



# OSS-579 Gen5 Adapter Card



## INSTALLATION GUIDE

OSS-579 Gen5 Adapter Card



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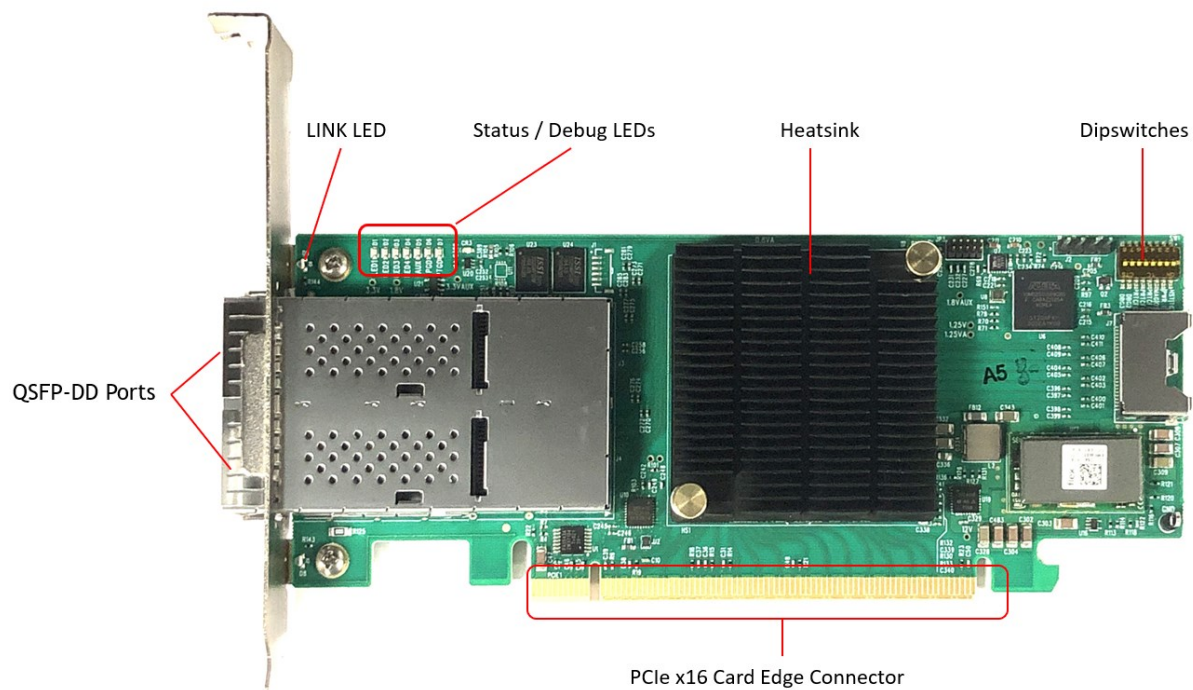
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# 1 Technical Information

## 1.2 Product Information

PCIe x16 Gen 5 host interface board with PCIe dual QSFP-DD cable connectors that can be configured as x16 or two x8 cable ports.

- The cable adapter operates in host or target mode controlled with DIP switch settings.
- With the OSS-PCIe5-HIB732-x16-H installed in a PCIe slot in PCIe Gen 5 motherboard and the OSS-PCIe5-HIB732-x16-T installed in an external target chassis full 128 GB/sec (full duplex) PCIe Gen 5 bandwidth is enabled using dual custom QSFP-DD copper cables up to 2m in length.
- All PCIe devices in the remote chassis appear to the host CPU as directly connected PCIe peripherals on the PCIe switch fabric.



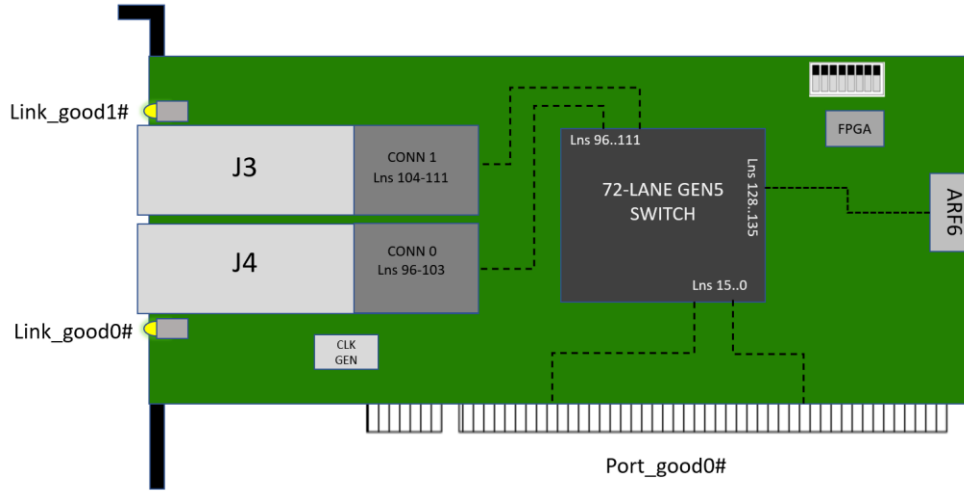
### 1.3 General Specification

Form Factor	PCIe 5.0 x16 add-in card
Dimensions	6.6" x 2.65" (16.76 x 6.73 cm) at 0.063" (1.6mm) thickness
Bandwidth	32GT/sec per lane, 128 GB/sec (full duplex) with x16 lanes
Connectors	PCIe x16 card edge connector Dual QSFP-DD connectors with custom pin-out (OSS cables required) 1 additional internal x8 PCIe ARF connector
Bracket	Standard and low-profile brackets available
PCIe Switch	Broadcom PEX 89072 <ul style="list-style-type: none"> <li>• 32 GT/sec 72 lane PCI Express Gen 5 Switch</li> <li>• DMA Controller</li> <li>• SSC Isolation</li> </ul>
Switch Latency	150 nsec
Cable Types	Supports the following cable types: <ul style="list-style-type: none"> <li>• Custom QSFP-DD PCIe CMI copper cables; .5m, 1m, 2m, 3m</li> <li>• Remote power and reset control</li> </ul>
Cable Connection Modes	One x16 host connection via edge card to: <ul style="list-style-type: none"> <li>• One x16 cable connection</li> <li>• Two x8 cable connections</li> </ul>
Power	20 W Max 1.5A @3.3V 1.2A @12V 250mA@3.3 aux
Operating Temperature	0 C to +40 C
Storage Temperature	-40 C to 85 C
Operating Humidity	10% to 90% relative humidity non-condensing
Storage Humidity	5% to 95% relative humidity non-condensing
Agency Compliance	Designed to meet the following agency standards: <ul style="list-style-type: none"> <li>• FCC—Part 15 Class A, 47CFR; Canada ICES-003, issue 4, Class A; Japan: VCCI, Class A; CE Emission 2004-108EC</li> <li>• UL/IEC 62368-1; Canada: CSA C22.2 No. 62368-1; Argentina: IEC62368-1; IEC 62368-1 (CB Certificate and CB Test Report)</li> <li>• CE Mark (EN55022 Class A, EN62368-1, EN55024, EN61000-3-2, EN61000-3-3)</li> <li>• CISPR 22, CISPR 24, Class A; Australia/New Zealand AS/NZS CISPR 22, Class A</li> <li>• RoHS 3 Compliance (Directive 2015/863/EC)</li> </ul>
Drivers / Software	Requires no software / driver installation
Supported Operating Systems	Windows 10 & Windows 10 Pro Windows 2012 Server and higher Centos 7 Ubuntu 16x and higher

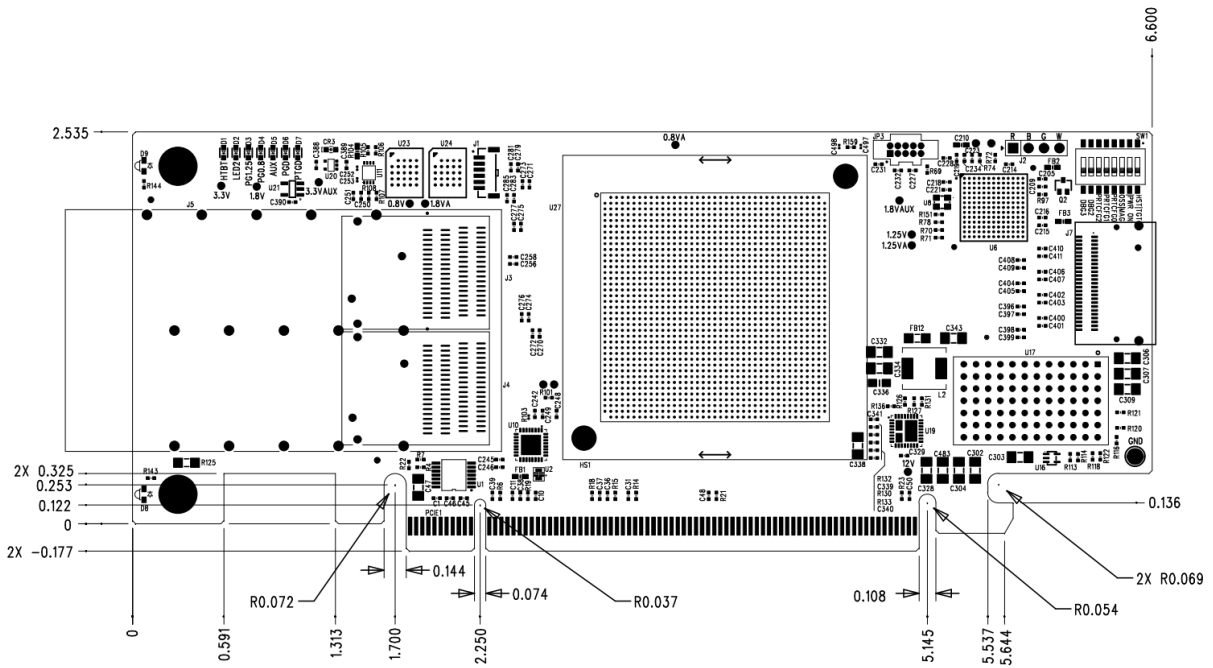
### 1.4 Features

- Operates at PCIe Gen 5 speeds up to 32 GT/sec per lane.
- Delivers 128 GB/sec (full duplex) bandwidth with x16 lanes.
- No drivers required.
- Utilizes custom QSFP-DD cables with sideband signals to support power control and remote reset (CMI functionality) x8 lanes per cable, 2 x8 cables used for x16 link.
- Can operate either Host or Target mode with the correct dipswitch settings.

### 1.5 Block Diagram



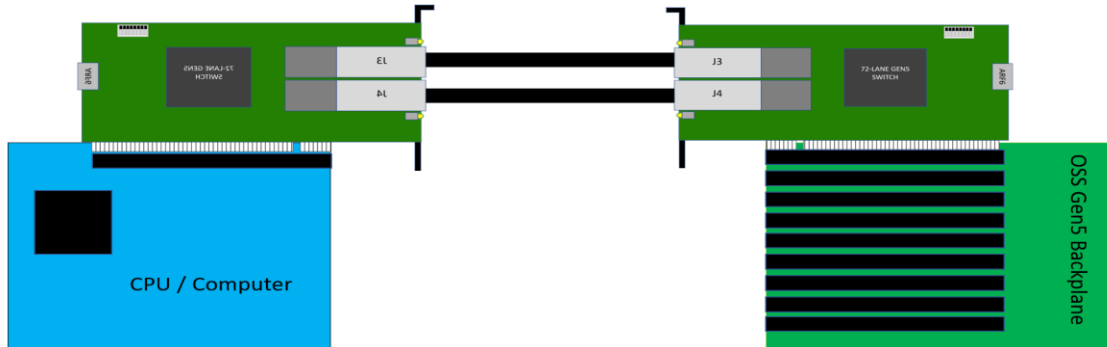
### 1.6 Dimensions



## 1.7 Supported Use Cases

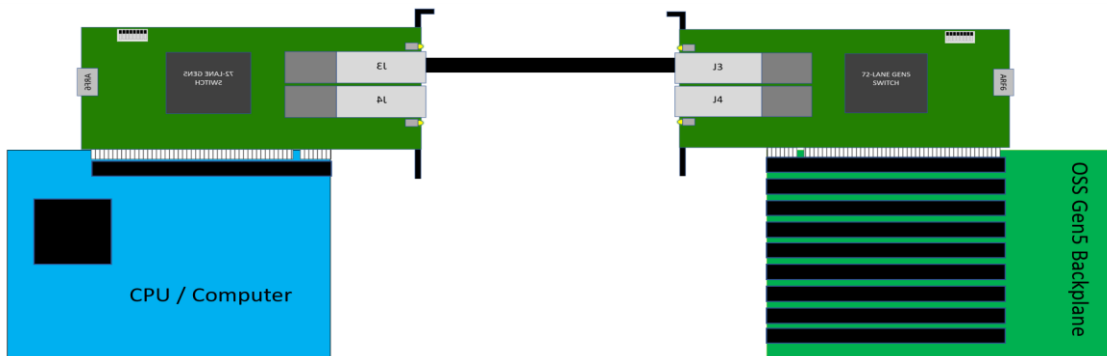
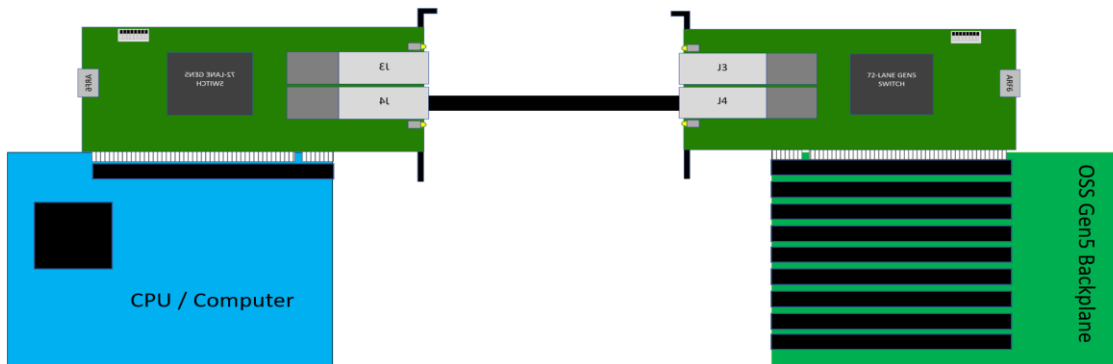
### 1.7.1 x16 Use Case

Using two link cables connected between a host computer and a Gen5 backplane or an OSS expansion unit.



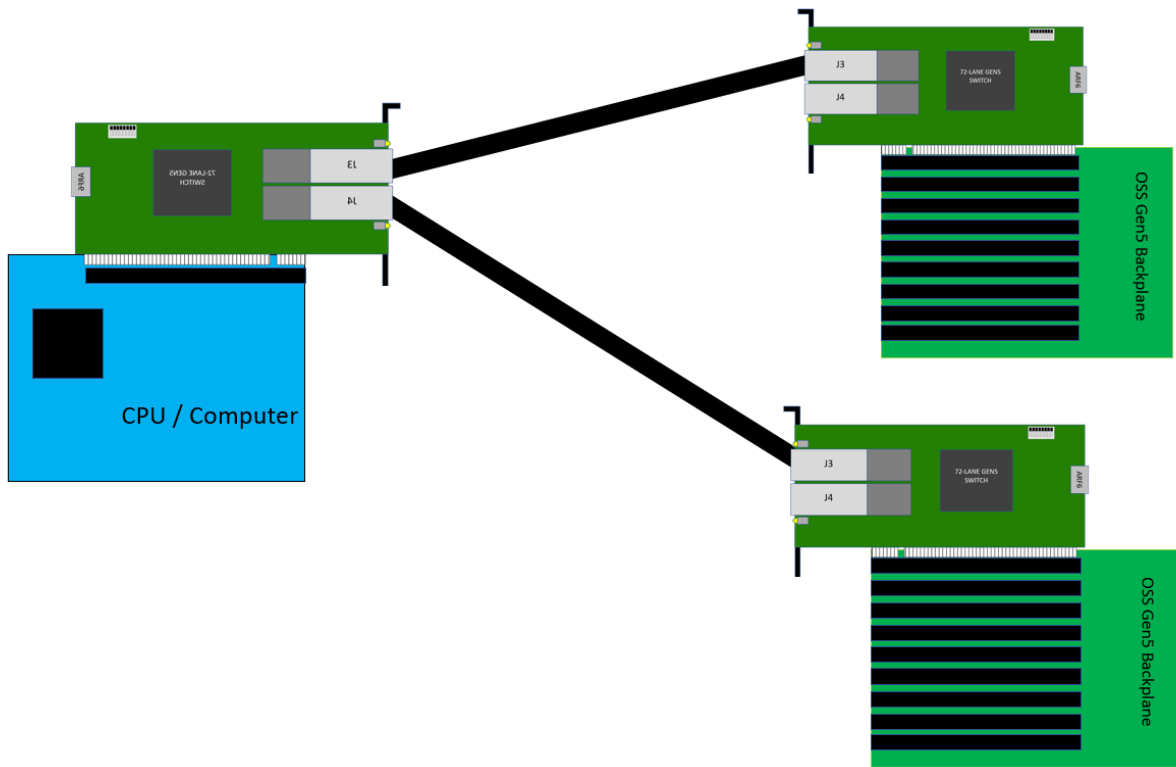
### 1.7.2 x8 Use Case

Using one link cable connected between a host computer and Gen5 backplane or an OSS expansion unit.



### 1.7.3 x16-x8,x8 Use Case

A single host computer connected to two OSS Gen5 backplanes or two expansion units via x8 link connection.





## 1.8 Card Dipswitch Settings

The following photos are three different dipswitch-mode settings on the OSS-579 adapter cards.

### 1.8.1 x16 Host mode

X16 Host mode requires two link cables

1	HOST	TARGET	=	HOST = OFF
2	#PWR ON		=	OFF
3	MAGMA	OSS	=	OFF
4	PRTCFCGO		=	ON
5	PRTCFCG1		=	ON
6	PRTCFCG2		=	ON
7	DBG2		=	ON
8	DBG3		=	OFF



### 1.8.2 x8 Host mode

X8 Host mode uses only one link cable

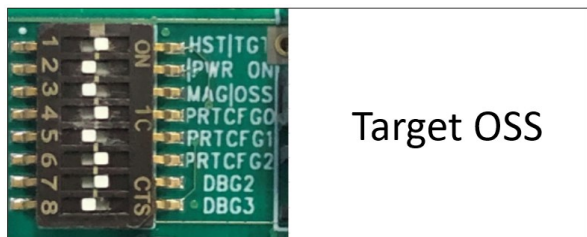
1	HOST	TARGET	=	HOST = OFF
2	#PWR ON		=	OFF
3	MAGMA	OSS	=	OFF
4	PRTCFCGO		=	OFF
5	PRTCFCG1		=	ON
6	PRTCFCG2		=	ON
7	DBG2		=	ON
8	DBG3		=	OFF



### 1.8.3 Target mode

Target mode will only work on OSS backplane (Upstream slot #0).

1	HOST	TARGET	=	TARGET = ON
2	#PWR ON	#PWRT ON	=	OFF
3	MAGMA	OSS	=	OFF
4	PRTCFCGO		=	ON
5	PRTCFCG1		=	OFF
6	PRTCFCG2		=	ON
7	DBG2		=	ON
8	DBG3		=	OFF



## 1.9 LED Indicators

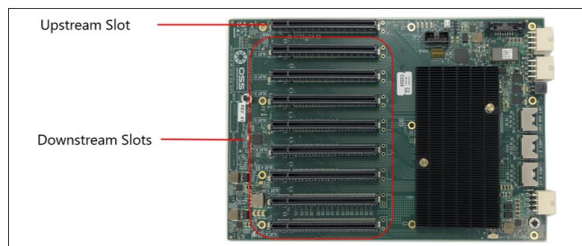
579 LED	Color	NAME	Normal State	Description
D1	Green	Debug LED1	ON	Reserved for Atlas switch heartbeat – currently not implemented
D2	Green	Debug LED2	ON	currently unused
D3	Green	Debug LED3	ON	Power good 1.25V (switch serdes power)
D5	Green	Aux Power	ON	3.3V AUX power ON
D6	Green	PGD - Power Good	ON	All power good
D9	Green	Link LED	ON	Link Status: -- Cbl link status (D8 -bottom cable) indicates bottom cable link status only if in x8x8 mode, rate as above. -- Cbl link status (D9 – top cable) indicates x16 link status of both cables or top cable in x8x8 mode.
CR3	Red	PEX Fatal Error	OFF	When ON= Error or Faulty
D7	Green	PTGD - Port Good	ON	Card Edge Link status: --ON (steady state) indicates Gen5 link --Blink rate 2 Hz indicates Gen4 link --Blink rate 1 Hz indicates Gen3 link --Blink rate 0.5 Hz indicates Gen2 link --Blink rate 0.25 Hz indicates Gen1 link

## 2 Hardware Requirements

This section provides the hardware parts needed for the OSS-579 adapter card to work. It is highly recommended to follow and use the hardware requirements below.

1. Two OSS-57 card
  - a. OSS-579 Target card
  - b. OSS-579 Host card
2. Gen 5 PCIe x8 Cable (qty: 2): QSFP-DD Cables
3. Gen 5 x16 PCIe slot (computer motherboard)
4. Gen 5 OSS backplane (OSS-581)
  - a. Using a non-OSS backplane is not supported and will not work.
5. ATX Power Supply: Minimum of 400 Watt

To achieve superior performance and reliability it is recommended to use the Adapter cards with compatible OSS Gen5 backplane (OSS-581), see photo below.



## 3 Software Requirements

The adapter card requires no driver installation in Windows OS and Linux.

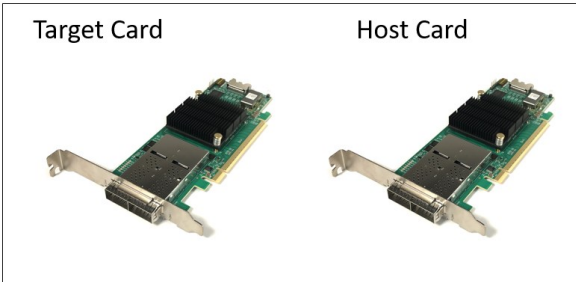
Computer running the following operating systems:

- a. Windows 10 or Windows 10 Pro
- b. Server 12 and higher
- c. Centos 7
- d. Ubuntu 18 and higher

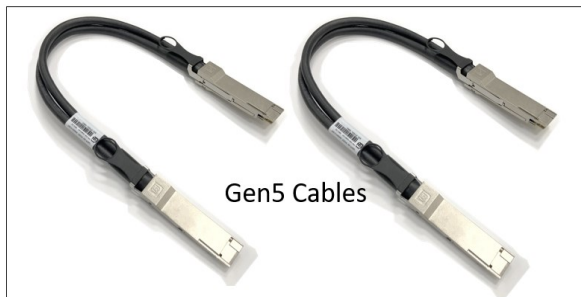
## 4 Unpacking

Check and identify the standard supplied item.

- Check the board make sure you have the correct Gen5 adapter card, see photo below.
- Inspect the board for physical defects and damages.



- If you ordered the adapter cards (host and target) with link cable(s), make sure the cables are included, see photo below.
- The Gen5 cables (QSFP-DD) are sold separately.



## 5 Setup / Installation

The following steps will guide you through the installation of your OSS-579 card.

### 5.1 Installation Overview

Following steps provide the exact sequence that needs to be followed for setting up the OSS-579 adapter cards.

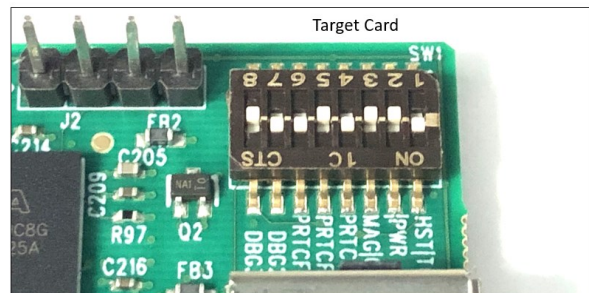
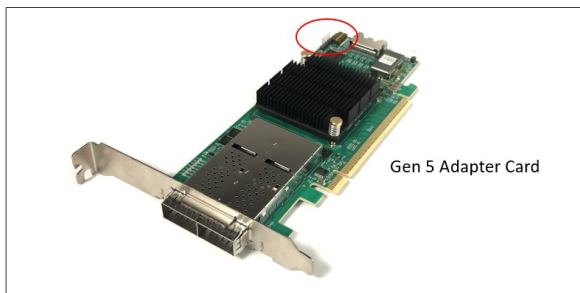
1. Set the Dipswitches
2. Prepare OSS backplane or expansion unit
3. Install the Adapter cards
4. Install QFSPD cables
5. Power UP the unit
6. Verify Installation

### 5.2 Set Dipswitches

Prior to installation, you must set the dipswitches on the OSS-579 adapter cards. Configure the card depending on what mode it will be used (Host mode or Target mode).

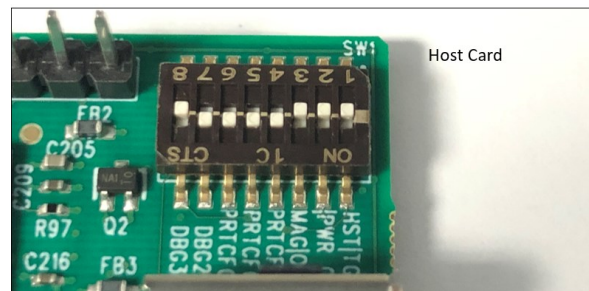
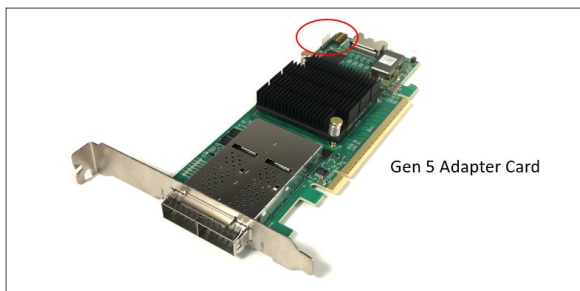
#### 5.2.1 Set Target Card Dipswitches

Set the dipswitches on the card to target mode, see photo below for correct settings



#### 5.2.2 Set Host Card Dipswitches

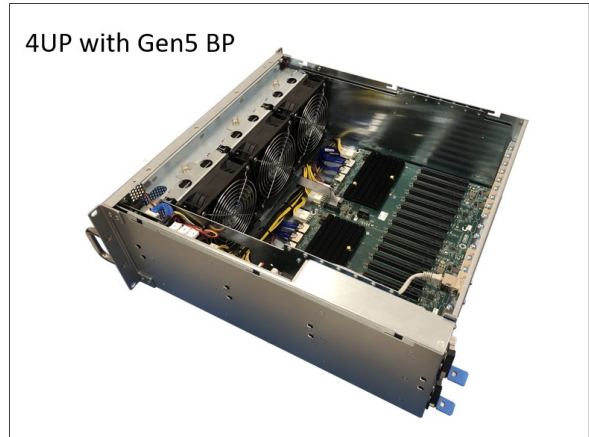
Set the dipswitches on the card to host mode, see photo below.



### 5.3 Prepare OSS Backplane

Prior to installation of the adapter card make sure the OSS backplane is properly configured. Use an OSS-581 Gen5 Backplane or an expansion chassis equipped with Gen5 backplane, see photos below.

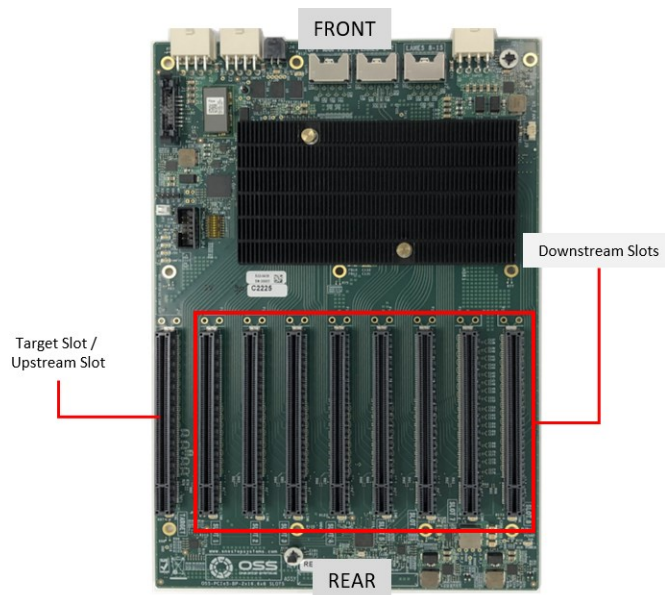
To setup and configure the Gen5 backplane, refer to the Gen5 backplane's installation guide.



### 5.4 Install Target Card

Use the designated Target Slot / Upstream Slot on the backplane when installing the card.

- Plugin the target card in the upstream slot on the backplane.
- See photo below for the correct default location of the Target slot (Upstream Slot).





Align the card-edge connector on top of the PCIe slot # 0 (Target slot / Upstream slot).

- Slowly and gently push the card down until it is firmly seated
- Secure the card.

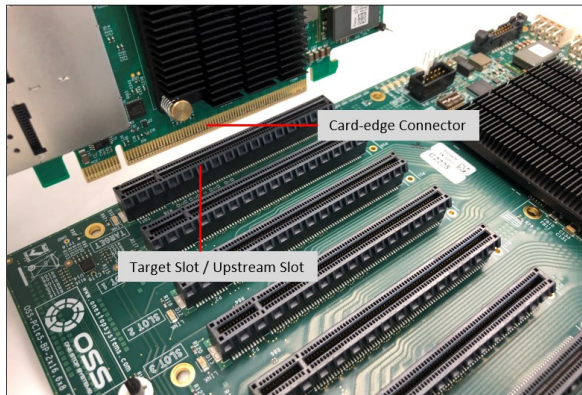
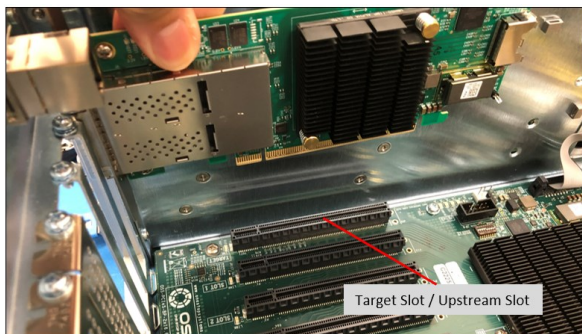


Photo below showing the Target card installation in the expansion chassis.

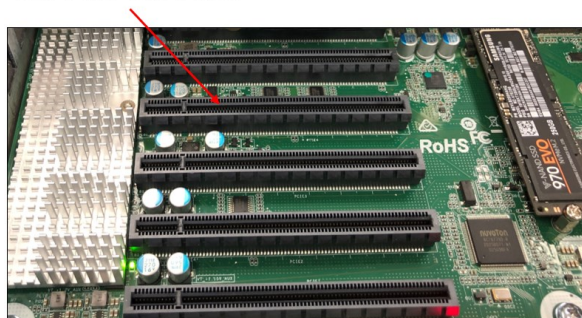


## 5.5 Install Host Card

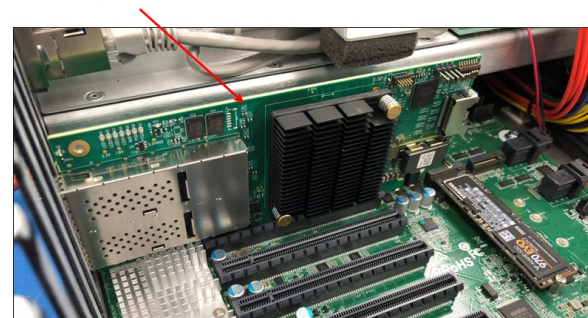
Plug in the host card in the computer / server.

- The host card can only be installed in the computer. Install the Host card in an x16 Gen5 PCIe slot.

x16 PCIe Gen 5 slot

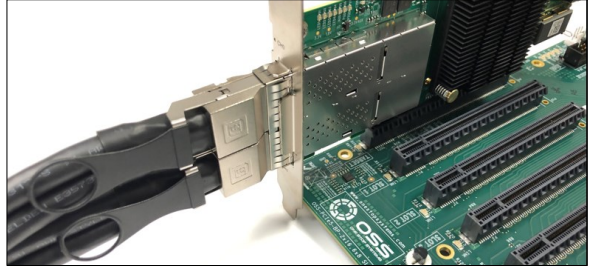
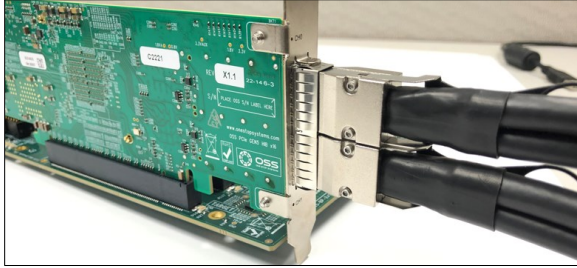


OSS Gen5 Host Card

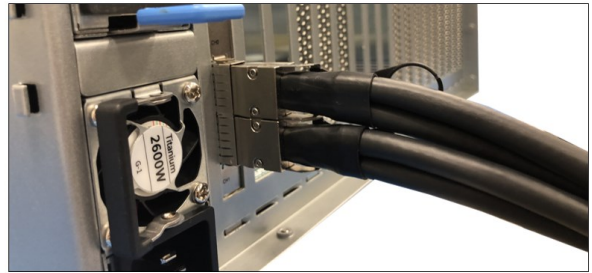
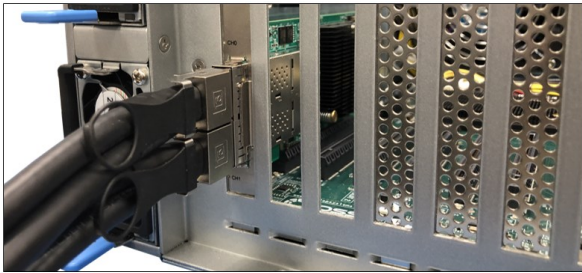


## 6 Cable Installation

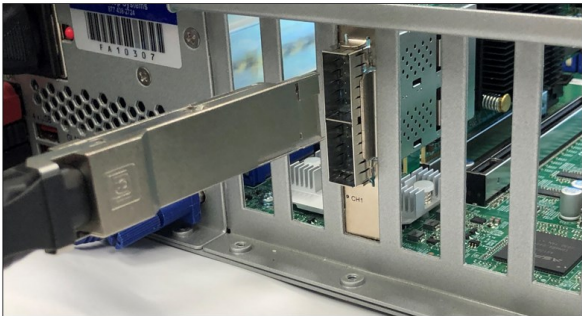
Plug in the two cables to the target card. See photos below for the correct orientation of the cables when connecting to the card.



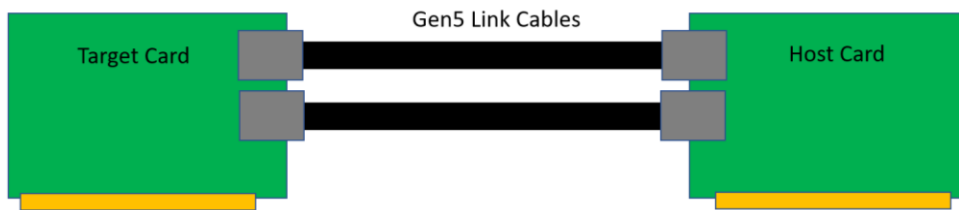
Photos below show the two link cables connected to the target card in the expansion chassis



Connect the other end of the cables to the host adapter card.



Use the diagram below as reference when connecting the cables between the host and target cards.





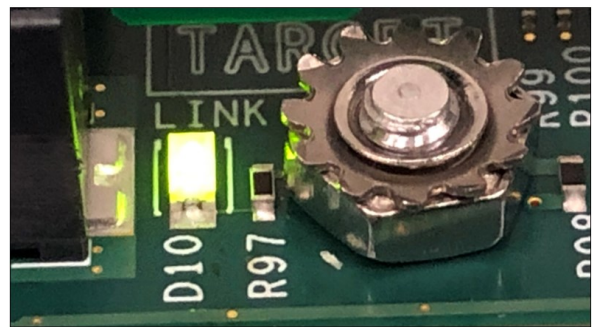
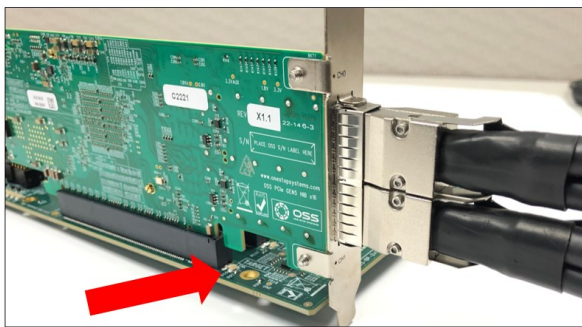
## 7 Powering UP the unit

- Power ON the Gen5 backplane first.
- Turn ON the host computer

## 8 Hardware Check

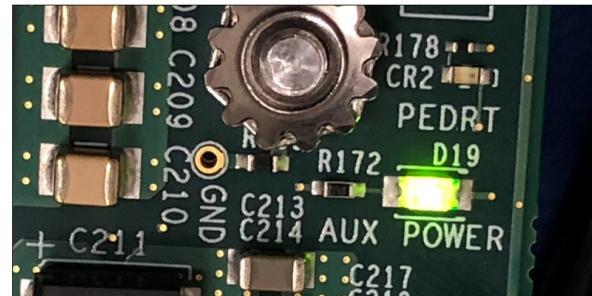
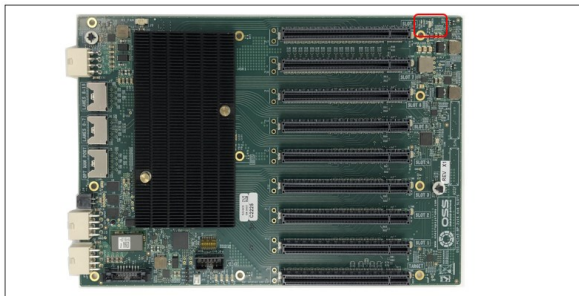
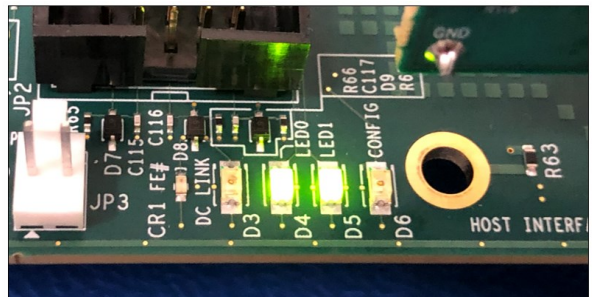
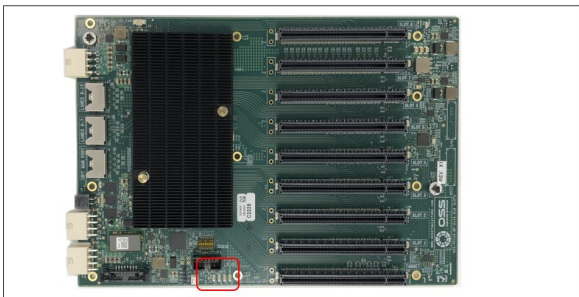
### 8.1 Verify Board LEDs

After powering UP the host computer, the Target SLOT LED on the backplane will illuminate as solid green as shown below.



Check the board LEDs. A fully operational back plane will illuminate the following LEDs.

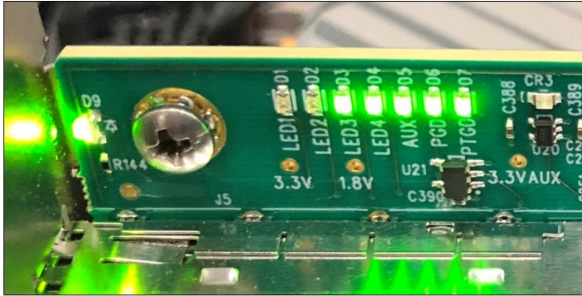
- D4 & D5
- D19: AUX power, solid green.



## 8.2 Verify Adapter Card LEDs

After powering ON the host computer, it will instantly power UP the target device.

- A fully operational adapter cards will illuminate the following LEDs (on both Host and Target cards).



## 9 Post Installation

Verify the OSS hardware after installation.

### 9.1 Linux

To check or verify if the OSS devices are detected, type or enter the command “`lspci -vvv |grep c030`”, see output below.

- It will show 46 total number of c030 device IDs, combining both OSS\_579 adapter cards and the OSS\_581 board.
- The c030 is the vendor device ID of the OSS\_579 card and OSS\_581.

The screenshot below shows 46 c030, indicating that the host device is communicating with the target and expansion backplane.

```

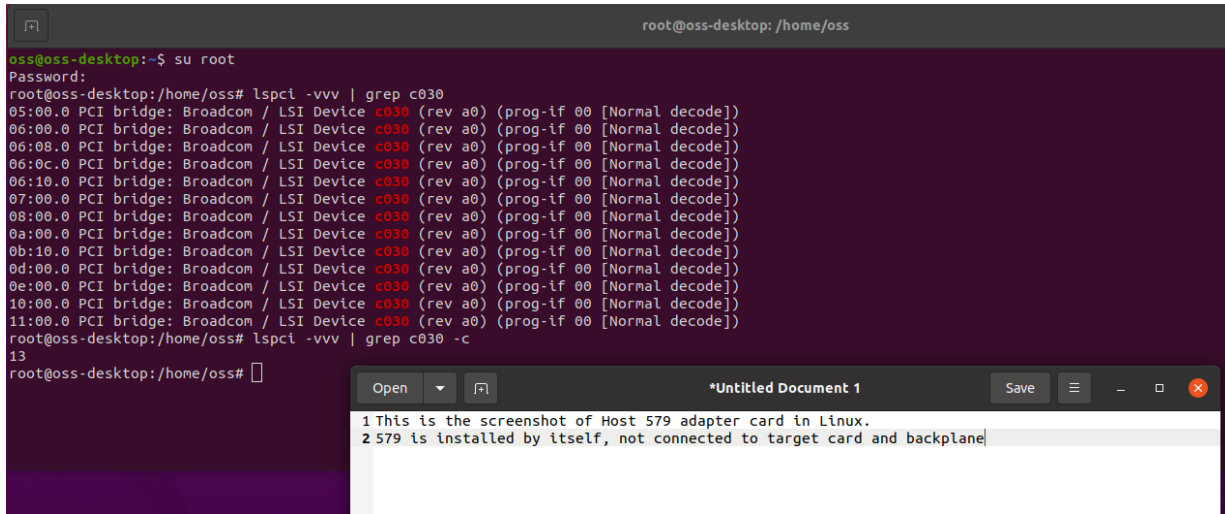
root@OSSuperServer:~# lspci -vvv | grep c030 -c
46
root@OSSuperServer:~#

root@OSSuperServer:~# root@OSSuperServer:~# lspci -vvv | grep c030
84:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
85:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
85:08.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
85:0c.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
85:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
86:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
87:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
89:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8a:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8c:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8d:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8e:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8f:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8f:08.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8f:0c.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
8f:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
90:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
91:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
91:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
93:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
94:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
94:04.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
94:08.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
94:0c.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
94:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
95:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
96:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
96:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
99:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
9a:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
9a:08.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
9d:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
9f:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a0:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a0:08.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a0:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a0:18.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a5:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a6:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a8:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
a9:10.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
ab:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
ad:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
ae:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
b0:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])
b1:00.0 PCI bridge: Broadcom / LSI Device c030 (rev a0) (prog-if 00 [Normal decode])

```

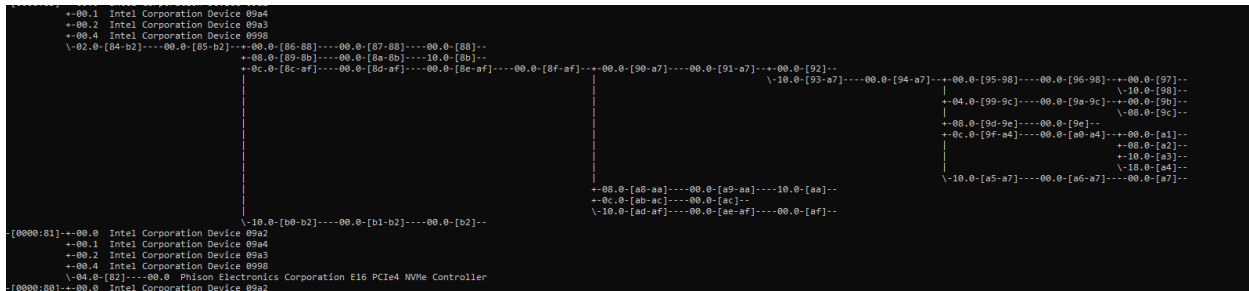
The screenshot below shows the output of “lspci -vvv |grep c030” with the OSS\_579 host card only being detected.

- This is the single OSS\_579 host card displaying 13 of c030 device IDs.



To check on the OSS-581 device hierarchy type or enter the command on a terminal window “lspci -vvtt”.

The screenshot below shows the hierarchy (tree-like structure) of the OSS\_581 backplane without PCIe cards in the slots.



Below photo is the tree-like structure of the OSS\_581 backplane with all 8 slots populated with different PCIe cards.

- Using the same command “lspci -vvtt”.

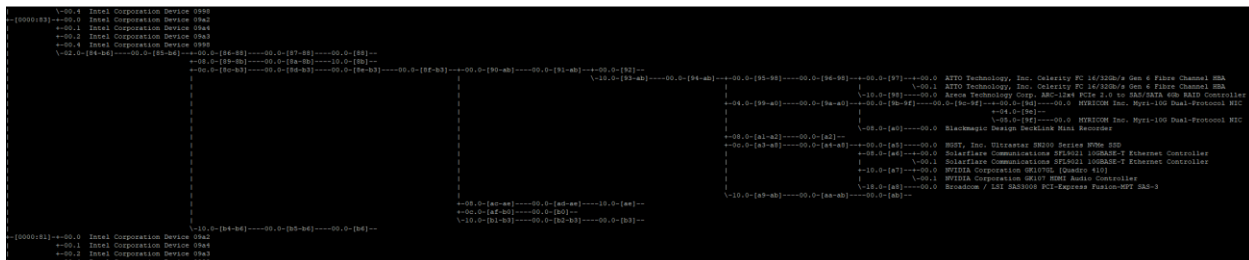
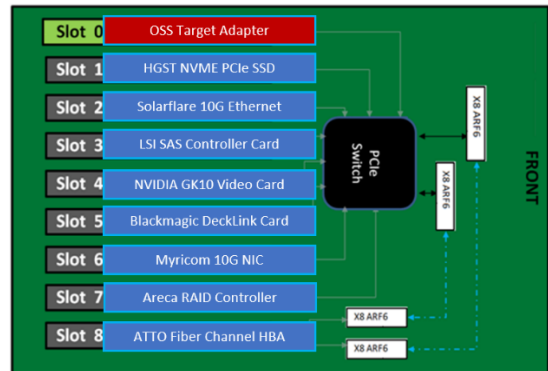


Photo below shows the hierarchy order of eight physical slots on the OSS\_581 backplane populated with different PCIe cards.

```

00.0-[92]--
10.0-[93-ab]----00.0-[94-ab]---+00.0-[95-98]----00.0-[96-98]---+00.0-[97]---+00.0  ATTO Technology, Inc. Celerity FC 16/32Gb/s Gen 6 Fibre Channel HBA
|
| \-00.1 ATTO Technology, Inc. Celerity FC 16/32Gb/s Gen 6 Fibre Channel HBA
| \-10.0-[98]----00.0  Areca Technology Corp. ARC-116x PCIe 2.0 to SAS/SATA 6Gb RAID Controller
++04.0-[95-a0]----00.0-[9a-a0]---+00.0-[9a-9d]----00.0-[9c-9d]---+00.0-[9d]---+00.0  MYRICON Inc. Myri-10G Dual-Protocol NIC
|
| \-04.0-[9e]--
| \-05.0-[9e]---00.0  MYRICON Inc. Myri-10G Dual-Protocol NIC
|
+00.0-[a1-a2]----00.0-[a2]--
| \-00.0-[a0]----00.0  Blackmagic Design DeckLink Mini Recorder
|
+0c.0-[a3-a8]----00.0-[a4-a8]---+00.0-[a5]----00.0  HGST, Inc. Ultrastar SN200 Series NVMe SSD
|
| \-00.0-[a6]---+00.0  Solarflare Communications SFP9021 10GBASE-T Ethernet Controller
| \-00.1  Solarflare Communications SFP9021 10GBASE-T Ethernet Controller
++10.0-[a7]---+00.0  NVIDIA Corporation GK107GL [Quadro 410]
|
| \-00.1  NVIDIA Corporation GK107 HDMI Audio Controller
| \-10.0-[a8]---+00.0  Broadcom / LSI SAS3000 PCI-Express Fusion-MPT SAS-3
|-10.0-[a9-ab]----00.0-[aa-ab]----00.0-[ab]--
10.0-[ae]--
00.0-[b3]--
  
```

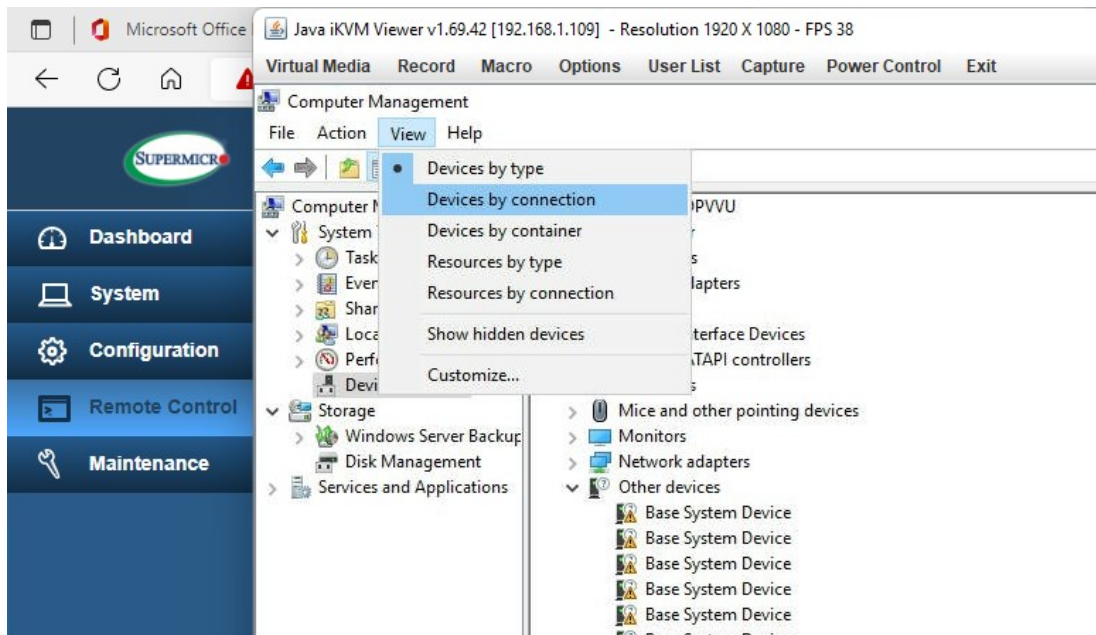
- ATTO Card----->>> is in slot# 8
- Areca RAID Controller Card----->>> is in slot# 7
- Myricom 10G Ethernet Card----->>> is in slot# 6
- Black Magic DeckLink Card----->>> is in slot# 5
- HGST NVMe PCIe SSD Card----->>> is in slot# 1
- Solarflare 10G Ethernet Card----->>> is in slot# 2
- NVIDIA GK107 Video Card----->>> is in slot# 4
- LSI SAS Controller Card----->>> is in slot# 3





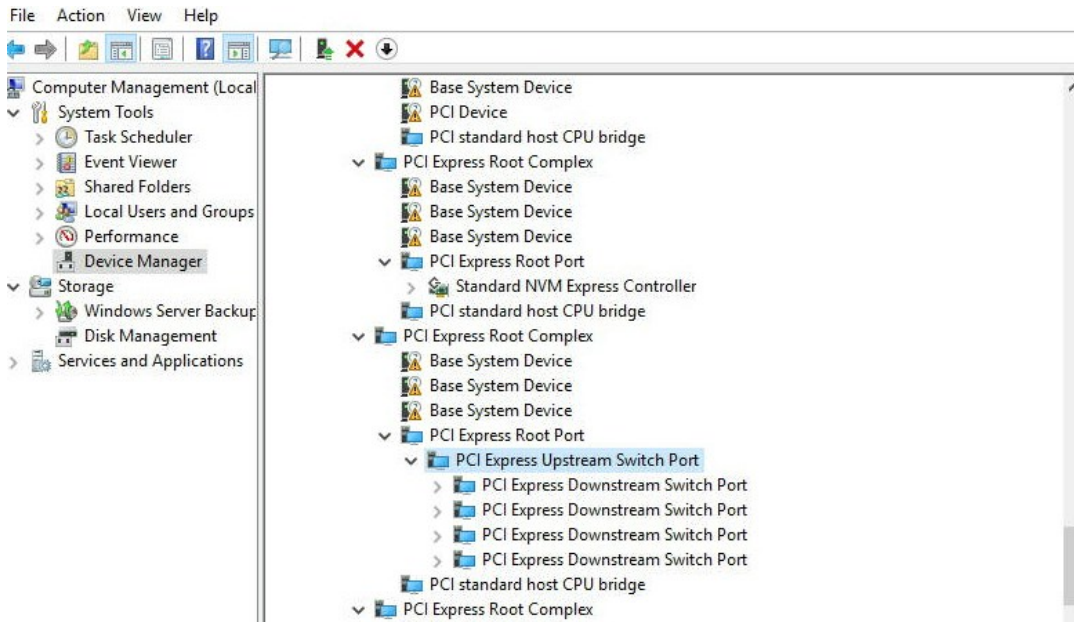
## 9.2 Windows

Start the Windows Device Manager, select view from the top menu, and then select 'Device by Connection'.



Select and expand PCI Express Root Port.

- An instance of PCI Express Upstream Switch Port will appear; select and expand the arrow signs.
  - Four instances of PCI Express Downstream Switch Ports will show up.
  - Select and expand all PCI Express Downstream Switch Ports.



Continue to expand all arrow signs until everything is fully expanded.

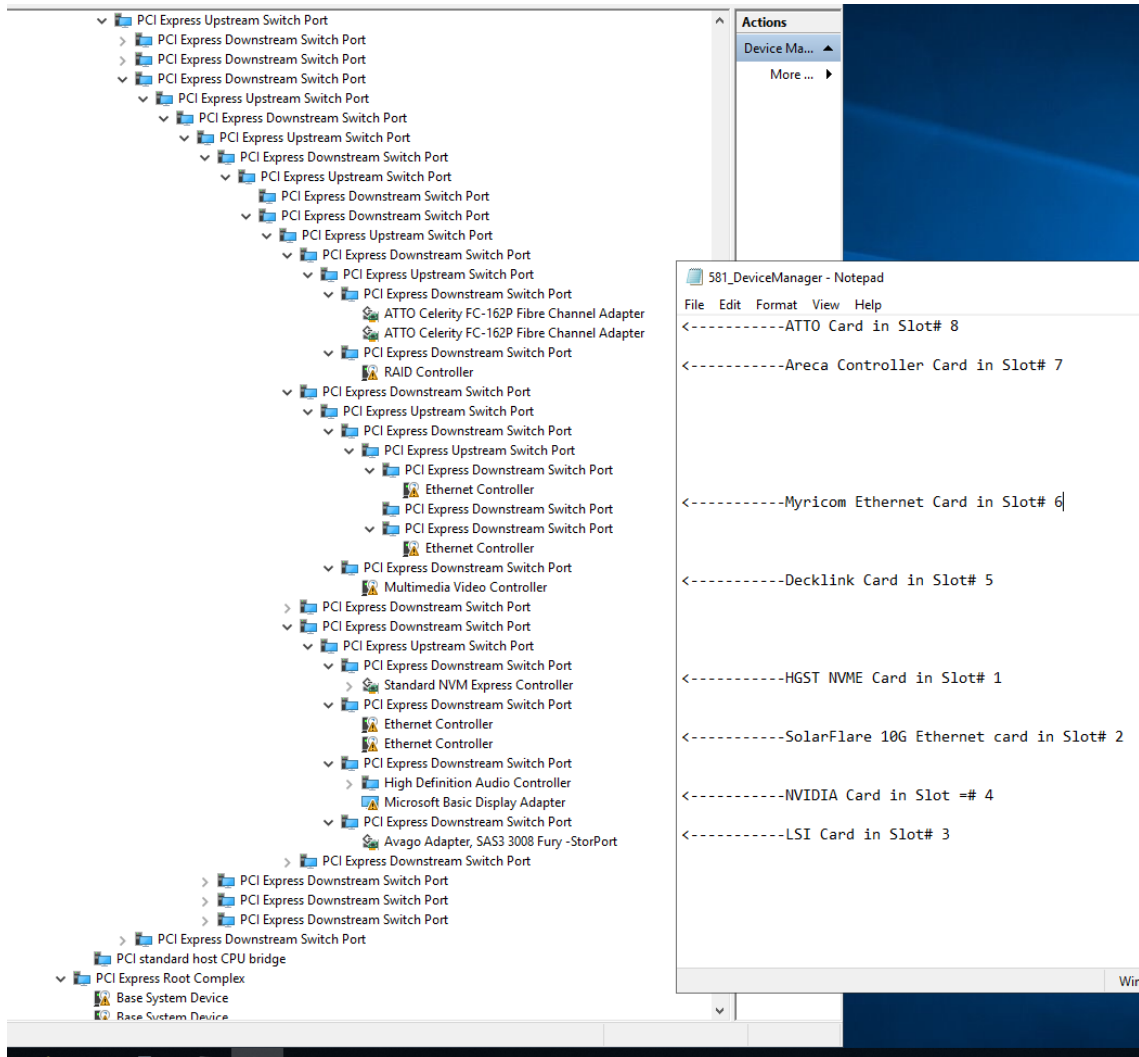
The screenshot below shows a fully expanded PCI Express Upstream and downstream Ports.

- Displaying the OSS-581 + both OSS-579 cards are detected in Windows Device Manager.
- There are no PCIe cards installed in the slots.



The screenshot below shows the hierarchy of OSS\_581 card slots populated with 8 different PCIe cards.

- All 8 PCIe cards are detected in Windows Device Manager.





## 10 How to Get More Help

### 10.1 Contacting Technical Support

Our support department can be reached by phone at [1 \(760\) 745-9883](tel:17607459883). Support is available Monday through Friday, 8:00 AM to 5:00 PM PT. When contacting Technical Support make sure to include the following information:

1. Exact and correct serial #
2. Service Ticket or Case # (if you already submitted an online request)
3. Computer Type & Model: Operating System
4. Make & Model of PCI/PCIe cards: Application
5. Problem description

When submitting an online technical support request always provide a valid working e-mail address, phone number, shipping address and proper contact name. Check your e-mail for an automated response containing the case # and updates. You can also visit our web site at this address <https://www.onestopsystems.com> for a quick response, use the Technical Support and RMA Request Form available in the Support Section of the website. Simply complete the form with all required information. Please make sure that your problem description is sufficiently detailed to help us understand your problem.

#### Shipping or Transporting of Expansion Unit with PCI / PCIe cards

Any PCIe cards in **should be removed** (or not to be installed) prior to shipment to avoid or prevent damage. Note: Expansion board and PCIe / PCI cards that arrive damaged in shipment will not be covered under warranty.

### 10.2 Returning Merchandise

If factory service is required, a Service Representative will give you a Return Merchandise Authorization (RMA) number. Put this number and your return address on the shipping label when you return the item(s) for service. Please note that One Stop Systems WILL NOT accept COD packages, so be sure to return the product freight and duties paid. Ship the well-packaged product to the address below:

Attention: RMA # \_\_\_\_\_, One Stop Systems  
2235 Enterprise Street, #110  
Escondido, CA 92029  
USA

It is not required, though highly recommended, that you keep the packaging from the original shipment of your product. However, if you return a product for warranty repair/ replacement or take advantage of the 30-day money back guarantee, you will need to package the product in a manner similar to the manner in which it was received from our plant. We cannot be responsible for any physical damage to the product or component pieces of the product (such as the host or expansion interfaces for the expansion chassis) that are damaged due to inadequate packing. Physical damage sustained in such a situation will be repaired at the owner's expense in accordance with Out of Warranty Procedures. Please, protect your investment, a bit more padding in a good box will go a long way to ensuring the device is returned to use in the same condition you shipped it in. Please call for an RMA number first.

### 10.3 Third Party Hardware & Software Support Policy

OSS evaluates, certifies, and bundles many popular third-party hardware and software products with OSS hardware for ease of use and guaranteed operation. OSS encourages customer innovation by combining OSS products in new and interesting ways with third party and customer developed hardware and software. Unfortunately, with infinite combinations of hardware and software, OSS cannot assess and validate every configuration. OSS is committed to supporting its products and identifying if any technical issue may be related to third-party hardware or software. To isolate technical issues, OSS may request that the system be returned to the same configuration that shipped from the OSS factory and any non-OSS supplied third-party hardware or software be removed from the system during troubleshooting.

We assess, certify, and support many third-party hardware and software products along with OSS hardware and are happy to integrate a fully supported system. Ask us about that service and we would be happy to help. If an OSS product is fully functional and a support issue is related to third-party hardware or software that did not ship from the OSS factory, the customer requesting support should reach out to the third-party vendor for assistance to fully troubleshoot the issue.

### 10.4 Online Support Resources

As a product user and customer, listed below are our Online Support Resources

<https://www.onestopsystems.com/support> provides Knowledgebase Articles such as troubleshooting methods, compatibility, FAQ, documentation, and product technical information. If you need technical support, product assistance or have a technical inquiry we encourage you to submit it on-line using our Technical Support Form. If you need to send a unit for repair or diagnostic evaluation, fill out our RMA (Return Material Authorization) online request form.



**2235 Enterprise Street, Suite#110, Escondido CA 92029**

Toll-Free : +1(800)285-8900 US • Main: +1 (760) 745-9883 • Fax: +1 (760) 745-9824

**[www.onestopsystems.com](http://www.onestopsystems.com)**