeviceNumber	0
DeviceType	PCIDevice
FQDD	CXLMemory.Slot.1-1
FunctionNumber	0
InstanceID	CXLMemory.Slot.1-1
LastSystemInventoryTime	2025-03-05T09:26:13
LastUpdateTime	2025-02-20T19:37:01
Manufacturer	SMART
PCIDeviceID	C241
PCISubDeviceID	2382
PCISubVendorID	1028
PCIVendorID	1235
SegmentNumber	1
SlotLength	Short Length
SlotType	PCI Express Gen 5

Figure 7. Hardware Inventory Status

CXL Firmware Version

CXL Memory Expansion AIC FW version is displayed under the Configuration ->Inventory->Firmware inventory tab.

CXLMemory.Slot.1-1	04.004.012.00R02
CXLMemory.Slot.2-1	04.004.012.00R02
CXLMemory.Slot.7-1	04.004.012.00R02
CXLMemory.Slot.8-1	04.004.012.00R02

Figure 8. Firmware Inventory Status

CXL Memory Settings

CXL Memory Size and CXL Memory Configuration that is displayed under **System > BIOS Settings > Memory Settings > CXL Memory Configuration** tab.

▼ CXL Memory Configuration

	Current Value
CXL Memory Size	1536 GB
Current CXL Memory Interleave Mode	Homogeneous(Full)
CXL Memory Mode	Homogeneous ▾
CXL Memory Attribute	Conventional Memory ▾

Apply
Discard

Figure 9. CXL Memory Configuration –Conventional Memory

iDRAC Redfish Interface

The following properties of CXL memory devices are exposed via Redfish.

Table 8. iDRAC Redfish Interface

Dbus Interface/Property	URI	Property
com.dell.idrac.CXL.Health/OverallHealth	/redfish/v1/Systems/ System.Embedded.1/Memory/<>/ MemoryMetrics	HealthData.PredictedMediaLifeLeftPercent
com.dell.idrac.CXL.Inventory/ TotalCapacity	/redfish/v1/Systems/ System.Embedded.1/ Memory/<>/redfish/v1/ Systems/System.Embedded.1/ MemoryDomains/<> /redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>/ CXLLogicalDevices/<> /redfish/v1/Systems/ System.Embedded.1/ MemoryDomains/<>/MemoryChunks/<>	CapacityMiB MemorySizeMiB MemorySizeMiB MemoryChunkSizeMiB
com.dell.idrac.CXL.Inventory/ FirmwareRevision	/redfish/v1/Systems/ System.Embedded.1/Memory/<> /redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<> /redfish/v1/UpdateService/ FirmwareInventory/<>	FirmwareRevision Version
com.dell.idrac.CXL.Inventory/ Manufacturer	/redfish/v1/Systems/ System.Embedded.1/Memory/<> /redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>	Manufacturer
com.dell.idrac.CXL.Inventory/ FriendlyFQDD	/redfish/v1/Systems/ System.Embedded.1/Memory/<>	Name Description

Table 8. iDRAC Redfish Interface (continued)

Dbus Interface/Property	URI	Property
	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<> /redfish/v1/UpdateService/ FirmwareInventory/<>	Description
com.dell.idrac.CXL.Inventory/ PartNumber	/redfish/v1/Systems/ System.Embedded.1/Memory/<> /redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>	PartNumber
com.dell.idrac.CXL.Inventory/ SerialNumber	/redfish/v1/Systems/ System.Embedded.1/Memory/<> /redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>	SerialNumber
com.dell.idrac.CXL.Inventory/Model	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>	Model
com.dell.idrac.CXL.Inventory/ PCleDeviceID	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>/ PCleFunctions/<>	DeviceId
com.dell.idrac.CXL.Inventory/ PCleFunction	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>/ PCleFunctions/<>	FunctionId
com.dell.idrac.CXL.Inventory/ SubsystemId	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>/ PCleFunctions/<>	PCleSubDeviceId
com.dell.idrac.CXL.Inventory/ PCleSubVendorID	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>/ PCleFunctions/<>	SubsystemVendorId
com.dell.idrac.CXL.Inventory/ PCleVendorID	/redfish/v1/Chassis/ System.Embedded.1/PCleDevices/<>/ PCleFunctions/<>	VendorId

CXL Memory Error Reporting

The table below provides a list of possible error events that can be logged to the server System event log.

Table 9. CXL Memory Expansion AIC Error Reporting - CXL Events

ID	Description	Severity level
CXL1010	An informational event is detected on the CXL device at PCIe slot <slot>, segment <seg>. (Extended ID: <code>).	Info
CXL1020	A self-serviceable event is detected on the CXL device at PCIe slot <slot>, segment <seg>. (Extended ID: <code>).	Warning
CXL1030	A critical event was detected for the CXL device at PCIe slot <slot>, segment <seg>. (Extended ID: <code>).	Critical

Table 9. CXL Memory Expansion AIC Error Reporting - CXL Events (continued)

ID	Description	Severity level
CXL1090	An OEM diagnostic event was detected on the CXL device at PCIe slot <slot>, segment <seg>. (Extended ID: <code>).	Info
CXL1010	An informational event is detected on the CXL device at PCIe slot <slot>, segment <seg>. (Extended ID: <code>).	Info

Table 10. CXL Memory Expansion AIC Error Reporting- PCI Events

ID	Description	Severity level
PCI3033	An Information-Only event was detected on a component at slot <number> segment <seg>.	Info
PCI3034	An Information-Only event was detected on a component at segment <seg>, bus <bus>, device <device>, and function <func>.	Info
PCI3036	A correctable PCIe error is detected on a component at slot <number> segment <seg>.	Warning
PCI3037	A correctable PCIe error is detected on a component at the segment <seg>, bus <bus>, device <device>, and function <func>.	Warning
PCI3039	A high-severity issue is detected is detected on a component in the slot <number> segment <seg>.	Critical
PCI3040	A high-severity issue is detected on a component at segment <seg>, bus <bus>, device <device>, and function <func>.	Critical

Table 11. CXL Memory Expansion AIC Error Reporting- PCIe Link Training

ID	Description	Severity level
UEFI0031	PCIe downtrain is detected on <device location>. Expected link width: <size> Actual link width: <size>.	Critical
UEFI0066	A PCIe link training failure is observed in <PCIe device> and the link is disabled. The system has halted.	Critical
UEFI0067	A PCIe link training failure is observed in <PCIe device> and device link is disabled.	Critical
UEFI0080	PCIe link speed is not optimal for <PCIe device>. Expected link speed: Gen <generation number> and actual link speed: Gen <generation number>.	Warning

Table 12. CXL Memory Expansion AIC Error Reporting- Device Initialization, Enumeration, and System Config

ID	Description	Severity level
UEFI0448	Unable to fully homogeneously interleave Compute Express Link (CXL) memory because the CXL hardware is incorrectly configured or has issues.	Warning
UEFI0449	BIOS is unable to initialize the server to use one or more CXL hardware devices installed in the server. This is because an unsupported CXL hardware configuration is used in the server.	Critical
UEFI0450	BIOS is unable to initialize the server to use one or more CXL hardware devices installed in the server because of hardware issues.	Critical
UEFI0451	Compute Express Link (CXL) hardware is not responding via the in-band management interface.	Critical

Table 13. CXL Memory Expansion AIC Error Reporting- Link and Protocol Boot Errors

ID	Description	Severity level
UEFI0056	One or more uncorrectable PCIe device issues have been detected during the Power-On-Self-Test (POST) operation.	Critical
UEFI0070	One or more correctable PCIe device issues have been detected during the Power-On-Self-Test (POST) operation.	Warning
UEFI0077	One or more uncorrectable PCIe device issues have been detected during the last boot operation.	Critical

CXL Memory Expansion AIC is compatible with Ubuntu 24.04.01 LTS (Kernel version: 6.8), and can be downloaded from ubuntu.com/download.

Topics:

- [Identify and Configure CXL Memory Expansion AIC](#)
- [Installation](#)

Identify and Configure CXL Memory Expansion AIC

Identifying CXL Adapters

Identifying CXL nodes with the `cxl` command

1. Run the command `cxl list`
 - CXL devices and NUMA nodes (regions) are displayed.

```

root@laas602ubuntu:~# cxl list
[
  {
    "memdevs": [
      {
        "memdev": "mem2",
        "ram_size": 412316860416,
        "serial": 1708480011612512256,
        "numa_node": 0,
        "host": "0000:0c:00.0"
      },
      {
        "memdev": "mem1",
        "ram_size": 412316860416,
        "serial": 12987647356546899968,
        "numa_node": 0,
        "host": "0000:0b:00.0"
      },
      {
        "memdev": "mem3",
        "ram_size": 412316860416,
        "serial": 7249649931752103936,
        "numa_node": 1,
        "host": "0001:0b:00.0"
      },
      {
        "memdev": "mem0",
        "ram_size": 412316860416,
        "serial": 5596905524127129600,
        "numa_node": 1,
        "host": "0001:0c:00.0"
      }
    ]
  },
  {
    "regions": [
      {
        "region": "region0",
        "resource": 242665652224,
        "size": 824633720832,
        "type": "ram",
        "interleave_ways": 2,
        "interleave_granularity": 256,
        "decode_state": "commit"
      },
      {
        "region": "region1",
        "resource": 1376537018368,
        "size": 824633720832,
        "type": "ram",
        "interleave_ways": 2,
        "interleave_granularity": 256,
        "decode_state": "commit"
      }
    ]
  }
]
root@laas602ubuntu:~#

```

Figure 11. CXL devices list and NUMA nodes

Identifying CXL adapters on the PCIe bus.

1. Run the command `lspci | grep CXL`
- SMART CXL adapters should be listed, along with their PCIe addresses.

```

root@laas602ubuntu:~# lspci | grep CXL
0000:0b:00.0 CXL: SMART Modular Technologies Device c241
0000:0c:00.0 CXL: SMART Modular Technologies Device c241
0001:0b:00.0 CXL: SMART Modular Technologies Device c241
0001:0c:00.0 CXL: SMART Modular Technologies Device c241
root@laas602ubuntu:~#

```

Figure 12. SMART CXL adapters

Identifying CXL NUMA nodes with `numactl`

1. Run the command `numactl -H`
- CXL NUMA nodes are listed as nodes without CPUs.

```

root@laas602ubuntu:~# numactl -H
available: 4 nodes (0-3)
node 0 cpus: 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
4 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108
0 142 144 146 148 150 152 154 156 158 160 162 164 166 168
node 0 size: 225359 MB
node 0 free: 223912 MB
node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
5 77 79 81 83 85 87 89 91 93 95 97 99 101 103 105 107 109
1 143 145 147 149 151 153 155 157 159 161 163 165 167 169
node 1 size: 290271 MB
node 1 free: 288936 MB
node 2 cpus:
node 2 size: 774100 MB
node 2 free: 773993 MB
node 3 cpus:
node 3 size: 774135 MB
node 3 free: 774027 MB
node distances:
node  0  1  2  3
  0:  10  21  14  24
  1:  21  10  24  14
  2:  14  24  10  26
  3:  24  14  26  10
root@laas602ubuntu:~#

```

Figure 13. CXL NUMA nodes

Verify memory size with “free”

1. Run the command `free -g`
- The combined amount of CXL and conventional memory is displayed.

```

root@laas602ubuntu:~# free -g
              total          used          free      shared  buff/cache   available
Mem:           2015             7          2012           0           0          2007
Swap:            7             0             7
root@laas602ubuntu:~# |

```

Figure 14. Combined amount of CXL and conventional memory

Installation

Obtaining Ubuntu

A trial and installation ISO file can be downloaded from ubuntu.com/download.

Patching

Dell requires that all operating system patches be kept up to date.

Installing CXL CLI tools

CXL command-line tools (such as numactl, cxi, so on) can be installed from the same preconfigured Canonical Ubuntu repositories that include other software packages that are provided by Ubuntu. The command `apt install <package>` will automatically resolve dependencies and install the given package.

Useful packages for CXL enumeration and management are:

Table 14. Packages

Package name	Utilities provided by this package
cxl	cxl
numactl	numactl
daxctl	daxctl
free	procps
lspci	pciutils

Ubuntu 24.04.01 features

Notable Features Missing or With Partial Support in Ubuntu 24.04.01 are as follows:

- Memory page retirement
- Partial DPA to HPA address translation
- XOR interleave translation (this feature is required to perform address translation for interleaved devices)
- Memory online and offline is not supported

Ubuntu CXL Errata

The `cxl list` command may not work properly on the R7725 platform .

```
root@dell:~# cxl list
[
  {
    "memdev": "mem1",
    "ram_size": 549755813888,
    "serial": 5596905524127129600,
    "numa_node": 0,
    "host": "0000:3f:00.0"
  },
  {
    "memdev": "mem0",
    "ram_size": 549755813888,
    "serial": 1708480011612512256,
    "numa_node": 1,
    "host": "0001:3f:00.0"
  }
]
root@dell:~# █
```

Address translation is not supported on the R7725 platform (Conventional memory mode only).
See [ubuntu.com blog](https://ubuntu.com/blog), announcements, and notifications for ongoing operating system information.

Firmware update

Topics:

- [Dell Update Package](#)

Dell Update Package

Prerequisites

Download the Memory Expansion AIC FW from the [Dell Support](#) page.

NOTE: Update iDRAC to the latest version before applying the CXL Memory Expansion AIC DUP.

Steps

1. Boot to the operating system and confirm that CXL Memory Expansion AIC firmware is displayed in the firmware inventory.
2. Log in to iDRAC. Navigate to **Maintenance > System Update** and upload the DUP package.
3. Select the .exe file from the Update Details and select "Install".
4. The firmware update job is created in the Job Queue.
5. After the firmware update is successfully completed, the changes will take effect after the server is restarted.

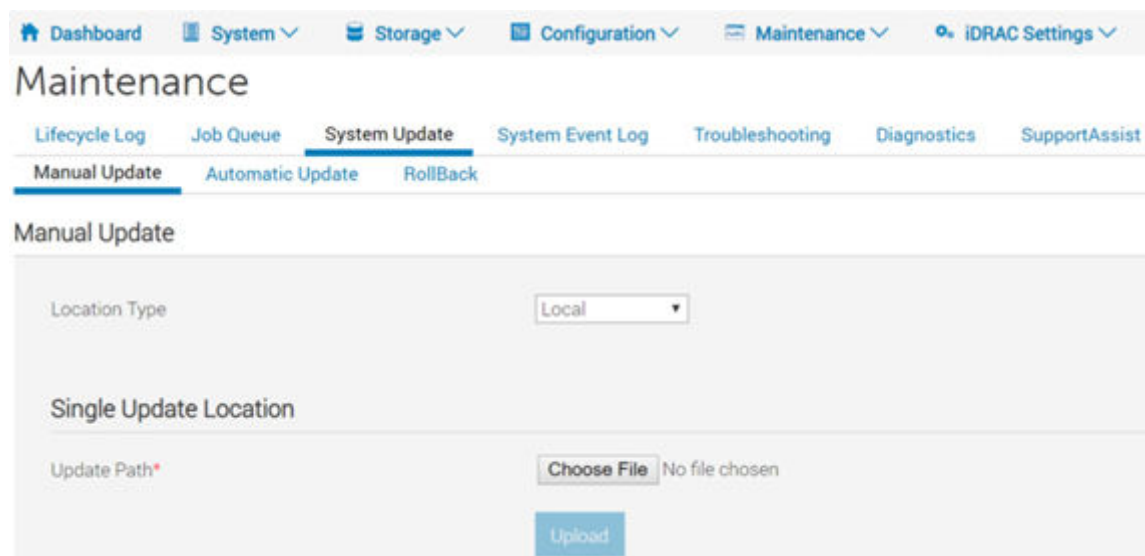


Figure 15. System update via iDRAC

NOTE:

- a. Before updating the CXL firmware, boot into the operating system and verify that the CXL device firmware version is listed in the Firmware Inventory.
- b. Do not perform other applications or update other component firmware while performing the CXL firmware update.
- c. Do not power cycle or reset the system during the package update process.
- d. For the initial release, the DUP firmware is not available for customers to download. It will be provided in the June release.

Getting Help

Topics:

- [Contacting Dell](#)
- [Documentation matrix](#)
- [Documentation feedback](#)
- [Locating your system Service Tag](#)

Contacting Dell

Dell provides several online and telephone-based support and service options. If you do not have an active internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country or region or region and product, and some services may not be available in your area. :

To contact Dell for sales, technical support, or customer service issues:

1. Go to [Dell Support](#) page.
2. Select your country or region from the drop-down menu on the lower right corner of the page.

For Customized support:

1. Enter your system Service Tag in the Enter your Service Tag field
2. Click Submit.
3. The support page that lists the various support categories is displayed.

For General support:

1. Select your product category.
2. Select your product segment.
3. Select your product.
4. The support page that lists the various support categories is displayed.

For contact details of Dell Global Technical Support:

1. Click Global Technical Support.
2. The Contact Technical Support page is displayed with details to call, chat, or email the Dell Global Technical Support team .

Documentation matrix

The documentation matrix provides information about documents that you can see for setting up and managing your system.

- The user may choose to reconfigure memory from device DAX mode to system RAM mode before using CXL memory. For more information, see [ndctl user guide](#).
- For more information about updating firmware's using Lifecycle Controller, see: Lifecycle Controller User's Guide is available at [iDRAC Manuals](#).

Documentation feedback

Click the Feedback link in any of the Dell documentation pages, fill out the form, and click Submit to send your feedback.

Locating your system Service Tag

Your system is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the front of a physical DR Series system by pulling out the information tag. The service tag can also be found on the Support page in the UI. This information is used to route support calls to the appropriate personnel for resolution.