



Luxon LX-400 Installation Guide



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Manual Revision 1.0

Release Date: Oct 18, 2019

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About this manual

This manual is written for professional system integrators and network technicians. It provides information for the installation and use of the Luxon LX-400. Installation and maintenance should be performed by experienced technicians only.

Notes

If you have any questions, please contact our support team at: support@stateless.net

This manual may be periodically updated without notice. Please check the Stateless website for possible updates to this manual revision level.

Warnings

Special attention should be given to the following symbols used in this manual.



Warning! Indicates important information given to prevent equipment/property damage or personal injury.



Warning! Indicates high voltage may be encountered when performing a procedure.

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Chapter 1 - Introduction

Overview

This chapter provides a brief outline of the functions and features of the LX-400. There are several important parts that are included with the system and are listed below (this list describes the parts included for the smallest supported cluster).

LX-400 Main Parts List		
Description	Part Number	Quantity
Stateless Server (based on Supermicro Superserver 6019P-WTR)	LX-SM4x100G-4228	4
EdgeCore Wedge switch	LX-FS-32100TOF-F	2
Cable Kit (1 included with each Stateless Host & Switch)	LX-CBL-KIT-3CAT6A-4QSFP28	4
Switch Interlink Cable	LX-FS-32100-CBL-.5MTR	2
Screwdriver (1 included with each Stateless Switch)	70003	2
Knee Pad (1 included with each Switch)	KP1060	2
Cable Pass-Through with Brush	SR1UBRUSH	1

Unpacking the System

Inspect the box the Luxon LX-400 was shipped in and note if it was damaged in any way. If any equipment appears damaged, please file a damage claim with the carrier who delivered it.

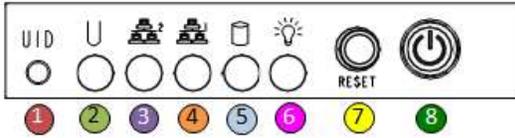
Decide on a suitable location for the rack unit that will hold the servers and switches. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. It will also require a grounded AC power outlet nearby. Be sure to read the precautions and considerations noted in Appendix A.

Server Chassis Features

Below are summaries of the main features located on the front and rear of each server used in the Stateless Luxon LX-400 cluster.

Front Panel Information

CHASSIS FRONT PANEL LEDs

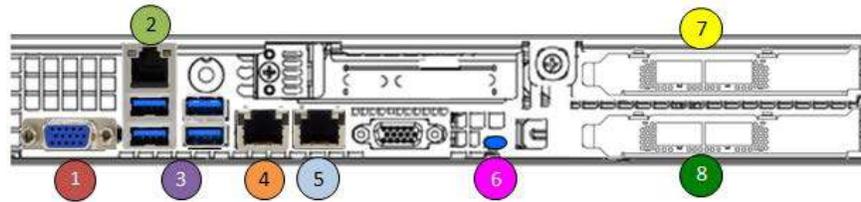


	Feature	Description
1	UID Button	Illuminates a front & back LED to ID unit
2	Info LED	SEE TABLE BELOW
3	NIC 2 LED	Network activity on NIC 2 when flashing
4	NIC 1 LED	Network activity on NIC 1 when flashing
5	HDD LED	Hard drive activity when flashing
6	Power LED	Power is supplied when illuminated
7	Reset Button	Press to reboot the server
8	Power Button	Apply or remove power to the server

Information LED

Status	Description
SOLID ●	System overheat
FLASH (1Hz) ✶	Fan failure
FLASH (.25Hz) ✶	Power supply failure
SOLID ●	Local unit identification (UID) activated
FLASH ✶	Remote unit identification (UID) activated

Rear Panel Information



Back Panel I/O Ports			
1	VGA Port	5	Management Port 2
2	Dedicated IPMI LAN	6	Unit Identification (UID) switch
3	USB 3.0 Ports (0, 1, 2, 3)	7	Network Interface Card 1
4	Management Port 1	8	Network Interface Card 2

Switch Chassis Features

Below are summaries of the main features located on the front and rear of each switch used in the Stateless Luxon LX-400 cluster.

Front Panel Information



Front Panel Information			
1	System status LEDs	5	LED position selection button (NOT USED)
2	Management Ports	6	LED selection indication (NOT USED)
3	Type-A USB port	7	Switch serial number information pull tag
4	32 x 100Gb QSFP28 ports (see table for info)	8	Debug header (NOT USED)

QSFP28 Port LED Information

LED Status	QSFP28 Port Status
OFF	<input type="checkbox"/> Port not enabled
SOLID	<input checked="" type="checkbox"/> Port/Channel is active (link is up)
SOLID	<input checked="" type="checkbox"/> Port/Channel is enabled but link not up
SOLID	<input checked="" type="checkbox"/> Port/Channel disabled by administrator

Rear Panel Information



Back Panel Information			
1	PSU status LEDs (AC input & DC output)	4	Fan status LED
2	Hotswappable power supply unit (PSU)	5	Serial BUS rack monitoring ports (UNUSED)
3	Hotswappable fan (5 per fan tray)		

Chapter 2 – Server, Cable Pass Through Panel & Switch Installation

Overview

This chapter provides advice and instructions for mounting your system into a rack.

Preparing for Setup

The box in which the system was shipped should include the rack-mount hardware needed to install it into a rack. Please read this section in its entirety before you begin the installation.

Choosing a Setup Location

- The system should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.
- Leave enough clearance in front of the rack so that you can open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are extended to the floor so that the full weight of the rack rests on them.
- In single rack installations, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a server or other component from the rack.
- You should extend only one server or component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server/Switch Precautions

- Review the electrical and general safety precautions in Appendix A.
- Determine the placement of each component in the rack before you install the rails.
- Install the heaviest server components at the bottom of the rack first and then work your way up.
- Use a regulating uninterruptible power supply (UPS) to protect the servers/switches from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow any field replaceable power supply units to cool before touching them.
- When not servicing, always keep the front door of the rack and all covers/panels on the servers & switches closed to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the room's ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturers' maximum rated ambient temperature.

Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on over-current protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack, the servers and the switches should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

Physical Installation Best Practices



To prevent bodily injury when mounting or servicing the servers/switches into a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- The units should be mounted at the bottom of the rack if they are the only units in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the servers at the bottom of the rack.
- As a best a practice to simplify wiring setup and identification, Stateless recommends (for a standard 4 server, dual switch cluster) the following physical installation setup:
 - At the lowest appropriate point in the rack, the 4 servers should be installed without gaps between them
 - The first switch should be installed directly above the servers
 - Install the cable pass-through above the first switch

- Install the second switch directly above cable pass-through
- Allow up to another 4U of rack space for future server expansion

Switch Grounding

The switch should be grounded using the following procedure: (see figure 2-1)

1. Ensure the rack on which the switch is to be mounted is properly grounded and in compliance with ETSI ETS300253. Verify that there is a good electrical connection to the grounding point on the rack (no paint or isolating surface treatment).
2. Attach a lug (not provided) to a #18 AWG minimum grounding wire (not provided), and connect it to the grounding point on the switch rear panel. Then connect the other end of the wire to rack ground.

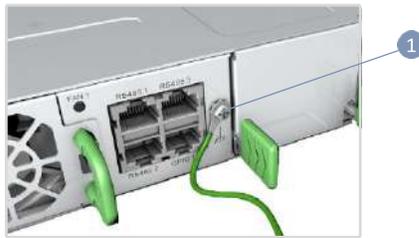


Figure 2-1. Grounding the Switch



Caution: The chassis ground connection must not be removed unless all supply connections have been disconnected.

Installing the Server Rails

There are a variety of rack units on the market, which may require a slightly different assembly procedure. The following is a basic guideline for installing the system into a rack with the rack mounting hardware provided. You should also refer to the installation instructions that came with the specific rack you are using.

Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies in the rack mounting kit. Each assembly consists of an outer fixed rack rail that secures directly to the rack itself (see Figure 2-2). Two pairs of short brackets to be used on the front side of the outer rails are also included.

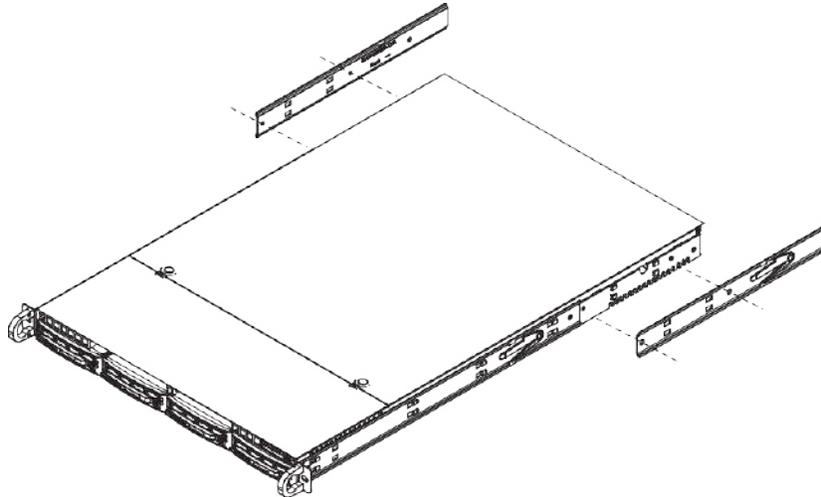


Figure 2-2. Installing the rails

Installing the Outer Rails

Begin by measuring the distance from the front rail to the rear rail of the rack. Attach a short bracket to the front side of the right outer rail and a long bracket to the rear side of the right outer rail. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack. Secure the short bracket to the front side of the outer rail with two screws and the long bracket to the rear side of the outer rail with three screws. Repeat these steps for the left outer rail.

Locking Tabs: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.



Warning: do not pick up the server with the front handles. They are designed to pull the system from a rack only.



Warning: Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Installing the Server into a Rack

Installing to a Standard Rack

You should now have rails attached to both the chassis and the rack. The next step is to install the server into the rack.

1. Line up the rear of the chassis rails with the front of the rack rails.
2. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to press the locking tabs when inserting). See Figure 2-3.

3. When the server has been pushed completely into the rack, you should hear the locking tabs "click".

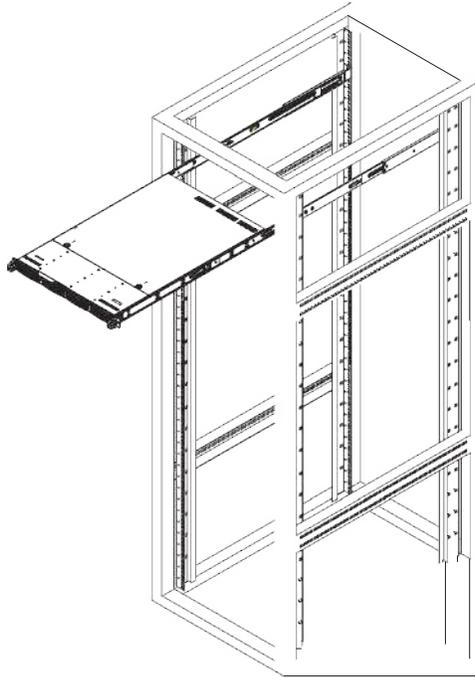


Figure 2-3. Installing the Server into a Rack

Note: Figure 2-3 is for illustrative purposes only. Always install servers and switches to the bottom of a rack first.



Slide rail or bracket mounted equipment is not to be used as a shelf or a workspace.

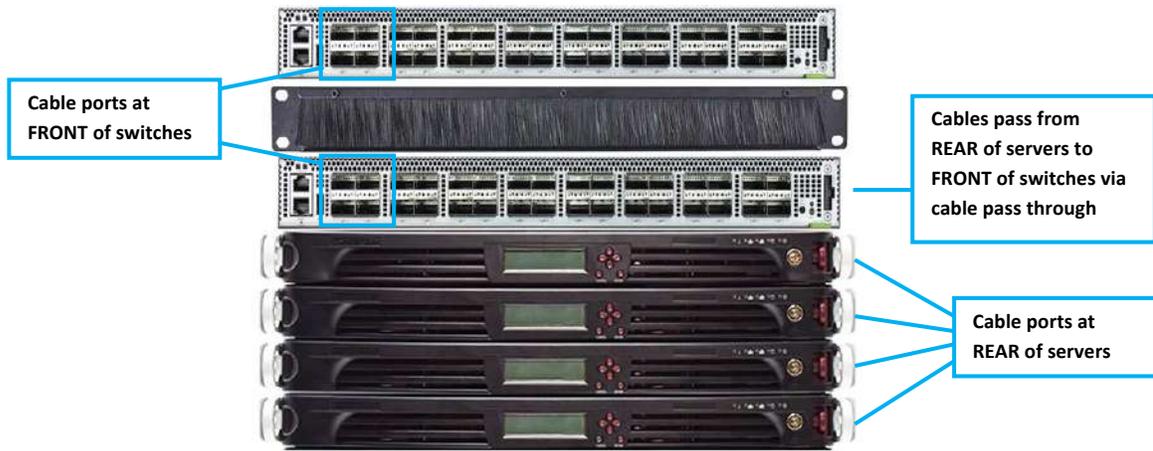
Installing the Pass-Through Brush Strip Panel

The Luxon LX-400 cluster comprises of 2 x 1U switches and 4 x 1U servers (also referred to in this document as hosts). In order to correctly install the LX-400 into a rack, a 1U space must be left between the two switches in order to simplify wiring.

The 1U space between switches and servers is needed in order to correctly pass network traffic and management cables from the connections at the rear of the servers to the front ports of the switches.



Warning: Failure to incorporate the appropriate space between servers and switches and install the pass through panel may result in the supplied LX-400 cabling being too short to make the necessary connections.



Installing the Switch Brackets

The brackets supplied with the switches are of different design to the rails of the servers; they cannot be interchanged with them and require a slightly different assembly procedure. The following is a basic guideline for installing the switches into a rack with the rack mounting hardware provided. You should also refer to the installation instructions that came with the specific rack you are using.

Installing the Mounting Brackets

As shown in Figure 2-4 below, there are no rails provided with the switch for rack installation. Instead, front and rear mounted brackets are supplied. Follow the instructions below for each side of a switch prior to attempting to mount it.

1. Attach each of the front-post and rear-post brackets to the switch using four of the included bracket screws.
2. Use an additional two screws to secure each of the rear-post brackets at the mid-point on the sides of the switch.

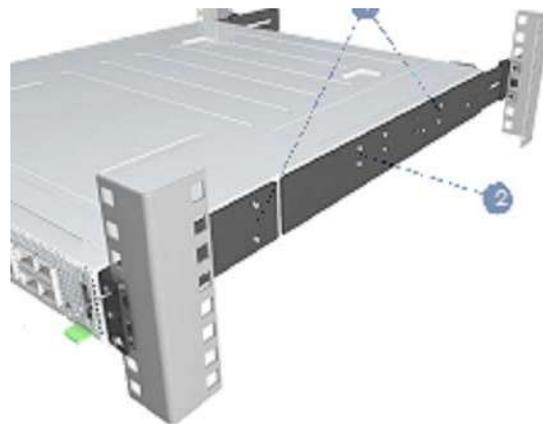


Figure 2-4. Installing the Switch Mounting Brackets

Installing the Switch into a Rack

You should now have brackets attached to the switch chassis. The next step is to install the switch into the rack as shown in Figure 2-5.

3. Use the screws and cage nuts supplied with the switch to secure the switch in the rack.
4. Lock the position of the rear-post bracket ears using the included position-locking screws.



Figure 2-5 Installing the Switch into a Rack

Chapter 3 – Server/Switch Wiring

Overview

There are two types of wiring connection required in order for the Stateless Luxon LX-400 cluster to operate correctly. The first type is the high speed (100Gbps QSFP28) network cabling that carries the tenant network traffic and connects the servers and switches. The second is the low speed, 1Gbps Cat6a cabling that is used for API & IPMI management traffic and connects the servers and switches to each other through an external management switch.

High Speed QSFP28 Network Cabling

In a standard cluster, there are 4 servers and 2 switches, with each server having 4 x QSFP28 NIC ports at the rear of the chassis. The QSFP28 cables that are designated to connect the server NICs to the two cluster switches are shipped in a cable kit with each server, they are black in color, are 1.5m long and have colored zip ties attached to either end to simplify identification.



Caution: The high speed network cabling between the servers and switches relies upon the QSFP28 cables supplied as part of the dedicated cable kit housed within each server packaging. Only use the QSFP28 cables supplied as part of the LX-400 product – other QSFP28 cable versions have not been certified and may affect cluster performance and operation.

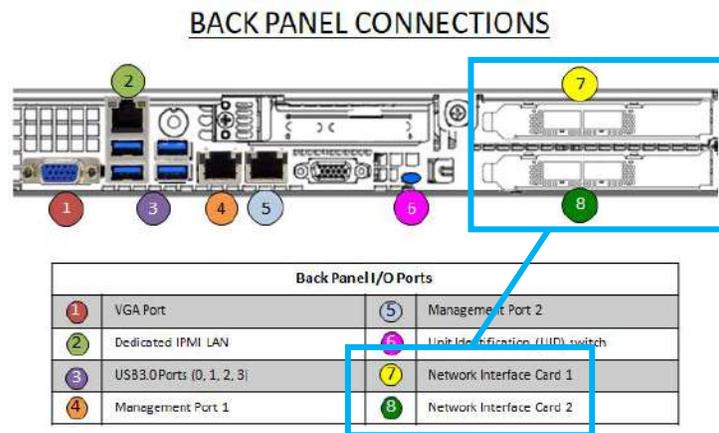


Figure 3-1 NICs and NIC port positions on server rear chassis

The upper NIC is referred to as NIC 1, the lower NIC as NIC 2. The left port of each NIC is referred to as Port #1, the right port as Port #2.

With this in mind, the cluster has been designed in such a way that the first 8 (eight) ports (Ports 1-8) of each cluster switch are dedicated as connections to the server NICs.



Warning: The cluster will not operate if the server QSFP28 wiring diagram shown below in Figure 3-2 not is adhered to.

QSFP28 Server/Switch Cabling

The following diagram, Figure 3-2 shows how each of the QSFP28 cables that connect the server NIC ports to the cluster switches should be connected.

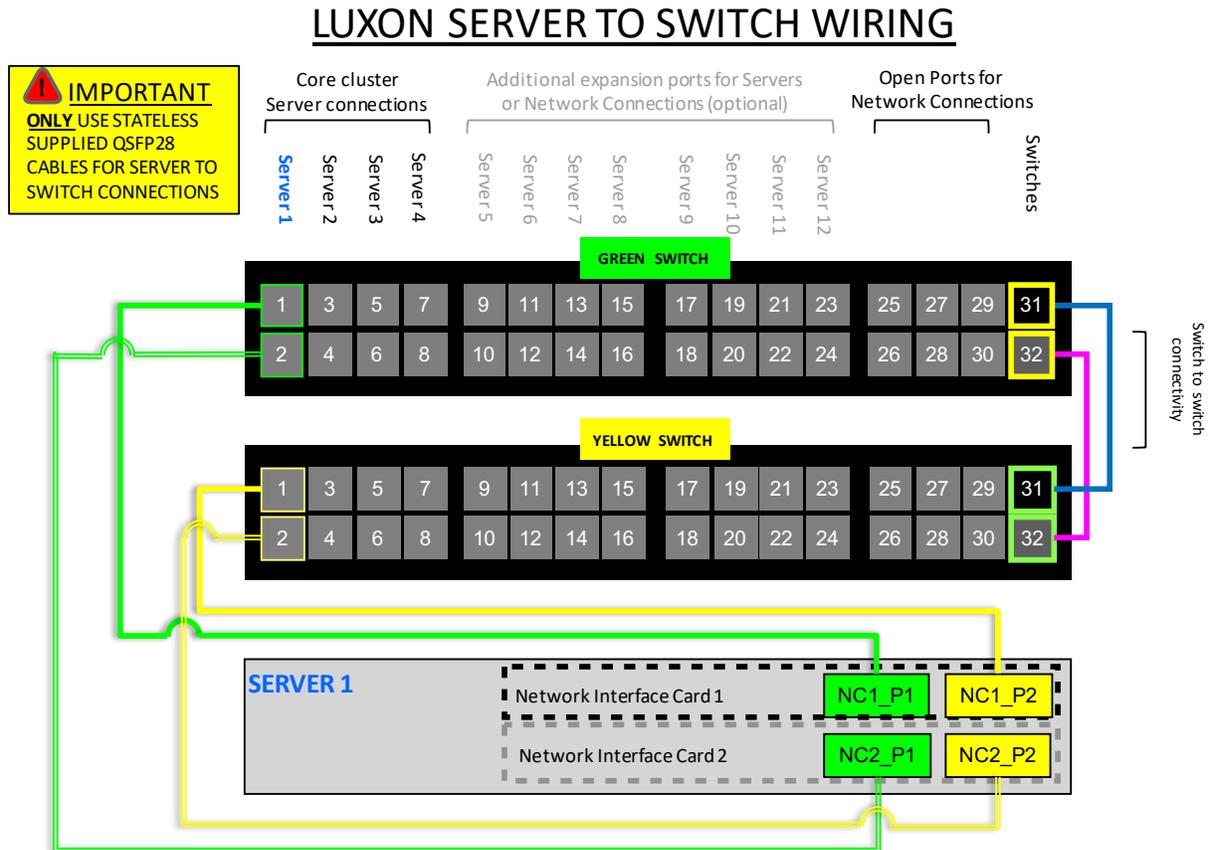


Figure 3-2 Server #1 QSFP28 Wiring connection diagram

In Figure 3-2, only the QSFP28 connections between the NICs of cluster server 1 are shown. In order to connect the NICs of cluster servers 2, 3, & 4, use the table below that identifies the correlation between server NIC port and cluster switch port.

QSFP28 CABLES – CONNECT SAME LETTER/NUMBER

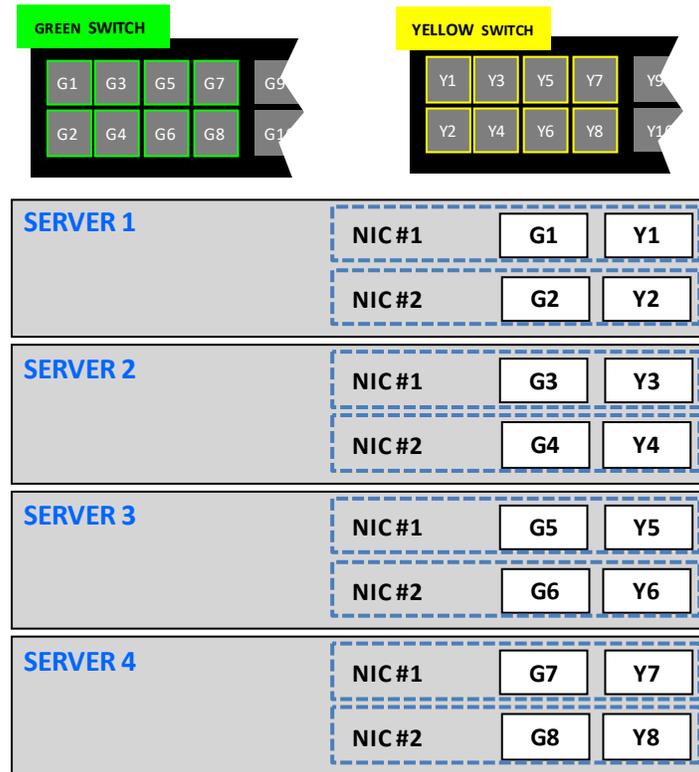


Figure 3-3 Server/Switch QSFP28 Wiring connection table

QSFP28 Switch Interlink Cabling

In addition to the server/switch QSFP28 cables, there are two other QSFP28 cables, one being shipped with each cluster switch. These 100Gb fiber cables are black, 0.5m long, and are solely for the purpose of connecting the two cluster switches together for high availability.

Figure 3-2 identifies that ports 31 and 32 are exclusively used for this purpose. No other ports can be used for switch interlink connections.

Cat6a API & IPMI Management Traffic Cabling

There are two types of traffic that the Luxon LX-400 cluster uses to operate correctly – the tenant network traffic and the cluster management traffic. As mentioned previously, the network traffic is handled using 100Gb QSFP28 ports on the servers and switches, whilst the management traffic is handled by standard 1Gb Cat6a cables.

Server Management Traffic Cabling

There are a number of Cat6a cables supplied with the cluster, these being color coded for identification and simplification of installation purposes. There are 3 Cat6a cables supplied with each server, these cables being part of the included cable kit. The three cables have different colors, one white, one blue, and one red. The colors of the cables are designed to match the same colored ports described by the server rear chassis label.

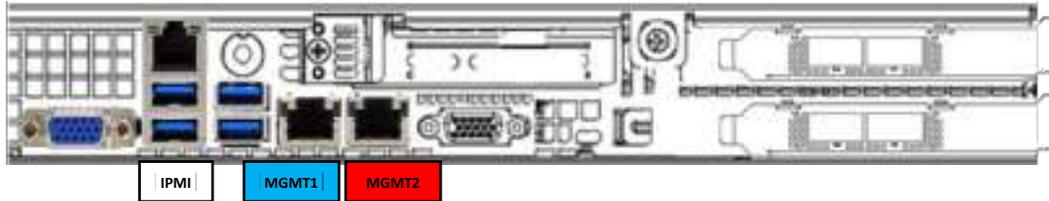


Figure 3-4 Management Cable Server Port Identification

Switch Management Traffic Cabling

With each switch supplied as part of the LX-400 cluster, there are two Cat6a cables, one grey, one black, these being color coded to match the ports on the front of each switch. These ports are situated on the far left of the switch front will be labeled in grey with black letters saying “Console” on top and black with white letters saying “Mgmt” on the bottom. These ports are labeled the same for both switches supplied in the cluster.



Figure 3-5 Switch Management Port Identification

Once all cables have been connected to their appropriate colored port on the servers and switches, these cables should be connected to a management switch.

For information on how to configure the management switch (whether it is supplied by Stateless or is customer owned) contact Stateless Support at support@stateless.net.

Emergency Console Cable

In the unlikely event of a problem connecting to the switch via the management switch or dedicated Console port on the Luxon cluster switch, a Type-A USB port is available to be used for connection. As part of the Luxon LX-400 cluster, a 2m long USB to RJ45 serial cable is supplied for this purpose.

Chapter 4 – Power on & Basic Operation checks



Caution: Prior to powering on the LX-400 servers and switches, ensure that all appropriate electrical and mechanical safety checks have been performed.

This chapter summarizes the diagnostics and information available from the servers and switches after power has been applied but prior to forming the cluster.

Both the servers and switches of the LX-400 cluster are supplied with dual redundant, hot swappable power supplies. Power supplies should be connected to different power circuits on all servers and switches in order to provide the highest level of redundancy.

Server Power On Checks

Upon applying power to a server, there will be a number of status indications provided – including a power-on self-test beep code and status LEDs on the top right corner of the front bezel.

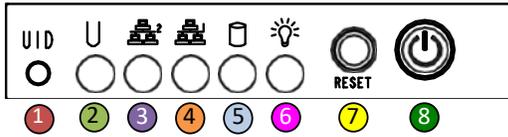
For correct operation, the server will sound a single beep to indicate that circuits have been reset and the server is ready to power up. Should this situation not occur, refer to Figure 4-1 below to identify the cause of the error.

BIOS Beep Codes		
Beep Code/LED	Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory	No memory detected
5 long beeps + 2 short beeps	Display memory read/write status	Video adapter missing or with faulty memory
1 continuous beep	System	System overheat

Figure 4-1 Power-On Self-Test Beep Codes

In addition to the BIOS beep code, there are a number of chassis front panel LEDs that indicate the status of the server having applied power. See Figure 4-2 below for more information.

CHASSIS FRONT PANEL LEDs



	Feature	Description
1	UID Button	Illuminates a front & back LED to ID unit
2	Info LED	SEE TABLE BELOW
3	NIC 2 LED	Network activity on NIC 2 when flashing
4	NIC 1 LED	Network activity on NIC 1 when flashing
5	HDD LED	Hard drive activity when flashing
6	Power LED	Power is supplied when illuminated
7	Reset Button	Press to reboot the server
8	Power Button	Apply or remove power to the server

Information LED

Status	Description
SOLID 	System overheat
FLASH (1Hz) 	Fan failure
FLASH (.25Hz) 	Power supply failure
SOLID 	Local unit identification (UID) activated
FLASH 	Remote unit identification (UID) activated

Figure 4-2 Server Status Indication LEDs

Switch Power On Checks



Caution: Use the AC power cord supplied with the switch. For International use, you may need to change the AC line cord. You must use line cord sets that have been approved for the socket type in your country.

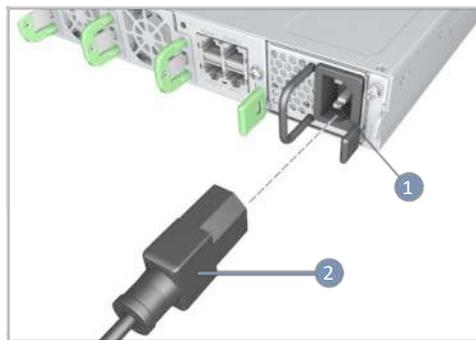


Figure 4-3 Connection of Power to Switch

With power applied, the switch will indicate that it has powered up correctly via the SYS LED as shown in Figure 4-4d below. When operating normally, the SYS LED should be solid green.



Figure 4-4 Verify Basic Switch Operation

Port Channel LEDs

At the front of each switch are 32 x 100Gb QSFP28 ports, the odd port numbers being on the top row, the evens on the bottom row. In between the two rows are Channel Status LEDs, these LEDs being associated with a pair of ports. In between the LEDs are two air flow vents that should not be obstructed.

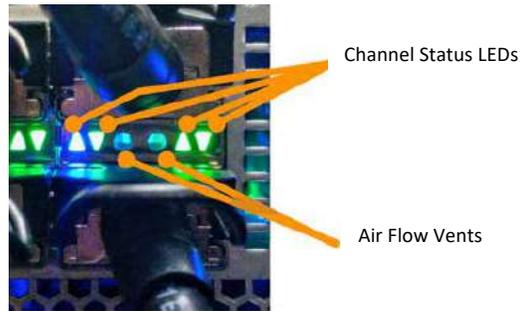


Figure 4-5 Channel Status LEDs

The color of these LEDs indicates the port status (note that the orientation of the triangular LED does not indicate which QSFP port the LED corresponds to) and can be used as a setup diagnostic tool.

LED Status	QSFP28 Port Status
OFF 	Port not enabled
SOLID 	Port/Channel is active (link is up)
SOLID 	Port/Channel is enabled but link not up
SOLID 	Port/Channel disabled by administrator

Figure 4-6 Channel Status LED Information

Chapter 5 – How to Create a Cluster

After all wiring and power connections have been made, and normal operation of switch and server hardware has been confirmed, the final installation step required is to create the LX-400 cluster from the individual components. This is a software defined process that requires making two API calls to one of the LX-400 servers. The first API command – a GET WORLD API call - is to report what all the IDs are of the discovered servers (called hosts) and switches that can be included in the cluster. This information is then used as part of the second CREATE CLUSTER API call that tells individual pieces of hardware to form a highly available cluster.

The rest of this chapter summarizes an example how these two API calls can be made.

Assumptions:

- The IP address of the server to which API calls are made is known
- All necessary management switches and IP addresses are known and have been appropriately provisioned
- The management IP address is known
- A cluster name, login username and login password are known

GET WORLD API call

The GET WORLD API call is used to source the IDs for all discovered servers (hosts) and switches. This information is needed in order to populate the create cluster API call and define which hardware should be included in the cluster itself.

The following example of the GET WORLD API call is for reference only and **hardware IDs shown are for example only.**

Notes:

1. curl is a command to run http calls. It defaults to GET calls, if not specified with -X flag.
2. jq is a program to print JSON-formatted files in a more legible way.

The GET WORLD API call is:

```
# curl --silent http://localhost/deploy/api/world | jq
```

A valid response to this API call should have the following format:

```
{
  "world": {
    "this_member": {
      "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
      "name": "node100",
      "cluster_state": {
        "type": "ready",
        "description": "This system is not configured to be part of a cluster, but is ready to
join one"
      },
      "last_seen": "2019-10-10T23:35:20.761598Z",
      "type": "host"
    },
    "hosts": [
      {
        "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
        "name": "node100",
        "cluster_state": {
          "type": "ready",
          "description": "This system is not configured to be part of a cluster, but is ready to
join one"
        },
        "last_seen": "2019-10-10T23:35:20.707710Z",
        "type": "host"
      },
      {
        "host_id": "77085b3c-f853-4563-828e-68a0ebf62edb",
        "name": "node102",
        "cluster_state": {
          "type": "ready",
          "description": "This system is not configured to be part of a cluster, but is ready to
join one"
        },
        "last_seen": "2019-10-10T23:35:20.707710Z",
        "type": "host"
      },
      {
        "host_id": "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
        "name": "node108",
        "cluster_state": {
          "type": "ready",
          "description": "This system is not configured to be part of a cluster, but is ready to
join one"
        },
        "last_seen": "2019-10-10T23:35:20.707710Z",
        "type": "host"
      },
      {
        "host_id": "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
        "name": "node114",
        "cluster_state": {
          "type": "ready",
          "description": "This system is not configured to be part of a cluster, but is ready to
join one"
        },
        "last_seen": "2019-10-10T23:35:20.707710Z",
        "type": "host"
      }
    ],
    "switches": [
      {
        "switch_id": "ae502a39-e42e-4b2e-bac2-ad5e6888d319",
        "name": "switch1.cluster3",
        "cluster_state": {
          "type": "ready",
          "description": "This system is not configured to be part of a cluster, but is ready to
join one"
        }
      }
    ]
  }
}
```

```

"ports": [
  {
    "port_index": 5,
    "host_id": "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
    "interface": "sl_nfapp1"
  },
  {
    "port_index": 6,
    "host_id": "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
    "interface": "sl_services1"
  },
  {
    "port_index": 3,
    "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
    "interface": "sl_nfapp1"
  },
  {
    "port_index": 4,
    "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
    "interface": "sl_services1"
  },
  {
    "port_index": 1,
    "host_id": "77085b3c-f853-4563-828e-68a0ebf62edb",
    "interface": "sl_nfapp1"
  },
  {
    "port_index": 2,
    "host_id": "77085b3c-f853-4563-828e-68a0ebf62edb",
    "interface": "sl_services1"
  },
  {
    "port_index": 7,
    "host_id": "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
    "interface": "sl_nfapp1"
  },
  {
    "port_index": 8,
    "host_id": "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
    "interface": "sl_services1"
  }
],
"last_seen": "2019-10-10T23:35:20.707710Z",
"type": "switch"
},
{
  "switch_id": "d4602dea-210d-4240-b612-dc446c95895f",
  "name": "switch2.cluster3",
  "cluster_state": {
    "type": "ready",
    "description": "This system is not configured to be part of a cluster, but is ready to
join one"
  },
  "ports": [
    {
      "port_index": 3,
      "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
      "interface": "sl_nfapp2"
    },
    {
      "port_index": 4,
      "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
      "interface": "sl_services2"
    },
    {
      "port_index": 1,
      "host_id": "77085b3c-f853-4563-828e-68a0ebf62edb",
      "interface": "sl_nfapp2"
    },
    {
      "port_index": 2,

```

```

        "host_id": "77085b3c-f853-4563-828e-68a0ebf62edb",
        "interface": "sl_services2"
    },
    {
        "port_index": 8,
        "host_id": "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
        "interface": "sl_services2"
    },
    {
        "port_index": 7,
        "host_id": "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
        "interface": "sl_nfapp2"
    },
    {
        "port_index": 6,
        "host_id": "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
        "interface": "sl_services2"
    },
    {
        "port_index": 5,
        "host_id": "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
        "interface": "sl_nfapp2"
    }
  ],
  "last_seen": "2019-10-10T23:35:20.707710Z",
  "type": "switch"
}
]
}
}

```

CREATE CLUSTER API call

With the values from the previous call, we can create the cluster in the following way:

```

#export CLUSTER_NAME=test-cluster
#export MANAGEMENT_IP=192.168.61.118
#REQ=$(cat << EOF
{
  "root_user": {
    "username": "admin",
    "password": "password"
  },
  "cluster": {
    "name": "test-cluster",
    "management_ip": "192.168.61.118"
  },
  "switch_ids": [
    "d4602dea-210d-4240-b612-dc446c95895f",
    "ae502a39-e42e-4b2e-bac2-ad5e6888d319"
  ],
  "host_ids": [
    "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
    "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
    "77085b3c-f853-4563-828e-68a0ebf62edb",
    "9d42b01c-18fd-4e34-9889-7d3a2d94a454"
  ]
}
EOF
)
#curl -X POST "http://${TARGET}/deploy/api/cluster" -d "${REQ}"

```

A valid response to this API call should have the following format:

```
{
  "cluster": {
    "cluster_id": "700eb725-32c0-48b5-aecb-c6f1af4ae5",
    "name": "test-cluster",
    "state": {
      "configuration": {
        "name": "test-cluster",
        "cluster_id": "700eb725-32c0-48b5-aecb-c6f1af4ae5",
        "ensemble": [
          {
            "host_id": "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
            "address": "169.254.158.244",
            "client_port": 2181,
            "peer_port": 2888,
            "leader_port": 3888
          },
          {
            "host_id": "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
            "address": "169.254.116.56",
            "client_port": 2181,
            "peer_port": 2888,
            "leader_port": 3888
          },
          {
            "host_id": "77085b3c-f853-4563-828e-68a0ebf62edb",
            "address": "169.254.21.10",
            "client_port": 2181,
            "peer_port": 2888,
            "leader_port": 3888
          }
        ],
        "non_ensemble": [
          {
            "host_id": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
            "address": "169.254.164.101",
            "client_port": 2181,
            "peer_port": 2888,
            "leader_port": 3888
          }
        ],
        "switch_ids": [
          "d4602dea-210d-4240-b612-dc446c95895f",
          "ae502a39-e42e-4b2e-bac2-ad5e6888d319"
        ],
        "host_ids": [
          "4b5d634e-b4a9-462e-9e35-ff2e227fd839",
          "56691dbe-90b7-4bcc-a361-f8499e9e5b6c",
          "77085b3c-f853-4563-828e-68a0ebf62edb",
          "9d42b01c-18fd-4e34-9889-7d3a2d94a454"
        ],
        "connection_string": "169.254.158.244:2181,169.254.116.56:2181,169.254.21.10:2181",
        "broker_list":
        "169.254.158.244:9092,169.254.116.56:9092,169.254.21.10:9092,169.254.164.101:9092"
      },
      "initiating_host": "9d42b01c-18fd-4e34-9889-7d3a2d94a454",
      "name": "creating_cluster"
    }
  }
}
```

Once the cluster has been created, the system is now ready to be configured for operation and use – see the Stateless Luxon LX-400 Operation & User Guide for more information.

Chapter 6 - Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Server Chassis Components



Warning: System Cooling is provided by 4 internal fans mounted inside each server. These fans are not hot swappable. In the event of a fan failure, contact the support team at Stateless (support@stateless.net) in order to arrange a replacement server.

Power Supply Replacement:

The LX-400 cluster servers each have a 700/750W dual redundant power supply configuration consisting of two hot-swappable, high-efficiency power units. The power supply units (PSUs) have an auto-switching capability, which enables them to automatically sense and operate with a 100V - 240V input voltage.

If either of the two power supply units on a server fails, the other PSU will take the full load and allow the system to continue operation without interruption. The Universal Information LED on the control panel will blink slowly and continue to do so until the failed module has been replaced. Replacement modules can be ordered directly from Stateless (see contact information in the Preface). The power supply units have hot-swappable capability, meaning you can replace the failed module without powering down the server.

Removing the Power Supply

You do not need to shut down the system to replace a power supply unit. The dual redundancy feature will keep the system up and running while you replace the failed hot-swappable PSU. Replace with the same PSU, which can be ordered directly from Stateless (see Contact Information in the Preface section of this manual).

1. Unplug the power cord from the failed power supply unit.
2. Push the release tab (on the back of the power supply) to the side and then pull the unit straight out to remove the failed PSU (see Figure 6-1).
3. The power supply wiring was designed to detach automatically when the PSU is pulled from the chassis.

Installing a New Power Supply

1. Replace the failed power supply unit with another LX-PWRSUP-SM4x100G-4228R power supply module.
2. Push the new power supply module into the power bay until you hear a click.
3. Finish by plugging the AC power cord back into the new power module.

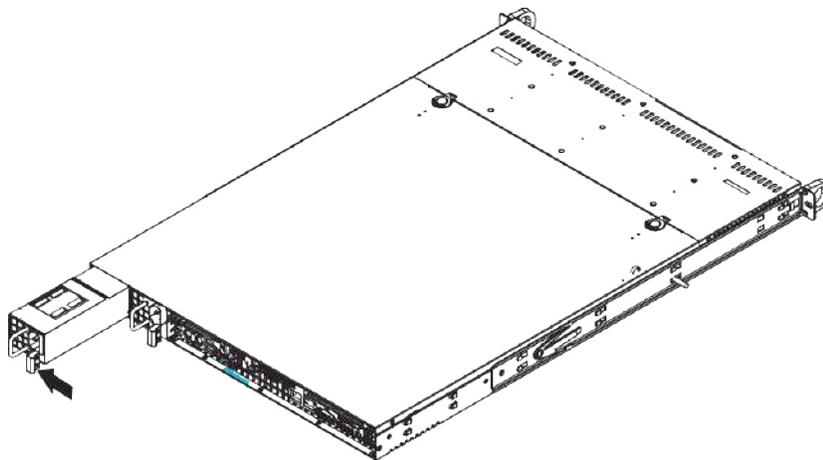


Figure 6-1. Removing/Replacing the Power Supply

Switch Chassis Components

Contained in each switch are two dual redundant hot-swappable power supply units (each with internal 40mm fans) and five hot-swappable cooling fans. All of these items can be replaced individually without needing to remove power from the system.

Each power supply unit has the following specifications:

- Input Voltage range = 90V-264V AC
- Output Voltage = 12V
- Hot Swappable
- Load-sharing between the 2 PSUs

Each of the five fans has the following features:

- Fans have status LEDs that show operational status
- Fans are individually hot-swappable

Switch PSUs and fans can be removed by pulling on each individual handle. Replacement units are simply pushed into place.

Appendix A

Standardized Warning Statements for AC Systems

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact the Stateless Technical Support department for assistance (support@stateless.net). Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Stateless Luxon cluster.

Warning Definition



Warning! This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Installation Instructions



Warning! Read the installation instructions before connecting the system to the power source.

Circuit Breaker



Warning! This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

Power Disconnection Warning



Warning! The system must be disconnected from all sources of power and the power cord removed from the power supply unit(s) before accessing the chassis interior to install or remove system components.

Equipment Installation



Warning! Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

Restricted Area



Warning! This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.

Redundant Power Supplies



Warning! The servers and switches in this cluster have more than one power supply connection. All connections must be removed to de-energize any individual component.

Backplane Voltage



Warning! Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

Comply with Local and National Electrical Codes



Warning! Installation of the equipment must comply with local and national electrical codes.

Product Disposal



Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.

Power Cables & AC Adaptors



Warning! When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Stateless only.

Appendix B – System Specifications

Server/Host Specifications

Server/Host Chassis
1U Rackmount, 17.2 x 1.7 x 20 in. / 437 x 43 x 508 mm. (W x H x D)
System Cooling
Four 4-cm counter-rotating PWM fans
Power Supply
Model LX-PWRSUP-SM4x100G-4228R (two power modules for redundancy) AC Input Voltages: 100-240 VAC Rated Input Current: 8.5A to 6A Rated Input Frequency: 50-60 Hz Rated Output Power: 700/750W Rated Output Voltages: +3.3V (25A), +5V (25A), +12V (700W: 58A at 100V-140V, 750W: 62A at 180V-240V), -12V (0.6A), +5Vsb (3A)
Operating Environment
Operating Temperature: 5° to 35° C (41° to 95° F) Non-operating Temperature: -40° to 60° C (-40° to 140° F) Operating Relative Humidity: 8% to 90% (non-condensing) Non-operating Relative Humidity: 5% to 95% (non-condensing)
Regulatory Compliance
Electromagnetic Emissions: FCC Class A, EN 55032 Class A, EN 61000-3-2/3-3, CISPR 32 Class A Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11) Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe) Other: VCCI-CISPR 32 and AS/NZS CISPR 32 Environmental: Directive 2011/65/EU, Delegated Directive (EU) 2015/863 and Directive 2012/19/EU
Perchlorate Warning
California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate ”

Switch Specifications

Switch Chassis
1U Rackmount, 17.32 x 1.73 x 19.97 in. / 440 x 44 x 507 mm. (W x H x D)
System Cooling

5 Hot-swappable fans with status indication

Power Supply

Model LX-PWRSUP-SM4x100G-4228R (two power modules for redundancy)

AC Input Voltages: 100-240 VAC

Rated Input Current: 8A to 3A

Rated Input Frequency: 50-60 Hz Rated Output

Power Rating: 600W

Max. Power Consumption: 512W

Operating Environment

Operating Temperature: 5° to 45° C (41° to 113° F)

Non-operating Temperature: -40° to 70° C (-40° to 158° F)

Operating Relative Humidity: 10% to 90% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: EN 55032:2015+AC:2016, Class A EN 61000-3-2:2014, Class A EN 61000-3-3:2013, FCC Class A VCCI Class A, CCC (GB9254-2008, Class A)

Electromagnetic Immunity: EN 55024:2010+A1:2015 IEC61000-4-2/3/4/5/6/8/11

Safety: CSA 22.2 No 60950-1 & UL60950-1, IEC/EN60950-1, GB4943.1-2011