



OPEN

Compute Project

ECS 1Gb Power Over Ethernet Switch Specification

1.0

Base Hardware Specification

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Table of Contents

1. License	4
2. Compliance with OCP Tenets	5
2.1. Openness	5
2.2. Efficiency	5
2.3. Impact	5
2.4. Scale	5
3. Version Table	6
4. Scope	7
5. Overview	8
6. Rack Compatibility	9
7. Physical Specifications	9
8. Environmental Requirements	9
Environmental:	9
Acoustic:	9
9. I/O System	10
System Overview	10
LED Indicators	10
RJ45 Management Port LED	10
SFP Management Port	10
Power LED	10
RJ45 1Gb Network Ports	10
SFP+ Uplink ports	11
Power supply module	11
Fan status	11
CPU Subsystem	11
Switching system requirements	11
Sample ECS 1Gb Power Over Ethernet Switch Block Diagram	12
10. Rear side power and fan	12
11. Mechanical	13
12. Power System	13

Open Compute Project • ECS 1Gb Power Over Ethernet Switch Specification

13. Environmental Regulations/Environmental Requirements	14
15. Software Support	14
16. Hardware Management	14
Appendix A - Checklist for IC approval of this specification	15

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Notes:

- 1) The above license does not apply to the Appendix or Appendices. The information in the Appendix or Appendices is for reference only and non-normative in nature.

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2. Compliance with OCP Tenets

Please describe how this Specification complies to the following OCP tenets. Compliance is required for at least three of the four tenets.

2.1. Openness

This base specification is fully open sourced through the Open Compute foundation. This specification is being contributed to Open Compute to stimulate additional open design and /or product specifications applicable to the Enterprise market

2.2. Efficiency

The ECS 1Gb Power Over Ethernet Switch specification calls out the minimum requirements for a cost-conscious Enterprise PoE switch. These minimal requirements will lead to the most cost effective and power efficient design(s) for this type of product.

2.3. Impact

The ECS 1Gb Power Over Ethernet Switch is the first base specification contributed to the Open Compute Enterprise Connectivity Solutions Group. This specification contribution is expected to result in follow on design and/or product contributions stimulating an ecosystem of consumers and suppliers working on follow on projects for the Enterprise market in Open Compute.

2.4. Scale

The ECS 1Gb Power Over Ethernet Switch specification describes the requirements for a high-volume Ethernet switch that can be used for numerous use cases by a wide range of customers. It envisioned that the resulting products from his specification will be widely produced and deployed in the market.

3. Version Table

Date	Version #	Author	Description
10/11/2022	1.0	Jeff Strande	Initial Release

4. Scope

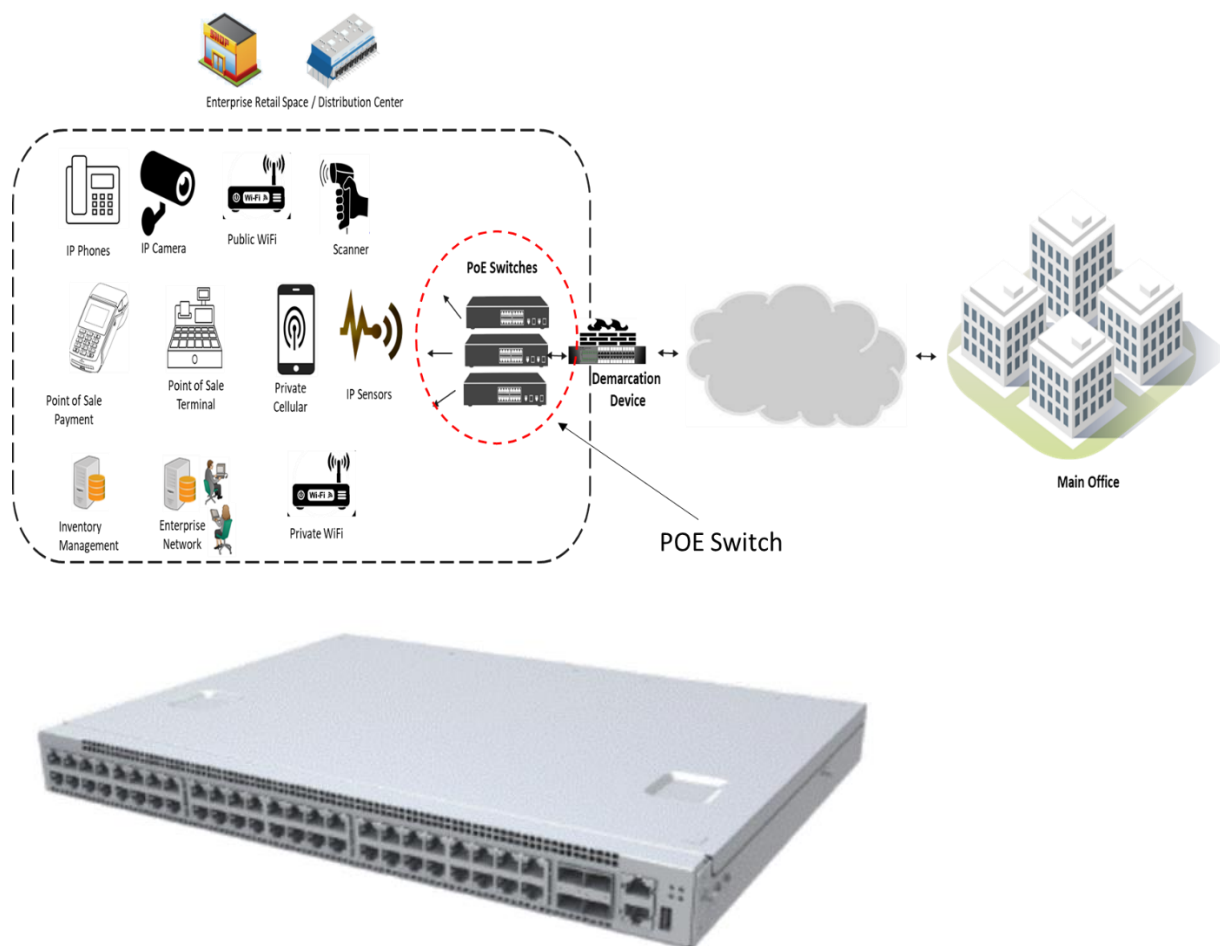
This document defines the base product specification for the ECS 1Gb Power Over Ethernet Switch used in the Open Compute Project.

Any supplier seeking OCP recognition for a hardware product based on this specification must be 100% compliant with any and all features or requirements described in this specification.

5. Overview

The ECS 1Gb Power Over Ethernet Switch is a networking device targeted for use at small and medium remote or “branch” locations which are normally connected by some type of WAN link to the main corporate network. These branch locations could be a warehouse/distribution facility, remote office environment, or a retail business.

The ECS 1Gb POE SWITCH will provide 1GbE connectivity for various types of systems in the network including devices that require power to be delivered to them over the Ethernet wired connection. The ECS 1Gb Power Over Ethernet Switch is a cost-conscious device targeted at high volume deployments at the remote edges of Enterprise networks.



- 48 x 1Gb Ethernet connections to directly attached devices
- Four High speed SFP+ 10Gports ports connecting to higher level devices.
- Three management ports
 - RJ45 serial console port
 - RJ45 10/100/100) Ethernet port
 - SFP port supporting 1Gb fiber
- USB Type A port

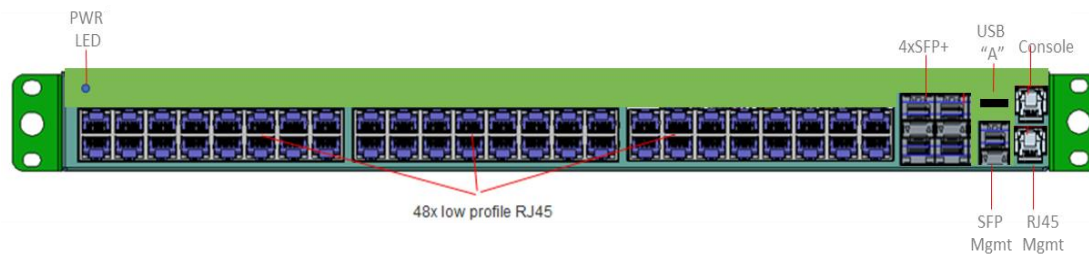
6. Rack Compatibility

The ECS 1Gb Power Over Ethernet Switch will be rack mountable in a standard EIA-310 rack. Rack mounting will be accomplished by standard rack mounting “ears” and/or a rack mounting rail kit.

7. Physical Specifications

Estimated dimensions 431mm x 370mm x 88.9mm

Sample drawing ECS 1Gb Power Over Ethernet Switch



Concept Drawings ECS 1Gb Power Over Ethernet Switch

8. Environmental Requirements

The ECS 1Gb Power Over Ethernet Switch will be installed in temperature-controlled environments and be required to operate between temperatures ranging from 0C – +45C. The ECS 1Gb Power Over Ethernet Switch will be equipped with redundant field replaceable fans capable of cooling the entire unit under maximum load conditions. The airflow for cooling the ECS 1Gb Power Over Ethernet Switch will be drawing air into the front of the Switch and exhausting air out the rear of the unit. The ECS 1Gb Power Over Ethernet Switch will incorporate sufficient temperature sensors located on the PCB assembly(s) allowing the unit to be managed for thermal conditions.

Environmental:

- *Operating Temperature: 0-45C*
- *Humidity: 5% - 90% (non-condensing)*

Acoustic:

- The ECS 1Gb Power Over Ethernet Switch may be installed in a location where humans are working therefore the maximum acoustical noise limit is 60dB.

9. I/O System

System Overview

The Base ECS 1Gb Power Over Ethernet Switch system will consist of the following

- 48 x RJ45 Gigabit Ethernet ports providing power over Ethernet capable of PoE 802.3at
- 4 x SFP+ ports capable of 10G connectivity.
- 1x RJ45 Gb Ethernet management port.
- 1 X SFP 1Gb Management port
- 1 x RJ45 Serial console port.
- 1x USB type A port
- Switching silicon with external CPU to run NOS *
 - Adequate memory and storage to support the NOS
- Power over Ethernet circuitry
- Support two field replaceable redundant load sharing power supply modules
- Support for redundant field replaceable system fans

LED Indicators

RJ45 Management Port LED

The RJ45 management port will support one or more LED indicators capable of indicating that the port has operational link and whether the port has active traffic.

SFP Management Port

The SFP Management port will support one or more LED indicators capable of indicating that the port has operational link and whether the port has active traffic.

Power LED

The ECS 1Gb Power Over Ethernet Switch will support an LED indicator on the front of the unit indicating the status of the system power supplies. A color for both power supplies working in normal operation and a separate color to indicate a power supply is not working will be supported.

RJ45 1Gb Network Ports

Each RJ45 1Gb port will support one or more LEDs to indicate the following conditions

- Whether the port has link
- Whether the port has activity
- Whether the port is supplying POE power

SFP+ Uplink ports

Each SFP+ uplink port will support one or more LEDs capable of indicating the following conditions

- Whether the port has link
- Whether the port has activity

Power supply module

Each power supply will support a LED to indicate whether the power supply is online

Green	Online
Off	Not Online

Fan status

Each fan module will include an LED to indicate fan status

Green	Online
Off	Not Online

CPU Subsystem

The ECS 1Gb Power Over Ethernet Switch will support an external CPU from the switching silicon. This external CPU and required components are listed below

CPU	Minimum 4 core CPU
RAM	Minimum 16GB
Storage	32GB

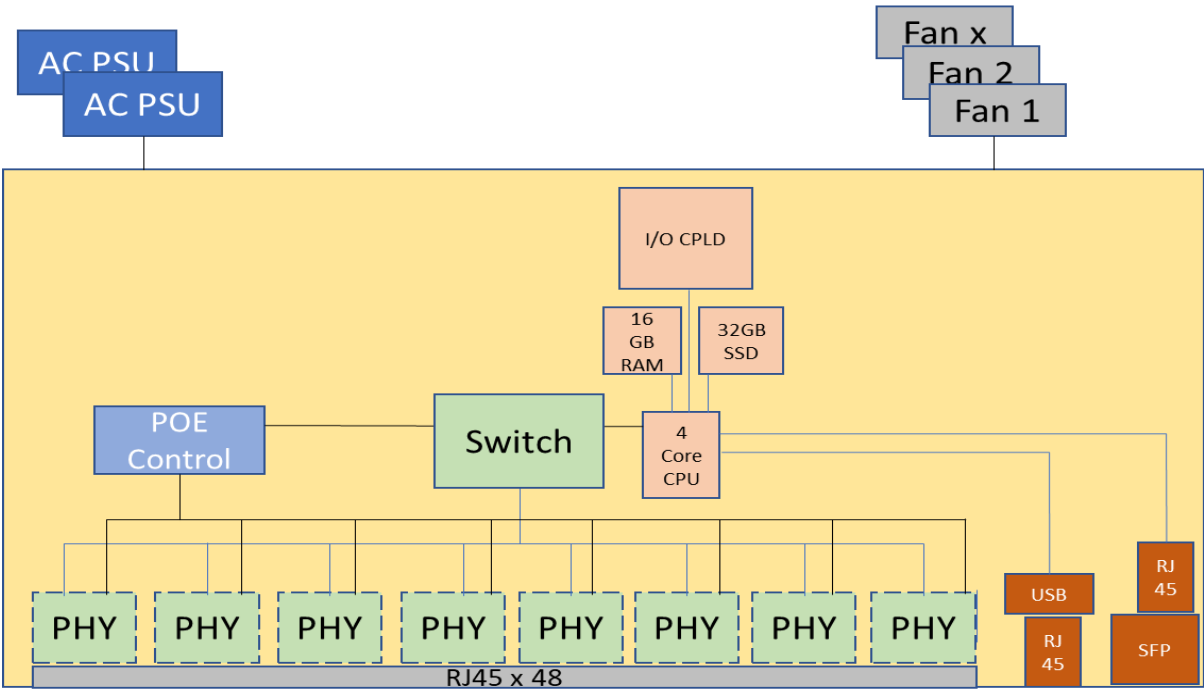
Switching system requirements

The ECS 1Gb Power Over Ethernet Switch and its underlying packet switching system must support the following functions

Data Switching Capacity	176 Gbps
Packet Forwarding Rate (64byte)	130 Mpps
MAC Address Table	16K
VLAN ID supported	4K
Jumbo Frame	9,198 bytes

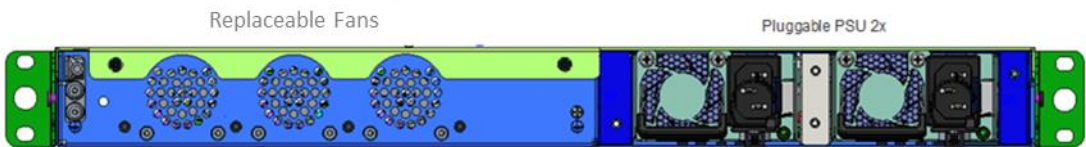
Tunneling	VXLAN Support

Sample ECS 1Gb Power Over Ethernet Switch Block Diagram



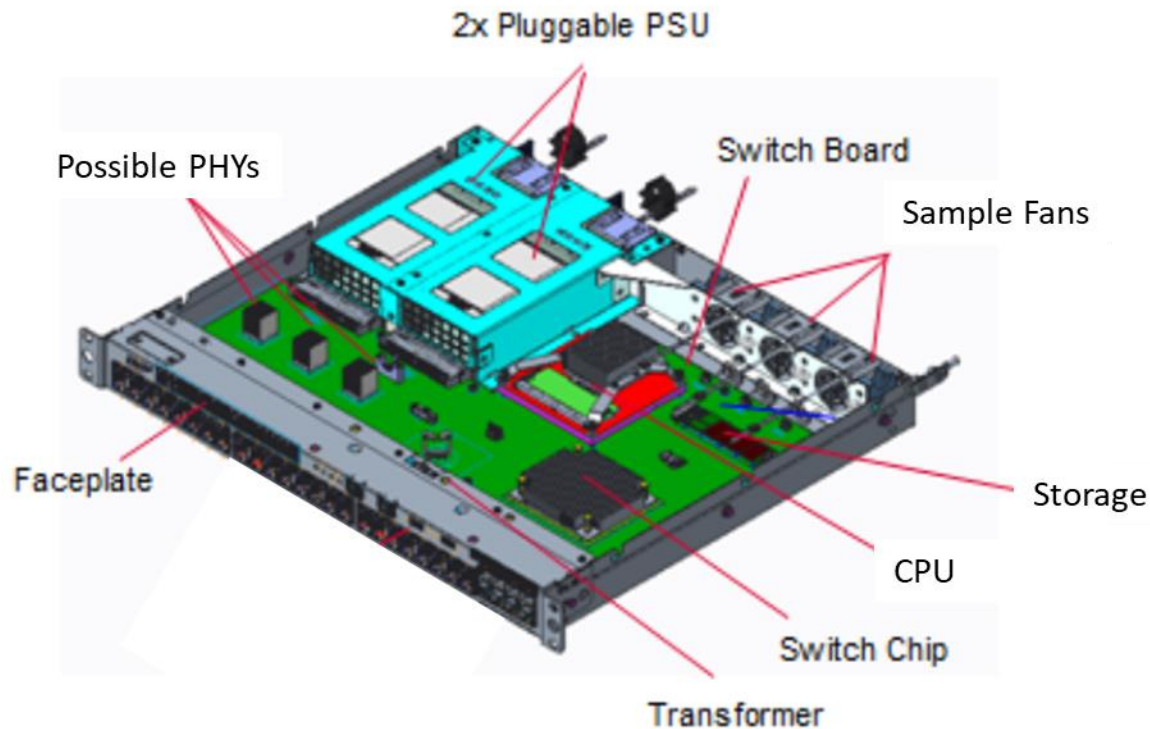
10. Rear side power and fan

The rear view of the ECS 1Gb Power Over Ethernet Switch shows the two hot swappable power supplies and a concept of the removeable system fan(s).



Concept Drawing ECS 1Gb Power Over Ethernet Switch

11. Mechanical



Concept Mechanical Drawing ECS 1Gb Power Over Ethernet Switch

12. Power System

The ECS 1Gb Power Over Ethernet Switch will support two hot swappable load sharing power supplies with input voltage ranging from 90V- 264 AC. There may be multiple power supply options offered supporting different output wattage capability to support different PoE load requirements.

The power supplies and on-board power system will supply power to the Power Over Ethernet circuitry and front panel capable PoE ports. All 48xRJ45 networking ports in the system will be capable of supplying PoE 802.3at power to connected devices. The minimum total available Power Over Ethernet budget (wattage) for the system is 500 Watts of POE power (this is in addition to any power required to run all other system functions) in a redundant power configuration. There may be various power supply options made available for the system that could increase this available POE power budget. Therefore, it will/may not be possible to have all Gigabit Ethernet ports in the system supplying the maximum 8023at of power

simultaneously. This available PoE power can be configured for a maximum per port output through management of the PoE controller.

13. Environmental Regulations/Environmental Requirements

Environmental

- *0 to 45 Degrees C operating range*
- *Humidity 5% to 95% non-condensing (operational and storage)*
- *Acoustical 60dB Maximum*

Safety

- *UL/ Canada*

Electromagnetic Compatibility

- *FCC Class B*

15. Software Support

Support for Open Source software options as well as commercial options will include:

- OCP Open Network Install Environment - ONIE
- OCP Open Network Linux - ONL
- Linux Foundation Distributed Enterprise NOS - DENT
- Linux Foundation Software for Open Networking in the Cloud - SONiC

16. Hardware Management

The ECS 1Gb Power Over Ethernet Switch will support the OCP baseline management profile as defined by the OCP Hardware management project

Appendix A - Checklist for IC approval of this specification

Complete all the checklist items in the table with links to the section where it is described in this spec or an external document .

Item	Status or Details	Link to detailed explanation
Contribution License Agreement	OWF CLA	License
Are All Contributors listed in Sec 1: License?	Yes	
Did all the Contributors sign the appropriate license for this spec? Final Spec Agreement/HW License?	Yes	
Which 3 of the 4 OCP Tenets are supported by this Spec?	Openness Efficiency Impact Scale	
Is there a Supplier(s) that is building a product based on this Spec? (Supplier must be an OCP Solution Provider)	TBD Base specification only	
Will Supplier(s) have the product available for GENERAL AVAILABILITY within 120 days?	TBD Base specification only	This is the base specification suppliers will submit their own design and/or product specification

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Item	Details	Links
Which product recognition?	“Approved Base Specification”	
If OCP Accepted™, who provided the Design Package?		N/A
Where can a potential adopter purchase the product?		N/A