4100i Ruggedized Switch

Kamal Takodra
Technical Marketing Engineer

Ed Kurata
Product Line Manager

aruba
a Hewlett Packard Enterprise company

Agenda

1. 4100i Overview
2. 4100i Details
3. 4100i Notable Features

Aruba CX 4100i Switch Series

Ruggedized, secure, and smart Ethernet switches

New ruggedized series extends CX innovation to harsh environments

24 port fan less rack mount
with 4 x 1/10GbE uplinks and built-in PSU

Ruggedized L2 Ethernet	DIN rail mount Rack mount
	Extended temperatures (-40C to 70C[1]) and IP30
IoT ready	30W and 60W PoE (360W) with high-speed uplinks
	Unified role-based access with Dynamic Segmentation[2]
Operational simplicity	Manage via single pane of glass with Aruba Central[3]
	Advanced configuration and programmability with CX

[1]Temperature derated to 50C if non-industrial temperature transceivers are used.
[2]UBT and Local User Roles supported. DUR not supported at launch.
[3]Central support planned for future release.

Intelligent edge extends beyond carpeted spaces

Smart, secure, and reliable connectivity improves productivity and increases safety

Manufacturing

Warehouses

Smart Cities

Large Public Venue

Government

Higher-Ed

Agriculture

Transportation

-40°C to 70°C Vented Enclosure

PoE IEEE802.3bt 60W

Surge Immunity

Dry Contact Alarm IO

NEMA-TS2 Smart Traffic

Rail

Substation

12 Port SKU

Redundant Power

DIN Rail Mounting

Intelligent edge extends beyond carpeted spaces

Industry specific standards[1]

Industry Specific	Description
Industrial	Industrial Immunity EN 61000-6-2 Industrial Emissions EN 61000-6-4 Light Industrial Immunity EN 61000-6-1
Power Substations	Power Station Communications Networks IEEE 1613 Substations Communications Networks EN/IEC 61850-3
Railway applications	Apparatus for Rolling Stock EN 50121-3-2 Signalling and Telecommunications Apparatus EN50121-4 Rolling stock electronic equipment EN50155/IEC 60571
Traffic Control Systems	Enclosure for smart traffic control NEMA TS 2
Other	Voltage Surge, Dips, Ripple, Interruptions, Vibration, Shock, Emx, Radio F, etc

[1]refer to datasheets for full list of compliance to specifications

Aruba CX 4100i Switch Series

Ruggedized CX IP30 Layer 2 access switch series

AC-DC 480W | AC-DC 240W | DC-DC 240W

3 power supplies (external)

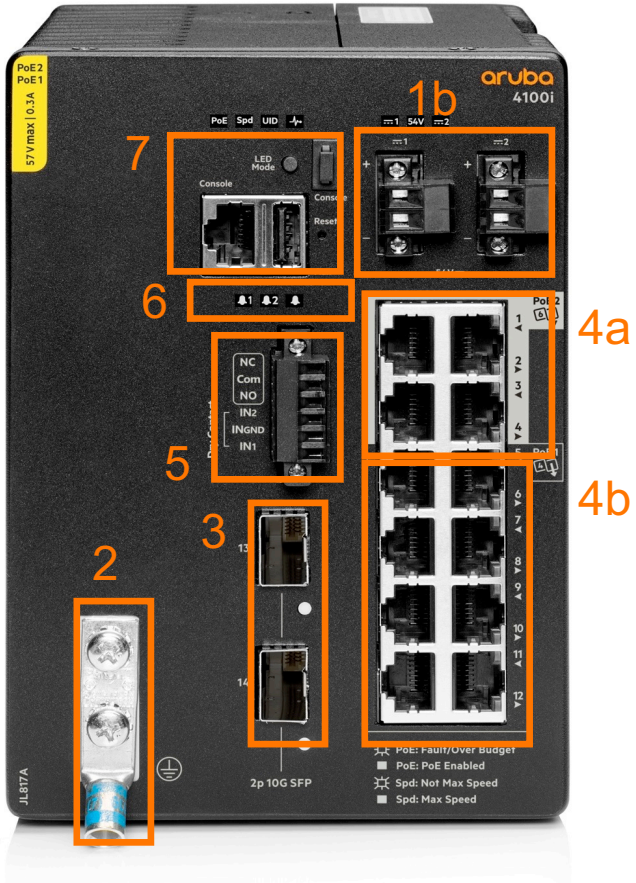
Aruba CX 4100i 12G CL4/6 POE 2SFP+ DIN Switch

- **L2 access features (Similar to 6100>6200)**
- **12 ports 10/100/1000 Base-T**
- **2 ports 100/1G/10G SFP+ slots**
- **Fan-less and IP30**
- **4 ports of PoE IEEE 802.3bt (60W/port) and 8 ports of 802.3at PoE (30W/port)**
- **3 external PSU choices for up to 360W PoE**
- **DIN mountable (rack mountable with kit)**
- **2 EPS input connections**
- **PoE Power:**
  - Normal (-40ºC to +50ºC): up to 360W JL820A
  - Derated (Ambient 70ºC) 200W JL820A

Aruba CX 4100i 24G CL4/6 POE 4SFP+ Switch

- **L2 access features (Similar to 6100>6200)**
- **24 ports 10/100/1000 Base-T**
- **4 ports 100/1G/10G SFP+ slots**
- **Fan-less and IP30**
- **4 ports of PoE IEEE 802.3bt (60W/port) and 20 ports of 802.3at PoE (30W/port)**
- **Internal power supply supporting up to 240W PoE power**
- **PoE Power:**
  - No Derating (-40ºC/40ºF to +70ºC/158ºF): 240W

Aruba CX 4100i Switch Series



JL817A 4100i 12 port 2 SFP+

JL818A 4100i 24 port 4 SFP+

1a Front Facing PSU + Cable loop
1b Dual DC input , for redundant PSU[1]
2 Ground point
3 10Gb SFP+
4a 60W PoE .bt Class 6
4b 30W PoE .at Class 4
5 Alarm Dry Contact connections
6 Alarm input /output LED
7 RJ45, USB-C console[2] and USB A

[1]No increase in POE budget
[2] In band use default VRF

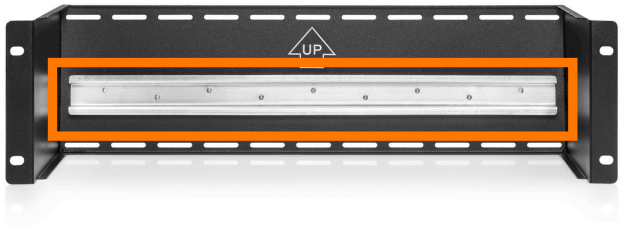
DIN RAIL

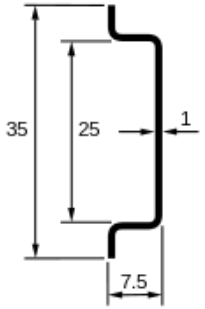
What is it ?

DIN stands for Deutsche Institut für Normung, which translates to ‘German Institute of Standards’.

They are the long metal strips that form standard component rail-mounting system in equipment cabinet racks.
DIN rails are designed for securely attaching electrical and industrial control products - such as circuit breakers, power supplies, actuators, solenoids etc- inside a typical equipment rack housing or frame.

JL822A DIN RACK KIT





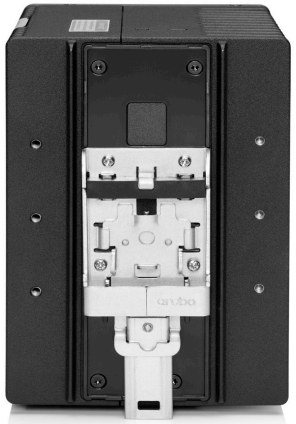
CX Switch & PSUs support 35mm “Top Hat”

TS35 (North America)
EN50022 (EMEA)
IEC 60715 (International)

Steel or stainless-steel DIN rail for dynamic stress installation. Aluminum DIN rail not recommended.

Front

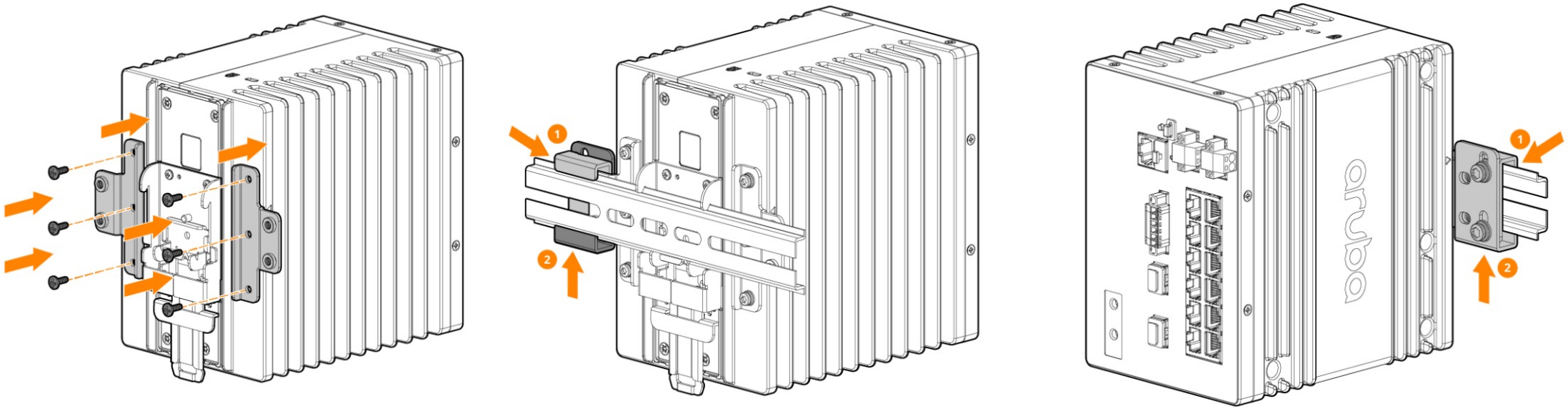
Rear Mount



Side Mount

DIN RAIL REINFORCEMENT

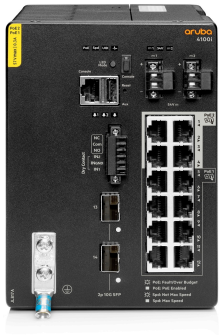
Optional reinforcement accessory bracket for rear mount



EPS Dimensions and Connections

External PSUs 4000i for CX 4100i DIN rail mount model

DC 54V-in



AC-DC
480W

AC-DC
240W

DC-DC
240W

Supported solution only with Aruba PSUs. Direct DC to switch not supported

4100i JL817A	4000i AC-DC 480W JL820A	4000i AC-DC 240W JL819A	4000i DC-DC 240W JL812A
(H)160mm X (W) 113mm X (D) 162.9mm [Add 10.6 mm for DIN bracket W or D per mount] H=3.6 U 3.84Kg	(H) 121mm X (W)144mm X (D) 118.6mm 1.37kg	(H) 121mm X (W) 85mm X (D) 124.1 mm 0.96kg	(H)115 mm X (W) 40mm X (D) 110mm 0.4kg
(H) 6.3¨ X (W) 4.4¨ X (D) 6.4¨ [Add 0.4¨ for DIN bracket W or D per mount] H=3.6 U 8.46lbs	(H) 4.76¨ X (W) 5.67¨ X (D) 4.67¨ 3.0lbs	(H) 4.76¨ X (W) 3.35¨ X (D) 4.86¨ 2.11lbs	(H) 4.52¨ X (W) 1.57¨ X (D) 4.33¨ 0.88lbs
DC Input= 14 AWG /2.5mm^2 up to 2 Meters	AC in cable not supplied AC in=16-12 AWG/ 1.5-4mm^2 DC out=14 AWG/ 2.5mm^2 up to 2 Meters	AC in cable mot supplied AC in=16-12 AWG /1.5-4mm^2 DC out=14 AWG/2.5mm^2 up to 2 Meters	DC in=12 AWG /4mm^2 DC out = 14 AWG/ 2.5mm^2 up to 2 Meters

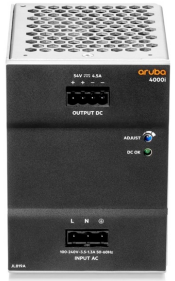
PoE power budget based on temperature and DC voltage

External PSUs 4000i for CX 4100i DIN rail mount model

3 external power supplies (4000i)

AC-DC
480W

AC-DC
240W



DC-DC
240W

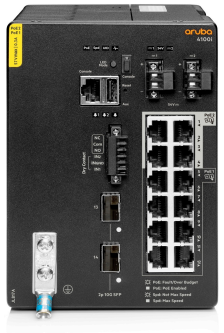
Supported configuration only with Aruba PSUs. Direct DC to switch not supported

PoE Power budget	AC-DC 480W PSU JL820	AC-DC 240W PSU JL819A	DC-DC 240W PSU JL812A
Normal (-40ºC/F to <50ºC/122ºF)	360W	180W	180W @48-55VDC 150W @24VDC 60W@12VDC
At ambient 60 ºC (≥ 50 ºC/122ºF <60ºC/140ºF)	320W	140W	150W@48-55VDC 150W@24VDC 60W@12VDC
At ambient 70ºC (≥60ºC/140ºF)	200W	80W	150W@48-55VDC 150W@24VDC 50W@12VDC

PoE Budget

User Configurable PoE Power Budget[1]

- **Configure based on PSU type**
- **Mixed PSU[2]**
- **Variable Operating temperature/derate**
- **Variable DC input to PSU**



AC-DC
480W

360/320/200W

AC-DC
240W

180/140/80W

DC-DC
240W

180/150/60/50W

```
4100i-12P# configure
4100i-12P(config)# poe-power 320
See the documentation before configuring PoE power.

Do you want to continue (yes/no)? yes
```

[1] only one active PSU no PoE power sharing
[2] Redundancy voltage difference ~ 1v see Install Startup Guide

PoE and Power Diagnostics

```
#diagnostics
#diag show power-monitor

----------------------------------------
          Voltage    Current    Power
Mbr/PSU   (Volts)    (Amps)    (Watts)
----------------------------------------
1/1       54.450     0.287      15.606
1/2       0.025      0.000      0.000
----------------------------------------
```

```
#diagnostics
#diag show power-supply
Subsystem: base
        Maximum PoE Power:       360 Watts
        PoE Power configured:    Yes
        Configured PoE Power:    320 Watts
        Operational 54V status:  Good
        Available PoE Power:     320 Watts

        PSU: 1/1
                Type:                   External PSU
                FRU EEPROM:             Absent
                PSU CONTROLLER:         Absent
                PoE Capable:            Capable
                Product Name:           N/A
                Serial Number:          N/A
                Manufacturer Name:      N/A
                Revision Number:        N/A
                Model Number:           N/A
                Description:            External DIN Power Supply
                Status:                 ok
                Present:                ok
                Input Power:            ok
                Ouput Power:            ok
                Bit Status:             ok
                MCU Status:             0
                Comm Status:            ok
                Last Read Uptime:       71734 s  878262 ms
                Present Uptime:         31 s  677723 ms
                Power OK Uptime:        31 s  677723 ms
                PoE Power OK Uptime:    34 s  464321 ms
                Fault Uptime:           0 s  000000 ms
                Total Warning Counts:   0
                Total Failure Counts:   0

        PSU: 1/2
                Type:                   (null)
```

[1] only one active PSU no PoE power sharing
[2] Redundancy voltage difference ~ 1v see Install Startup Guide

PoE uniform NO derating

Rack mount internal PSU

Aruba CX 4100i 24G CL4/6 POE 4SFP+ Switch

- **24 ports 10/100/1000 Base-T**
- **2 ports 100/1G/10G SFP+ slots**
- **Fan-less and IP30**
- **4 ports of PoE IEEE 802.3bt (60W/port) and 20 ports of 802.3at PoE (30W/port)**
- **Internal power supply supporting up to 240W PoE power**
- **PoE Power:**
  - (-40ºC/ºF to +70ºC/158ºF): 240W
- **1U (H 44mm X W 444.5mm X D 304.4 mm / 1.73˝X 17.5˝X 12.0˝)**
- **6.5kg/ 14.33lbs**

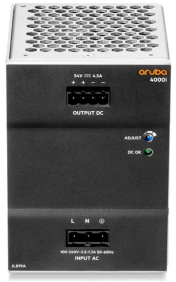
EPS and surge protection

Surge protector is needed to meet some of the industrial requirements

Power supplies (4000i) and SPD

AC-DC
480W

AC-DC
240W



DC-DC
240W

4000i AC-DC 480W JL820A	4000i AC-DC 240W JL819A	SPD2-300-2P0-R	4000i DC-DC 240W JL812A	SPD2-150-2P0-R
POE 54V DC 480W 100-240VAC Power Supply and output 54V DC to supply into JL817A 4100i switch.	Aruba 4000i POE 54V DC 240W 100-240VAC Power Supply and output 54V DC to supply into JL817A 4100i switch.	Up to 4kV over protection (see data sheet)	The DC power supplies takes in 12V-48V DC and output 54V DC to supply into JL817A 4100i switch.	Up to 4kV over protection (see data sheet)

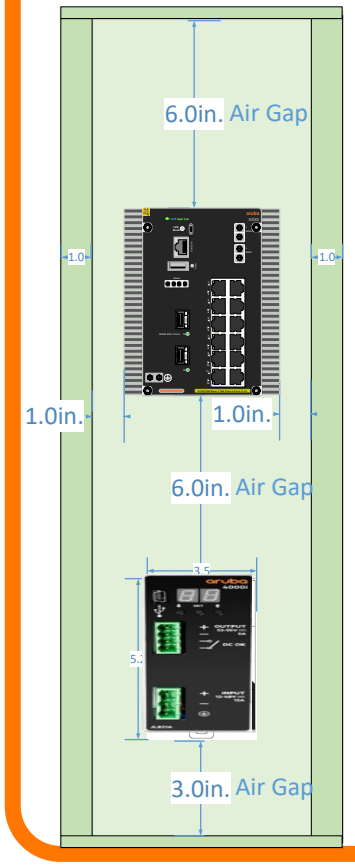
Supported Mounting (DIN Mount Switch)

Supported Mounting

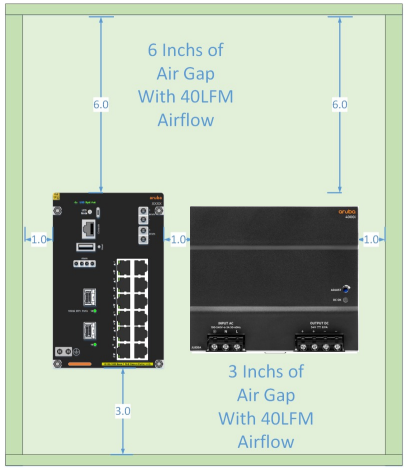
Cabinet Mounting

6” to the top of enclosure.
1” spacing to the adjacent equipment.

Narrow Enclosure

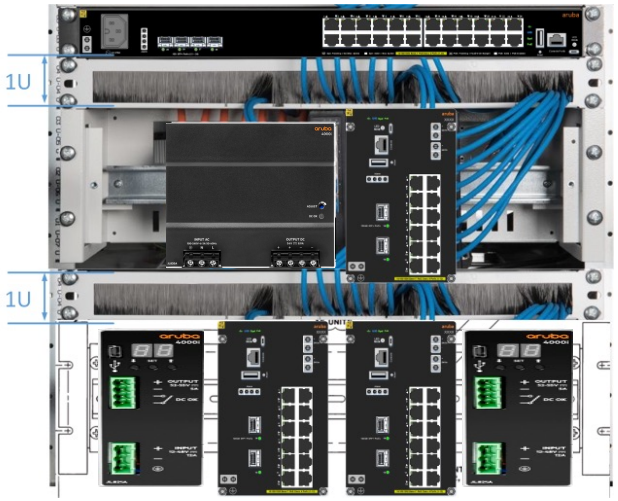


Wide Enclosure

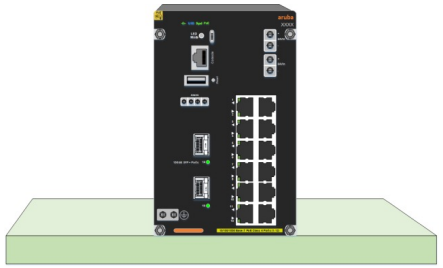


Din-to-Rack Mount Kit

1U spacing from the top/bottom equipment.
1” spacing to the adjacent equipment.

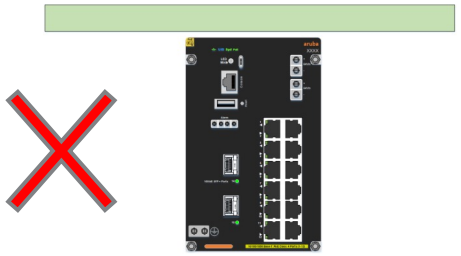


Upright Table Top

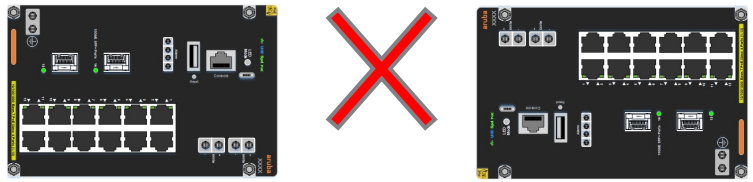


Unsupported Mounting

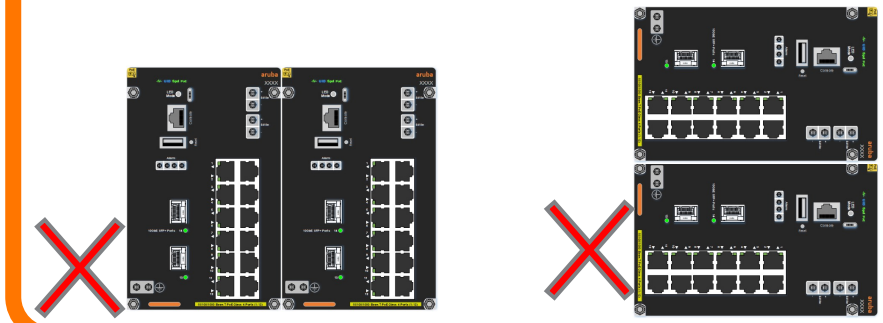
Under Table/Surface



Horizontal Table top or mounting



Side-way Stacked
Physical Stacking

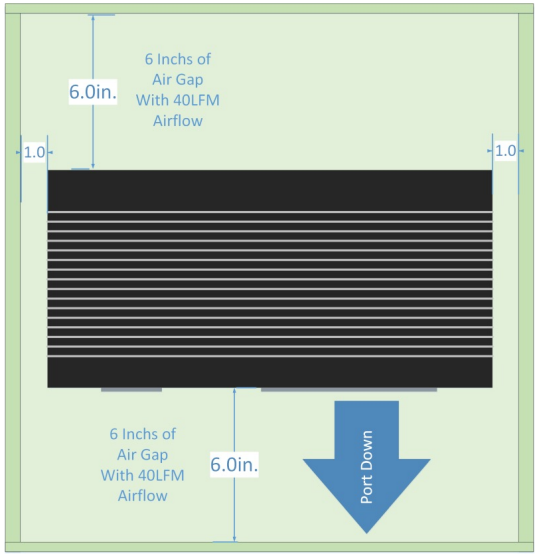


Mounting Solution (Rack Mount Switch)

Supported Mounting

In Cabinet Wall Mounting

- 6” to the top of cabinet.
- 1” spacing to the adjacent equipment.
- Support Ports-Down orientation only



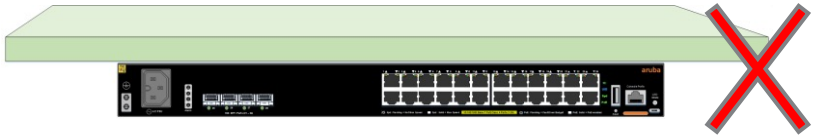
Rack Mount

1U spacing above the switch to the next equipment.

Upright Table Top

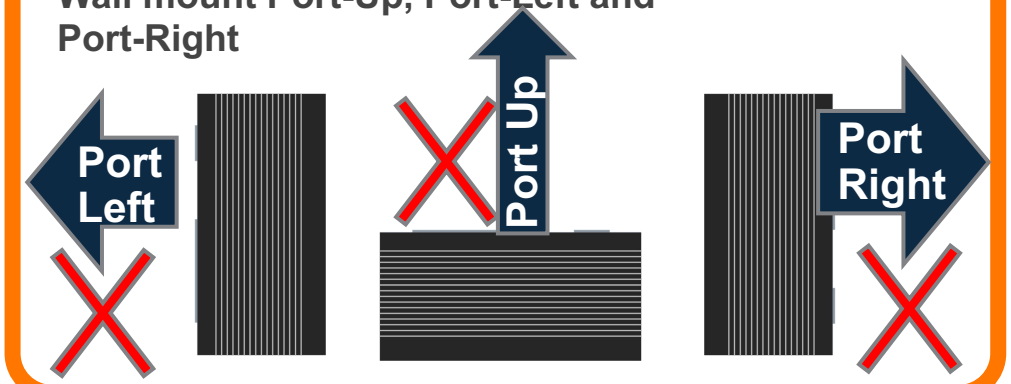
Unsupported Mounting

Under Table/Surface



Physical Stacking

Wall mount Port-Up, Port-Left and Port-Right



Aruba CX 4100i Industrial Transceivers

SKU	Description	XCVR type	Specification
JL780A	Aruba 1G I-Tmp SFP LC SX 500m MMF	1000M SX	Max Transmission distance ~0.5km (OM2) (MMF only)
JL781A	Aruba 1G I-Tmp SFP LC LX 10km SMF	1000M LX	Max Transmission distance 10km (SMF) Max Transmission distance ~0.5km (MMF)
JL782A	Aruba 10G I-Tmp SFP+ LC SR 300m MMF	10GBase-SR	Max Transmission distance ~0.4km (OM4) (MMF only)
JL783A	Aruba 10G I-Tmp SFP+ LC LR 10km SMF	10GBase-LR	Max Transmission distance 10km (SMF)

Industrial transceiver temperature range: -40C(-40F) to +85C(185F)[1]

Non Aruba Industrial Temperature rated XCVR behavior

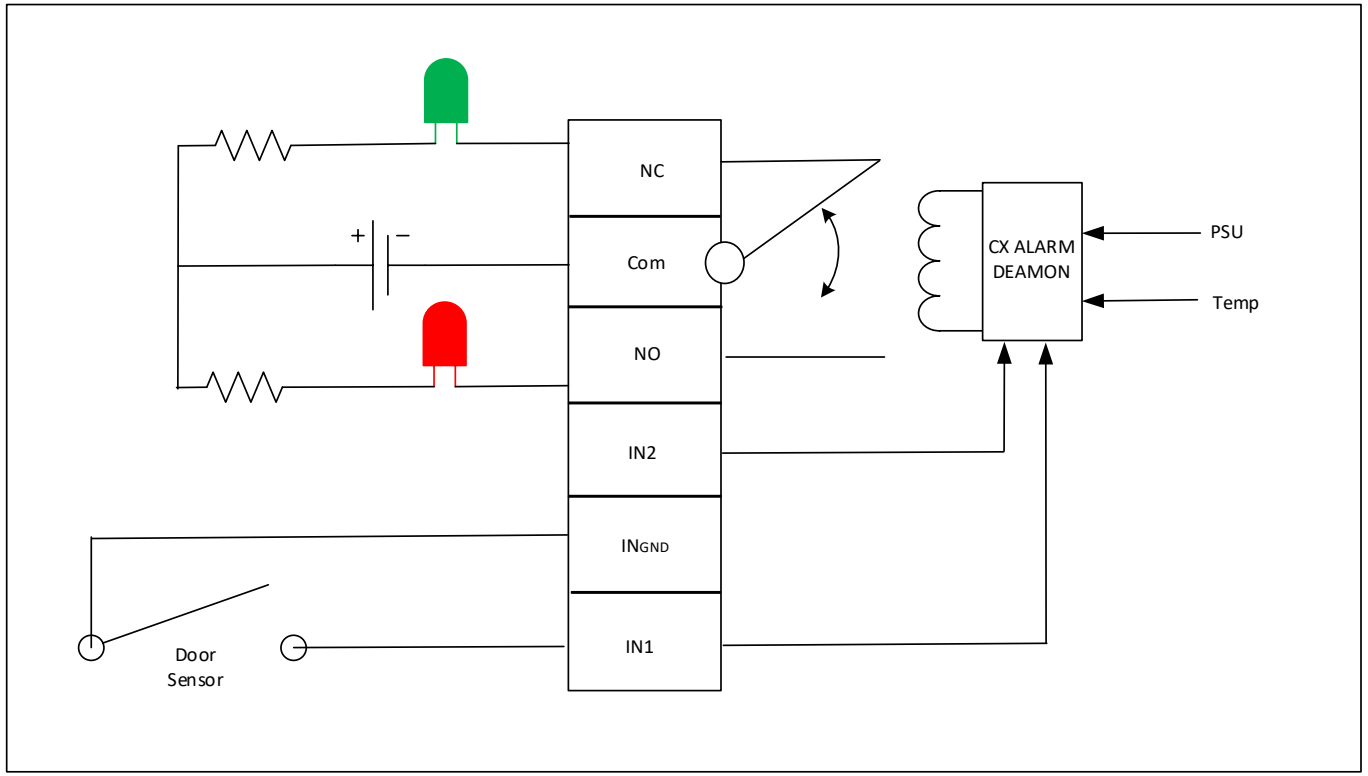
- Derating log
- ambient temperature warning log
- XCVR case temperature log (assuming it rises above its limit)

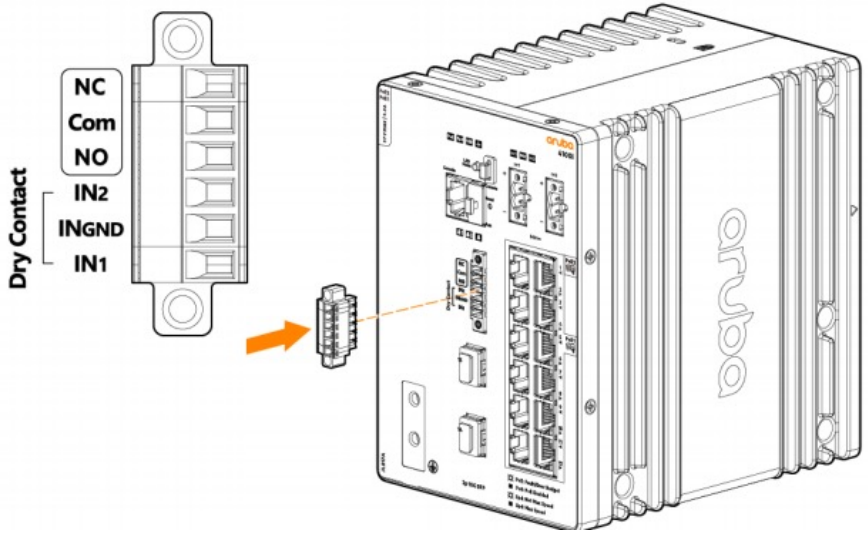
[1] 3 Year Warranty XCVRs https://www.arubanetworks.com/assets/support/Aruba-Transceiver-Warranty.pdf July 2020

4100i Notable Features

Alarm Ports

- Hardware alarms ports that generate alarm on internal or external condition
- Each input alarm can be configured to trigger an alarm upon either "normally open" or "normally closed" circuit
- Alarm actions: The action to be taken when the external device connected at the input port indicates an event has occurred. The action could be configured to **one** or **all** of the below: **log-and-trap:** Each input alarm configured to generate an event log as well as a trap event. **relay:** Each input alarm event can be relayed to the alarm output port.





- Relay NC (Normally Closed) , NO (Normally Open), Common
- IN1 Input 1 channel, IN2 Input 1 Channel, INGND
- Input NO VOLTAGE
- Output 1A@24V DC or 0.5A@48VDC
- Wire AWG 18-16

Alarm Ports-Configuration

```
alarm temperature action log-and-trap | relay

alarm power-supply action log-and-trap| relay
```

```
alarm input IN1 name toi-door

alarm input IN1 trigger open | closed

alarm input IN1 action |log-and-trap |relay

alarm snooze [ time in mins]
alarm snooze repeat
```

Alarm Ports

```
show alarm input
Alarm Snooze Timer Status : Inactive
 ---------------------------------------------------------------------------
Input Alarm IN1
---------------------------------------------------------------------------
Alarm Port          Status          log-and-trap        Relay     Trigger
---------------------------------------------------------------------------
IN1                 Inactive        yes                 no        Closed
---------------------------------------------------------------------------
Input Alarm IN2
 ---------------------------------------------------------------------------
Alarm Port          Status          log-and-trap        Relay     Trigger
 ---------------------------------------------------------------------------
IN2                 Active          no                  yes       Open
```

Event log & SNMP trap sent on trigger action

Output Relay Circuit not used

Inactive as Open circuit

Activate on IN1 Closed Circuit

Event log & SNMP trap not used

Active as Open circuit

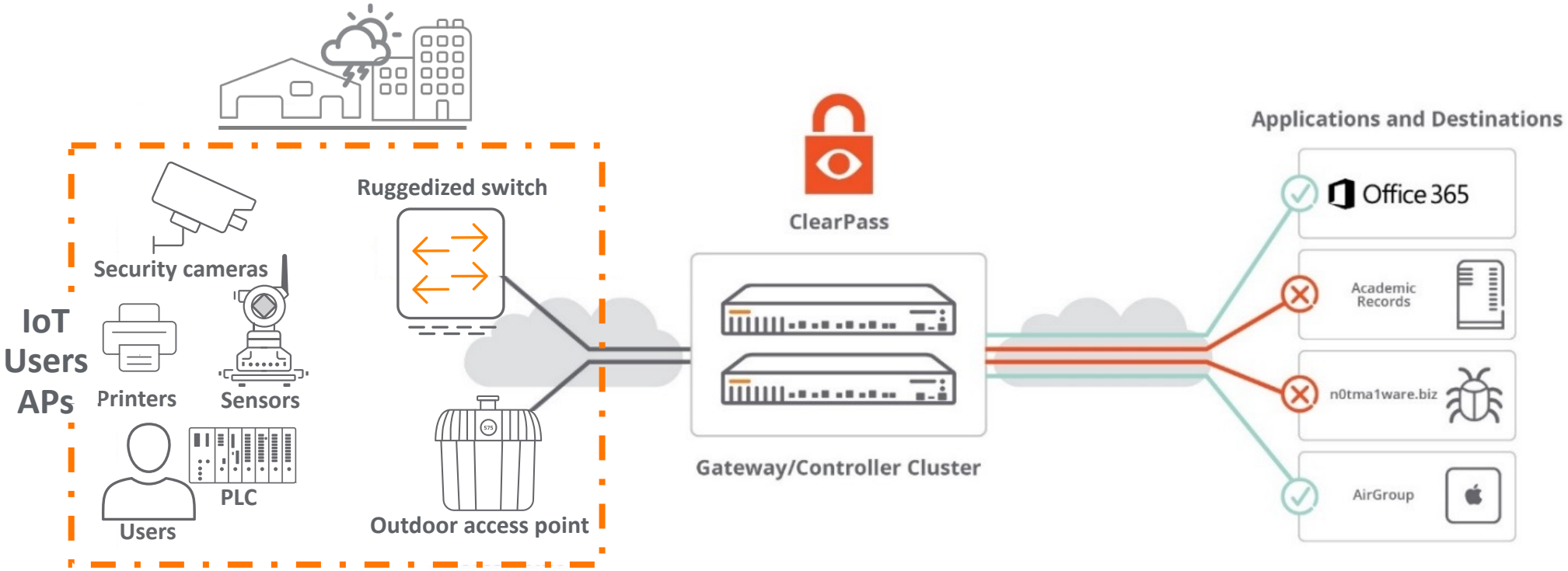
Activate on IN1 Open Circuit

Output Relay Circuit used

```
show alarm
Alarm Snooze Timer Status : Active
          Duration remaining: 1 min 32 sec
---------------------------------------------------------------------------
Global Alarm: Temperature
---------------------------------------------------------------------------
Alarm Event                 Status              log-and-trap        Relay
---------------------------------------------------------------------------
Temperature                 Inactive            yes                 no
---------------------------------------------------------------------------
Global Alarm: power-supply
 ---------------------------------------------------------------------------
Alarm Event                 Status              log-and-trap        Relay
 ---------------------------------------------------------------------------
power-supply                Active              no                  yes
```

Securely add IoT, users, and access points

Extending Aruba Dynamic Segmentation beyond carpeted spaces



AUTOMATED	SEGMENTED	CENTRALIZED
Save time and reduce misconfigurations	Improve traffic separation and security posture	Enhance visibility and management

Note: CX 4100i supports UBT and Local User Roles

Dynamic Segmentation -UBT

```
!
radius-server host 10.5.8.12 key ciphertext <password>
!
!
vlan 1000
    name UBT
spanning-tree
ubt-client-vlan 1000
ubt zone toi vrf default
    primary-controller ip 10.5.8.6
    enable
http-proxy 10.80.2.217:8080 vrf default
port-access role user-tunnel
    reauth-period 180
    gateway-zone zone toi gateway-role emp-role
aaa authentication port-access dot1x authenticator
    enable
interface 1/1/X
    no shutdown
    vlan access 1
    aaa authentication port-access dot1x authenticator
        enable
!
config ommitted
!
ip source-interface ubt 10.5.8.13
https-server vrf default
4100i-TOI#
```

- LUR 10.8
- Up to 32 roles
- Up to 768 UBT clients

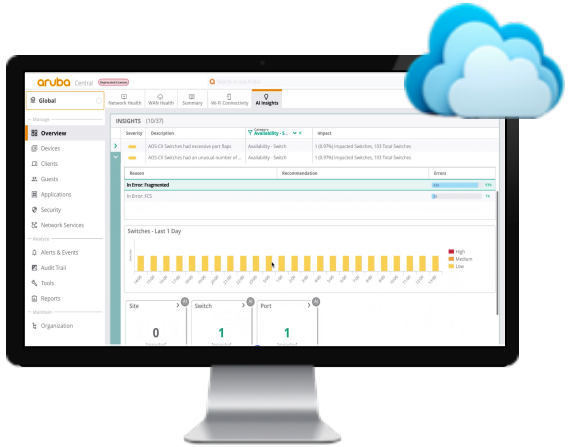
Dynamic Segmentation -UBT

```
 show ubt state
=====================================================================
Zone toi:
=====================================================================

Local Conductor Server (LCS) State:

LCS Type      IP Address    State                Role
---------------------------------------------------------------------
Primary     : 10.5.8.6   ready_for_bootstrap operational_primary

Switch Anchor Controller (SAC) State:

              IP Address      MAC Address          State
-------------------------------------------------------------------
Active      : 10.5.8.6        00:0b:86:b7:6a:7f    registered
Standby     : 10.5.8.7        00:0b:86:dd:6c:00    registered

User Anchor Controller(UAC): 10.5.8.6

User                Port   State                          Bucket ID  Gre Key  VLAN
-------------------------------------------------------------------------------
a0:36:9f:39:ef:ce   1/1/1  registered                     24         1        1000

# show ubt users up

=====================================================================
Displaying UBT Users of Zone: toi having Tunnel Status UP
=====================================================================
Downloaded user roles are preceded by *
Port        Mac-Address        Tunnel Status       Gateway-Role                Failure Reason
-----------------------------------------------------------------------------------------------
1/1/1       a0:36:9f:39:ef:ce  activated           emp-role                    ---/---
```

Simplify Operations with a Unified Infrastructure

Unique architecture provides management flexibility with same switch

Central



Cloud-based
wired + wireless access
network management

COP

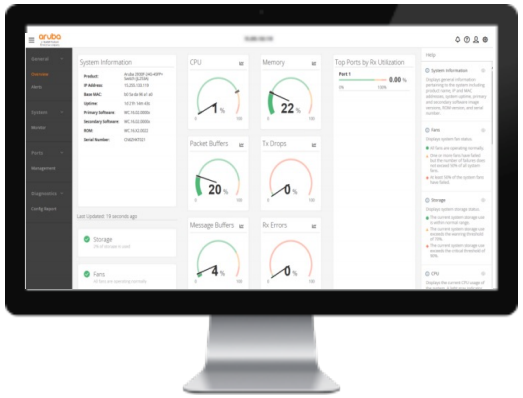
On-prem
wired + wireless access
network management

CLI

NetEdit

for AOS-CX

Web GUI

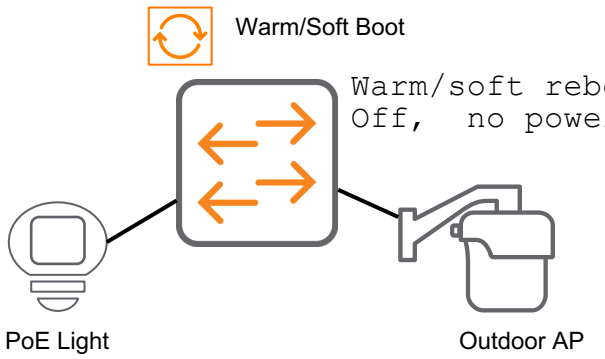


Web interface for
single switch network
management

Central support for CX 4100i planned for future release.

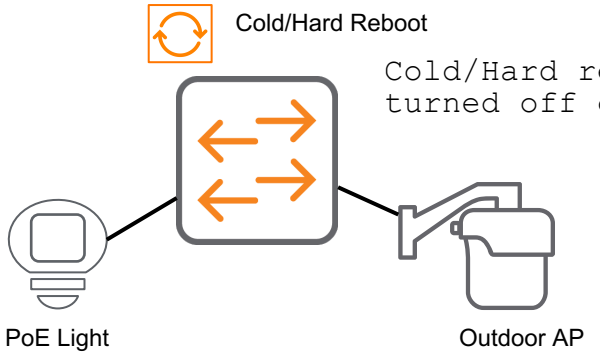
Quick POE and Always-on POE

Always On PoE



Warm/soft reboot -power to switch is not turned Off, no power interruption i.e software upgrade

Quick PoE



Cold/Hard reboot- power to switch system is turned off or lost i.e unplanned outage

https://www.youtube.com/watch?v=0Upsb75hTOY

```
show power-over-ethernet

System Power Status

  PoE Power Status                : No redundancy
  Operational Power Status        : No redundancy
  Total Available Power           : 240.00 W
  Total Configured Power          :   0.00 W
  Total Failover Pwr Avl          :   0.00 W
  Total Redundancy Power          :   0.00 W
  Total Power Drawn               :   0.00 W
  Total Power Reserved            :   0.00 W
  Total Remaining Power           : 240.00 W
  Trap Threshold                  : 80 %
  Trap Enabled                    : Yes
  Always-on PoE Enabled           : 1/1
  Quick PoE Enabled               : None


 Internal Power:
        Total Power
  PS    (Watts)          Status
  ----- ------------     ---------------------
  1/1   0                OK
```

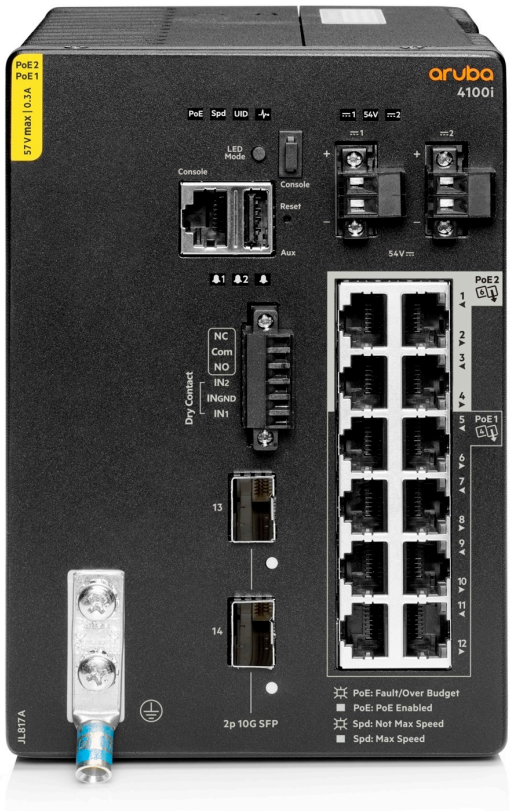
Quick POE and Always-on POE

```
# configure
power-over-ethernet
  always-on  Continue supplying power to port during switch reboot
  quick-poe  Provide power to powered device quickly after cold boot
  threshold  Set the excess power consumption trap threshold. (Default: 80)
  trap       Send SNMP traps for PoE events
# power-over-ethernet quick-poe 1/1
```

```
# show power-over-ethernet
System Power Status

  PoE Power Status              : No redundancy
  Operational Power Status      : No redundancy
  Total Available Power         : 240.00 W
  Total Configured Power        :   0.00 W
  Total Failover Pwr Avl        :   0.00 W
  Total Redundancy Power        :   0.00 W
  Total Power Drawn             :   0.00 W
  Total Power Reserved          :   0.00 W
  Total Remaining Power         : 240.00 W
  Trap Threshold                : 80 %
  Trap Enabled                  : Yes
  Always-on PoE Enabled         : 1/1
  Quick PoE Enabled             : 1/1

 Internal Power:
        Total Power
  PS    (Watts)        Status
  ----- ------------   ---------------------
  1/1   0              OK
```

https://www.youtube.com/watch?v=0Upsb75hTOY

PoE-mixed



JL817A 4100i 12 port 2 SFP+

JL818A 4100i 24 port 4 SFP+

Mixed PoE

Up to 360W (12 port)

Up to 240W (24 port)

60W ports dot bt > at >af

30W ports dot af > at

Note 12 port de-rated over > +50ºC/122ºF

DHCP Snooping and Relay

```
dhcpv4-snooping authorized-server 10.10.10.1
dhcpv4-snooping flash-storage
vlan 1
vlan 2
    dhcpv4-snooping
vlan 3
    dhcpv6-snooping
```

Allow known DHCP servers

Optional bind dhcp bindings to flash or usb

Enable dhcp snooping under vlan

Allowable bindings 256

```
interface vlan 2
    ip address 10.69.15.1/24
    ip helper-address 10.69.253.3
    ip helper-address 10.69.253.5
    ip helper-address 10.6.25.3
```

Enable relay for V4 under VLAN

Up to 8 IPv4 helpers per SVI

```
dhcpv6-relay

interface vlan 3
    ipv6 address 2001:db8:3::1/64
    ipv6 nd prefix default valid 4294967295 preferred 4294967295 no-autoconfig
    ipv6 nd ra managed-config-flag
    no ipv6 nd suppress-ra
    ipv6 helper-address unicast 2001:db8:8400::1
    ipv6 helper-address unicast 2001:db8:8402::2
    ipv6 helper-address unicast 2001:db8:8401::3
```

Enable V6 relay, **off by default**

DHCPV6 statefull config (RA & ND) under VLAN.
Client IPv6 and DNS address defined by DHCP Server

A flag Off

M flag On

Allow RA

V6 relay to DHCP server address 2001:db8:840X::Y
Up to 8 IPv6 helpers per SVI

https://community.arubanetworks.com/community-learning

Automation Control Protocols Overview

- Automation control protocols are used with specialized networks to connect sensors and actuators to each other, to control systems, and to the applications that consume their data.There are ≈200 distinct, non-interoperable building and industrial automation control protocols, and 30 PHYs in these networks
- Real-time control protocols are valued because of their low latency, reliability, and deterministic behavior. These attributes are required in high-speed closed-loop control systems
- Ethernet is used in some automation control protocols, however, in time-sensitive networks protocols it may be a form of Ethernet that is so heavily modified as to be non-interoperable with managed and unmanaged IT LAN switches
- It is critically important to understand if a customer is using a form of Ethernet that is compatible with the 4100i switches. These may include Profinet IO, Modus TCP/IP, BACnet IP, OPC-UA

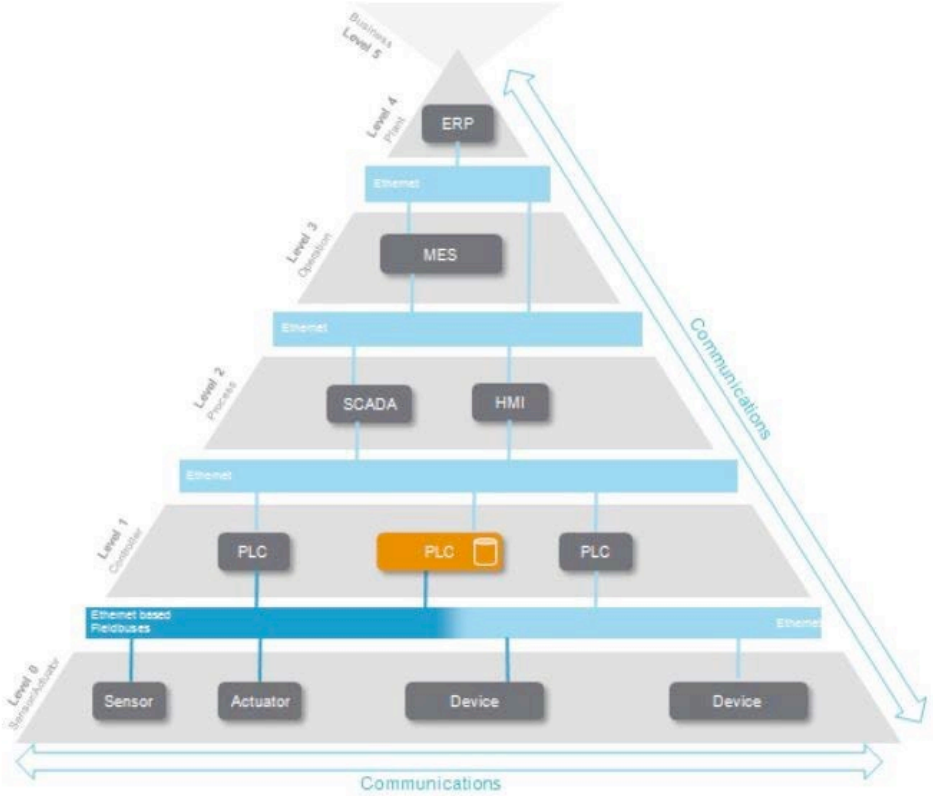


Image credit: Schneider Electric

Automation Control Protocols

Popular Industrial/Automation Protocols

- “Profinet I/O” Devices on Ethernet can report back information that can be acted upon in IO networks. (Siemens)
- “EtherNet/IP” Ethernet/“Industrial Protocol” used to carry Common Industrial Protocol, multicast intensive defined by Open DeviceNet Vendors Association, (ODVA.ORG)
- “Modbus” communication for I/O networks Client /Server over RS232, RS422,**RS485** and **Ethernet** (Modicon /Schneider/modbus.Org)
- BACnet- Bulding Automation Control Networks developed by American Society Heating Refrigeration Automation Engineering ISO 16484-5 (BACnet.org) .Most prevalent are BACnet over IP and BACnet over Master Slave /Token Passing (**RS485**).
- Trend transport over Ethernet and IP

Automation Control Protocols

- 4100i may **NOT** natively support specific Industrial Protocol .
  - Case by case, **PoC/Test and validate in client specific environment**
- Profinet I/O can use:
  - Unmanaged switches (Profinet CC-A)
  - Managed switches (Profinet CC-A)
  - Profinet capable switch for reporting and action may not be supported (Profinet CC-B and C) ⊗
- EtherNet/IP:
  - Minimum Required-IGMP snooping, full duplex switching, port mirroring
  - Minimum + Recommended -IGMP query, Auto-negotiated /manual port settings, VLAN, SNMP, Wire speed
  - ODVA Tested /Certified ⊗
- Modbus
  - Use in Ethernet/TCP/IP implementations only, operates over various speeds and can operate at slower speeds depending on use case. Requires specific MODBUS gateways
- BACNet
  - Use in Ethernet/Internet Protocol implementations only. Requires specific BACnet gateways, routers and protocols.

4100i Summary

- Ruggedized for harsh environment /IP30/Fanless/DIN mount and 19” 1U
- Industry specific compliance
- External PSUs AC & DC with redundancy
- Aruba Industrial transceivers + 4100i (-40ºC/ºF to +70ºC/158ºF) cold boot up to 20 mins
- Alarm Output X 1 & Inputs X 2
- 10.8 CX L2 Access Switch with L2 “feature set” between 6100/6200
- UBT / LUR
- DHCP Snooping and Relay
- Always On and Quick PoE
- PoE bt >at > af
- Console (RJ45/USB-C)
- Single (Default) VRF
- In band IP management
- Central/CoP/NetEdit/WebUI/CLI
- Static Routing
- No stacking
- No BT dongle
- Industrial/ Automation highly modified Ethernet. PoC / Test. Not natively supported

Thank you

arubanetworks.com