

Aruba Instant On 1960 Switch Series Stacking Configuration Guide



Published: April 2022
Edition: 1

Copyright Information

© Copyright 2022 Hewlett Packard Enterprise Development LP.

Open Source Code

This product includes code licensed under the GNU General Public License, the GNU Lesser General Public License, and/or certain other open source licenses. A complete machine-readable copy of the source code corresponding to such code is available upon request. This offer is valid to anyone in receipt of this information and shall expire three years following the date of the final distribution of this product version by Hewlett Packard Enterprise Company. To obtain such source code, send a check or money order in the amount of US \$10.00 to:

Hewlett Packard Enterprise Company 6280 America Center Drive, San Jose, CA 95002

Notices

The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Confidential computer software. Valid license from Hewlett Packard Enterprise required for possession, use, or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Links to third-party websites take you outside the Hewlett Packard Enterprise website. Hewlett Packard Enterprise has no control over and is not responsible for information outside the Hewlett Packard Enterprise website.

Acknowledgments

Microsoft® and Windows® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Adobe® and Acrobat® are trademarks of Adobe Systems Incorporated. Java® and Oracle® are registered trademarks of Oracle and/or its affiliates. UNIX® is a registered trademark of The Open Group.

Contents	3
About this Document	5
Intended Audience	5
Applicable Products	5
Applicable Software Version	5
Related Documents	5
Terminology	6
Introduction to Stacking	7
Purpose of Stacking	7
What is Stacking	7
Benefits of Stacking	7
Aruba Instant On 1960 Stacking Overview	8
Introduction to Local Stacking	8
Introduction to Cloud Managed Stacking	9
Building a Stack	12
Building a stack using Local Web GUI	12
Building a stack using Cloud Management	15
Adding switches to a stack	22
Adding a switch using Local Web GUI	22
Adding a switch using Cloud Management	23
Identifying a stack and its members	26
Understanding stack status using the Local Web GUI	26
Turning on Locator LEDs using Local Web GUI	26
Understanding stacking status using Cloud Management	27
Turning on Locator LEDs using Cloud Management	28

Monitoring a Stack	29
Monitoring a stack using Local Web GUI	29
Monitoring a stack using Cloud Management	31
Replacing a switch in a Stack	34
Replacing a switch using Local Web GUI	34
Replacing a switch using Cloud Management	34
Removing a switch in a Stack	36
Stack Management	40
Unit ID numbering using a local Web UI	40
Stack Management using Cloud Portal	42
High Availability	43
High Availability scenarios of Locally Managed stack	44
High Availability scenarios of Cloud Managed stack	45
Best Practices for High Availability	46
Upgrading the Stack	47
Managing Software upgrades using Local Web GUI	47
Managing Software upgrades using Cloud Management	49
Troubleshooting	51
Basic Troubleshooting Tips	51
Diagnosing with the LEDs	52
Testing the Switch by resetting it	54
Restoring to Factory Defaults	54
Stacking FAQs	56
Support Information	58

About this Document

This Aruba Instant On 1960 Switch Series Stacking Configuration Guide provides detailed instructions and recommendations for Stacking on 1960 Switch series.

Intended Audience

This guide is intended for administrators who would like to understand the details of stacking feature, different types of management options available and their configurations on Aruba Instant On 1960 Switch Series.



The web interface pages illustrated in this document are examples and might not match your switch or environment.

The switch and accessory drawings in this document are for illustration only and may not match your switch and accessory products.

Applicable Products

Model Name	SKU
Aruba Instant On 1960 12XGT 4SFP+ Switch	JL805A
Aruba Instant On 1960 24G 2XGT 2SFP+ Switch	JL806A
Aruba Instant On 1960 24G 4p Class 6 20p Class 4 PoE 2XGT 2SFP+ 370W Switch	JL807A
Aruba Instant On 1960 48G 2XGT 2SFP+ Switch	JL808A
Aruba Instant On 1960 48G 8p Class 6 40p Class 4 PoE 2XGT 2SFP+ 600W Switch	JL809A

Applicable Software Version

Aruba Instant on 1960 Switch should be using the below SW version.

- If locally managed Switch or cloud managed, the SW version should be 2.4.0 or above or portal should be running latest SW after 1st Nov 2021

Related Documents

- *Start Here: Installation, Safety, and Regulatory Information for the Aruba Instant On 1960 Switches*
- *Aruba Instant On 1960 Switch Series Management and Configuration Guide*
- *Aruba Instant On User Guide for 2.4.0 or above*

To access the above publications, visit <https://community.arubainstanton.com/>.

Terminology

Term	Description
GUI	Graphical User Interface
SKU	Stock Keeping Unit
Layer 2	Layer 2 of the OSI 7-layer Model
Layer 3	Layer 3 of the OSI 7-layer Model
DHCP	Dynamic Host Configuration Protocol
PoE	Power over Ethernet
VLAN	Virtual LAN
ISP	Internet Service Provider
LED	Light Emitting Diode
PC	Personal Computer

Purpose of Stacking

Combining multiple switches into a single logical device can provide increased capacity and improved redundancy for access and distribution workloads, while simplifying configuration and providing a single point of management access.

What is Stacking

A stack is a network solution composed of two or more stackable switches.

Switches that are part of a stack behave as one single device.

Stacking allows users to expand their network capacity without the hassle of managing multiple devices.

Improved redundancy depending on its topology, a stack can continue to transfer data even if a link or unit within the stack fails.

Benefits of Stacking

- **Simplified Management and configuration** makes it easy to configure and manage physical switches as one single entity with a single management IP address, simplifying network operation.
- **High Availability** provides redundant infrastructure so that the network stays connected when a single switch failure occurs.
- **Scalability** helps you scale as the organization's network grows. Up to four 1960 switches can be stacked together.
- **Flexibility** allows stacking with 1G and 10G ports (no-dedicated stack ports).
- **Increased Bandwidth** as stacking increases the link speed for topologies connected in ring.

1960 Switch Stacking Overview

The Aruba Instant On 1960 Switches are stackable switches which helps stack multiple Instant On switches so that they can act as a single device. Maximum of four switches can be deployed in a stack. Each Instant On site can accommodate multiple stacks.

The 1960 Switch Series can be managed in one of the following ways:

- Using a Web-browser interface, you can access from any PC or workstation connected to the switch.
- Using the Aruba Instant On mobile App or cloud-based Web portal.

Similarly, 1960 stack setup can be built, configured, managed using both their management modes,

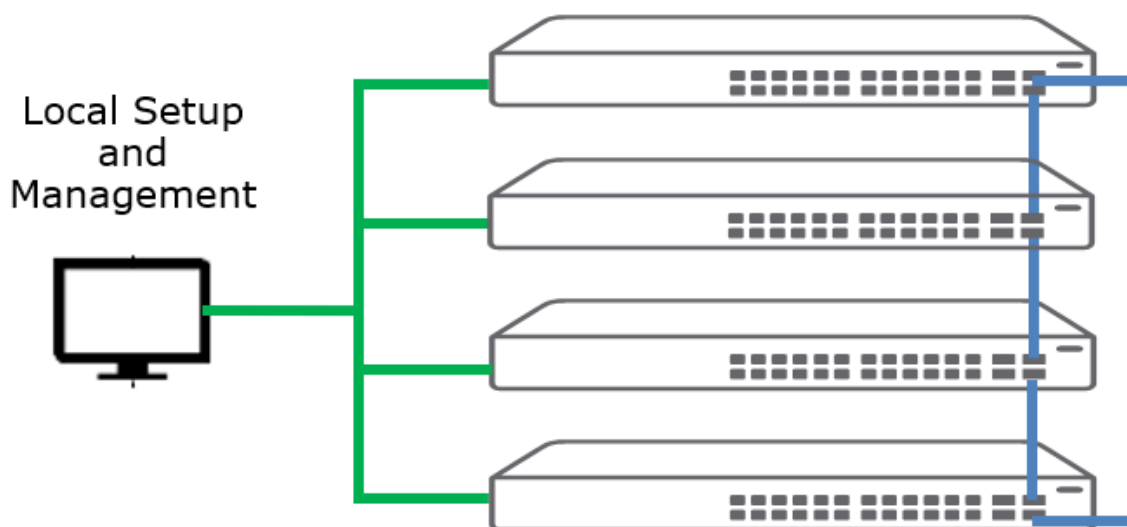
- Local Stacking via local management web GUI
- Cloud Managed Stacking via mobile App or cloud-based web portal

Introduction to Local Stacking

Management using the Local Web GUI is popular with customers who have traditionally used the Web GUI or CLI to manage stacks on the OfficeConnect 1950 switches.

Local stacking meaning the stack is built, managed and monitored by the local management web GUI.

A stack can be managed locally when the PC or workstation is connected to the switch or to the network and is reachable.



High Level Steps to Build a Stack

1. Connect Switch 1 to a PC and configure stacking ports and Unit ID numbering (Optional).
2. Connect Switch 2 to a PC and configure stacking ports and Unit ID numbering (Optional).
3. Connect Switch 3 to a PC and configure stacking ports and Unit ID numbering (Optional).
4. Connect Switch 4 to a PC and configure stacking ports and Unit ID numbering (Optional).
5. Connect stacking cables as configured.
6. Reboot switches and they come up as stack switch as a logical single device with one management IP address through which the stack members can be managed.

Expected Result

- Stack is formed with Conductor, Backup & Members
- A Conductor and Backup are picked up between unit IDs 1 and 2
- If the unit IDs are configured, then the stack uses the IDs provided

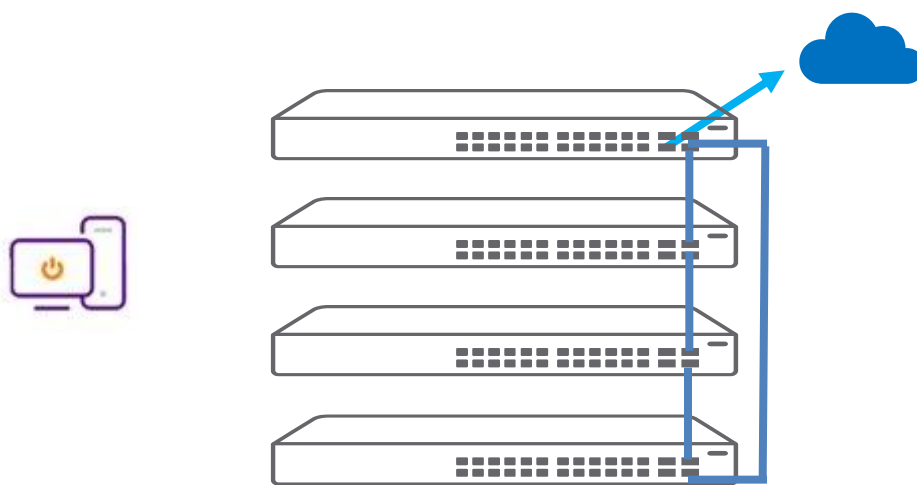
If no unit IDs are provided, the stack auto configures itself by picking a Conductor, Backup, and Members and auto-assigns a unit ID.

Introduction to Cloud Managed Stacking

Cloud managed stacking means that the stack is built, managed and monitored by the cloud portal (Web-based cloud portal or Aruba Instant On Mobile App). This cloud management option enables users to remotely manage and monitor the stack.

High Level Steps to Build a Stack

1. Connect all members in a ring or chain topology,
2. Connect an uplink (internet) to any one of the switches and wait for the cloud LED to alternate between green/ amber which means the switches are reachable to the instant on cloud portal and ready to onboard.
3. A stack can be auto discovered (ring topology) or onboarded manually (chain topology) by following the manual create stack option to onboard the stack using the Mobile App or the Cloud portal
4. Cloud portal adds the stack with Conductor, Backup and Members.



Expected Result

- Stack is formed with Conductor, Backup & Members
- A Conductor is picked based on the switches where uplink is connected, which can be later changed as per needs.

Understanding Hybrid Stacking

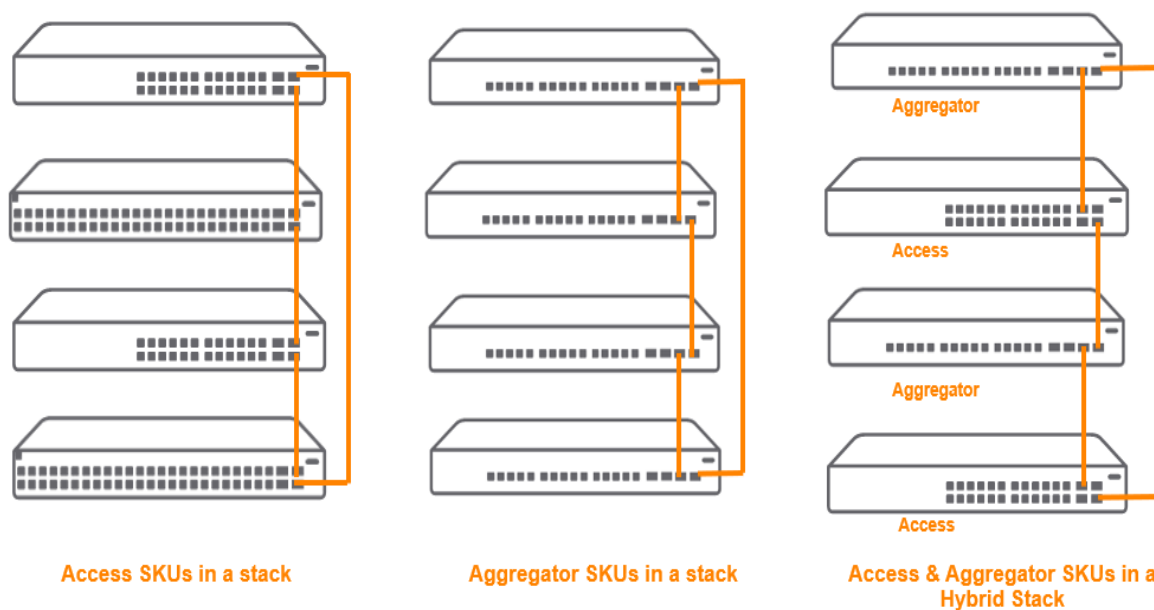
Native stacking is a stacking method which allows only same SKU type of devices to be present on the stack.

Hybrid stacking allows a mix of different SKUs (from same product series) to form a stack.

Aruba Instant On 1960 switches support forming a stack of Access switches and Aggregator switches.

- Access switches - 24 or 48 1G network interfaces with 4 10G uplink interfaces
SKU numbers - JL806A/ JL807A & JL808A/ JL809A
- Aggregate switches – 12 port Aggregator with 10G downlink / uplink interfaces
SKU number JL805A

The first two stacks in the figure below are native stacks that have only Access switch models used for stacking whereas the third one is a Hybrid stack comprising of both Access and Aggregator switch models.

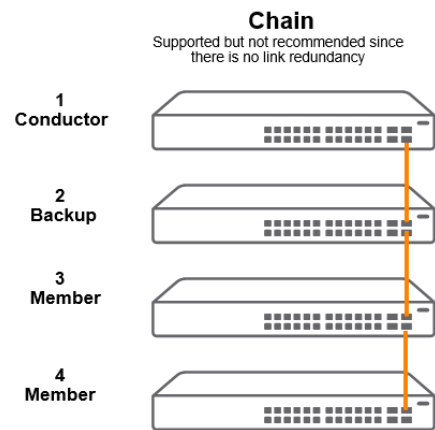
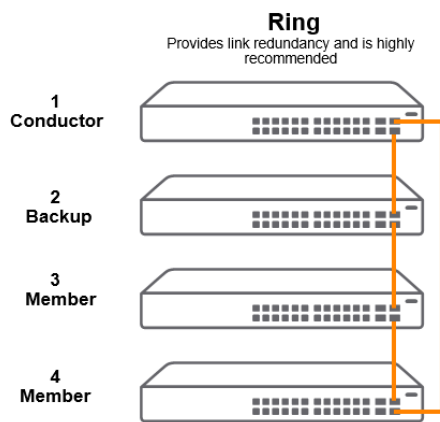


Supported Topologies

Following topologies are supported on Aruba Instant On 1960 switch series

Chain Topology: starting from first till the last switch it's a linear connection between all the switches

Ring Topology: like chain expect last unit connects back to the first unit.



This chapter will cover the process of setting up an Instant On 1960 stack from scratch using the Local Web GUI and Cloud Management. Please review the section on picking the right stack management option in *Chapter 3: Stacking Overview* before proceeding.

Building a Stack Using Local Web GUI

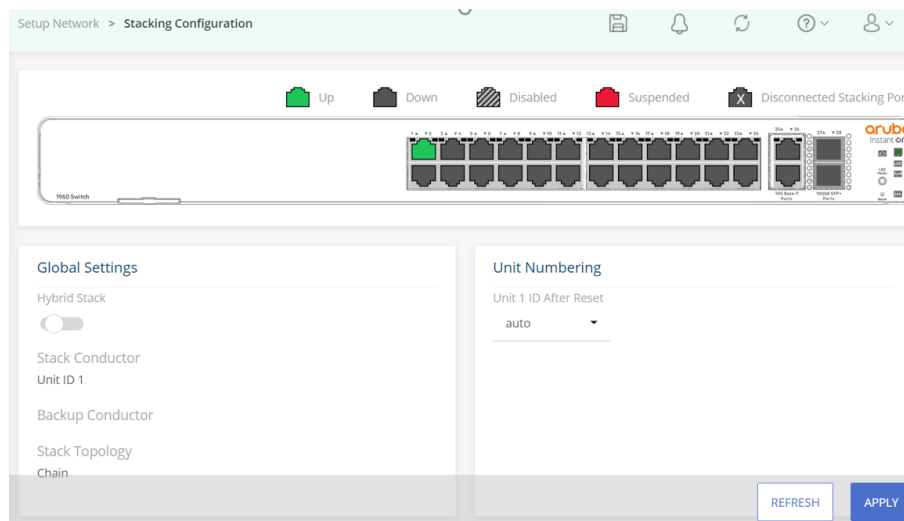
The process of building a switch stack from scratch starts with planning. Based on the needs of the installation/site, the height of the stack (number of switches) and the right models in the Instant On 1960 family must be picked to get the right port and PoE density. Once they are determined, the number and placement of uplinks as well as the order and role of the members must be planned. Armed with the above information, we can now proceed to build a stack from scratch using the Local Web GUI. In this example, we will set up a 2-member 1960 stack with an uplink from the Conductor.



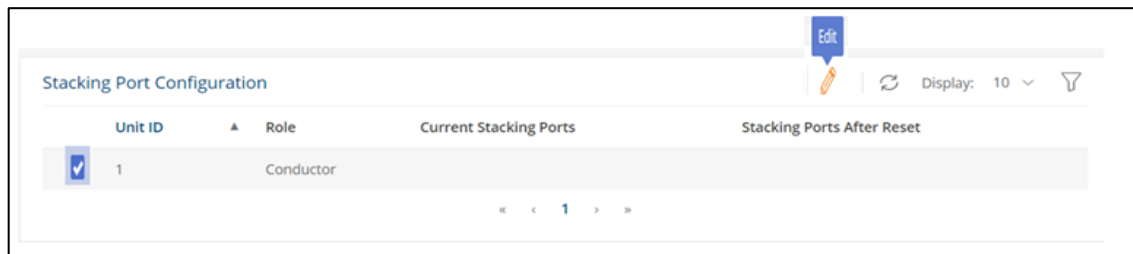
In this section, we will configure out-of-box Instant On 1960 switches in factory-default state. Please carefully read [Site Preparation and Switch Installation Precautions](#).

Configuring the first switch (Conductor)

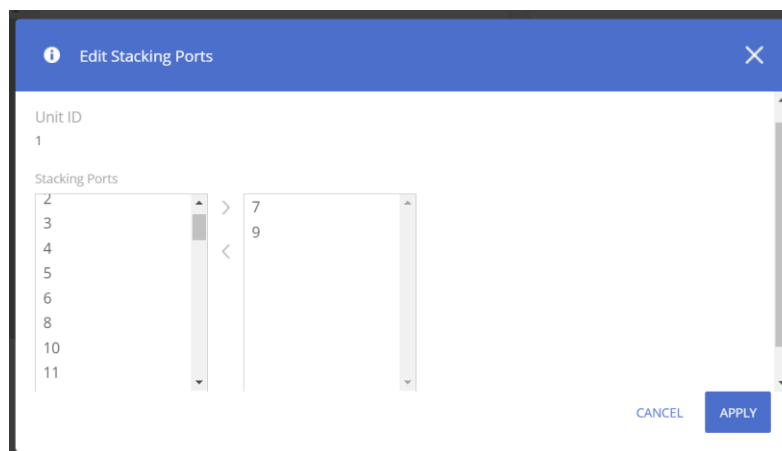
1. Power on an Instant On 1960 switch and connect a PC to any of the ports 1G ports via a Cat 5e/Cat 6 cable.
2. Manually configure IP address on the PC in the same subnet of switch. For example, an out-of-box switch will have 192.168.1.1 as its IP address; so, pick an IP such as 192.168.1.100 for the PC.
3. Open the browser and type in 192.168.1.1 to open the switch Web GUI login with the credentials (username is admin and password should be blank).
4. Note: Since this is the first time you login, you will be asked to configure a new password.
5. On the navigation panel on the left, go to Setup Network followed by Stacking Configuration. Picture below indicates the Stacking Configuration page for a factory default switch. All factory default 1960 switches will have a stacking unit ID as 1 and since no other switch is connected, topology will be shown as Chain.



6. To ensure that this switch always remains the Conductor, change the Unit Numbering dropdown to choose 1 (instead of the default value of auto).
7. Configure stacking ports by scrolling to the bottom of the page and clicking the Edit button in the Stacking Port Configuration widget. Choose Unit ID 1 and choose stacking ports.



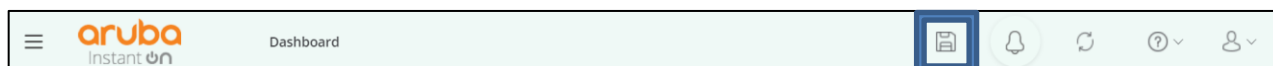
8. Select the stacking ports and move them to the right and click *Apply*. It is recommended to use the 10G ports for stacking, though in the example below 1G ports are being used.



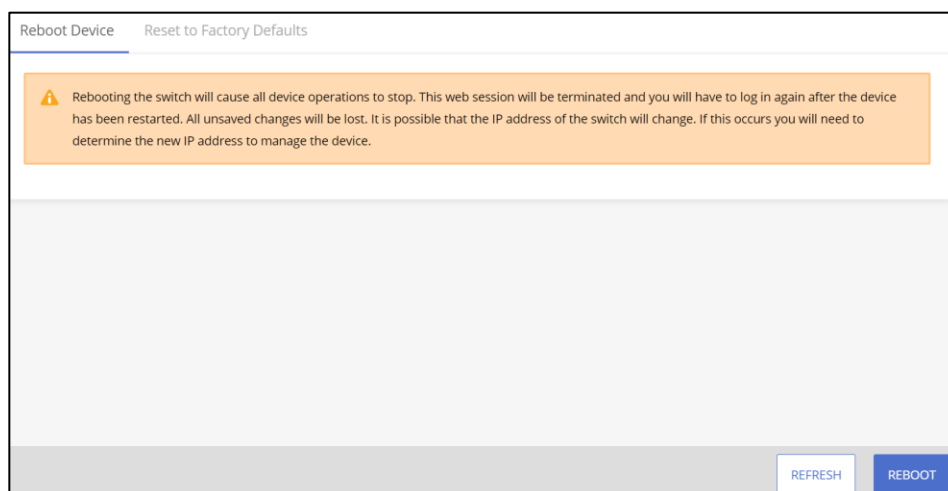
9. Stacking Port Configuration widget should now show the stacking ports selected. Note that the switch needs to be rebooted before the ports can be used for stacking.

Stacking Port Configuration			
Unit ID	Role	Current Stacking Ports	Stacking Ports After Reset
<input type="checkbox"/> 1	Conductor		7,9

10. Ensure that the configuration is saved using the Save button on the Dashboard panel.



11. Reboot the first switch by navigating to Maintenance on the left panel and choose *Reset*. Click on the *Reboot* button to power cycle the first switch.



Configuring the second switch (Backup)

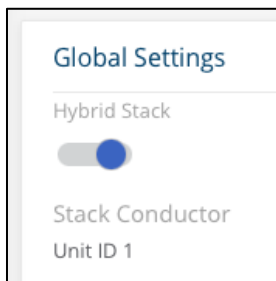
12. Repeat the above steps for the second switch that needs to be configured as the Backup unit. Ensure that unit ID is set as 2 and there are at least two stacking ports chosen for the second unit.

Forming the stack

- Physically interconnect the first and second switch on the stacking ports chosen. It is recommended to use at least two stacking cables between any two switches in a stack for redundancy purposes.
- Both switches should reboot and detect each other through the stacking cables connected. The stack can now be accessed on a single IP address (192.168.1.1). Thus, forming a two-member stack with a Conductor and Backup switch.
- Connect an uplink on the Conductor for access to the rest of the network. For higher availability, it is recommended that both the Conductor and Backup have at least one link to the uplink switch.

Configuring Hybrid Stacking

If there are Aggregator SKUs (JL805A) in the stack, Hybrid Stack option needs to be turned on at the time of initial stack build. While configuring the unit ID and stacking ports, also turn on the Hybrid Stack option in the Stacking Configuration page. This needs to be done for every switch in the stack even if the switch being configured is not an Aggregator SKU (JL805A).



Note:

- Not enabling this option on all units of the stack results in non-hybrid units not joining the stack.
- Enabling this feature requires device reboot and automatically erases device / stack configuration.
- Table Sizes and other setting of the hybrid stack are based on the lowest denominator among the SKUs.
- De-selecting this feature requires reboot but doesn't require removal of device configuration.

Building a Stack Using Cloud Management

Cloud management allows more flexibility in building a stack and simplifies the overall process of onboarding and building a stack. Though it is recommended to plan out the type of units, stack height and uplinks based on the needs of the deployment, the Cloud management portal allows Instant On 1960 switches to be onboarded as individual switches and later be combined into a stack (as long as they are physically connected to each other) – this method is termed Manual Stack Onboarding. Cloud management also allows for the method of installation where a set of switches can be wired up in a ring topology and be automatically discovered and onboarded – this method is termed Automatic Stack Onboarding. In the following example, we will set up a 4-member 1960 stack using both the manual and automatic onboarding process.


Automatic Stack Onboarding (Recommended)

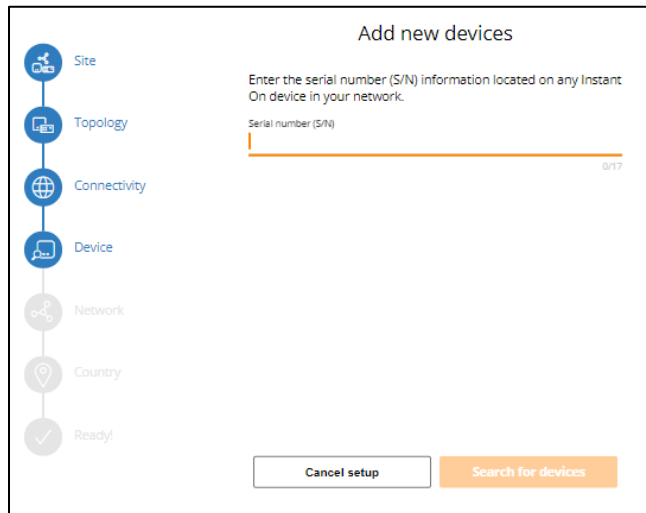
The easiest and recommended way to build a stack is to physically interconnect the switches and let Cloud management portal automatically discover the stack. This method of deployment is helpful when the person doing the wiring and installation is at a remote location and does not need to know how to configure or administer the switches. Once the installation and wiring are completed, a remotely located administrator can successfully discover, configure, and monitor the stack.

Though Cloud managed stacking supports both Chain and Ring topologies (Please refer to Supported Topologies section in chapter 3 Stacking Overview), the stack needs to be connected in a Ring for Automatic Onboarding to work. In the following example, we will set up a 4-member stack in Ring topology.

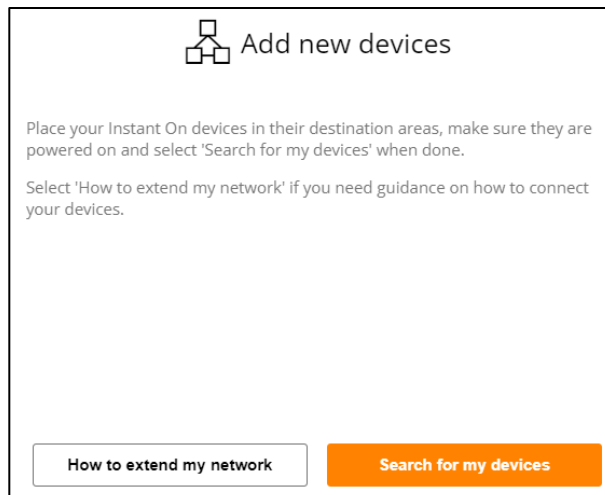


In this section, we will configure out-of-box Instant On 1960 switches in factory-default state. Please carefully read [Site Preparation and Switch Installation Precautions](#).

1. Install all 4 switches in a rack and connect them in a Ring topology on the ports that will be used for stacking. Instant On 1960 supports 10G ports for stacking and it is recommended that these ports are used to build a reliable, high-bandwidth stack connection. In this example we use 4 switches however stack can be created with 2 switches and not mandatory to have 4 always.
2. Connect an uplink cable to one or more switches in the stack. Ideally the uplinks should be connected to the members that will play the role of a Conductor or Backup. The uplink should be capable of providing connectivity to the Internet.
3. Turn on all the 1960 switches – note that there is no need to sequence this operation and the switches can be turned on all at once or one-by-one.
4. Wait for the switches to boot up and connect to the Cloud management portal. This can be confirmed when all the switches have their Cloud LED alternating between green and amber. This could take a couple of minutes from the time of turning on the power.
5. Login to the Cloud Management portal (portal.arubainstanton.com), login into your account and go to the site associated with this installation.
6. Click on *Inventory* tile  and click on *Add devices*.
 - a. If this is a new site with no devices in it, the following screen will be seen. Enter the serial number of any one of the switches in the stack. The serial number is available on the orange-colored luggage tag in the front panel of the switch.



- b. In the case where a site has already been setup with other devices present, there is no need to enter the serial number for discovery. In that case, the following screen will be



displayed.

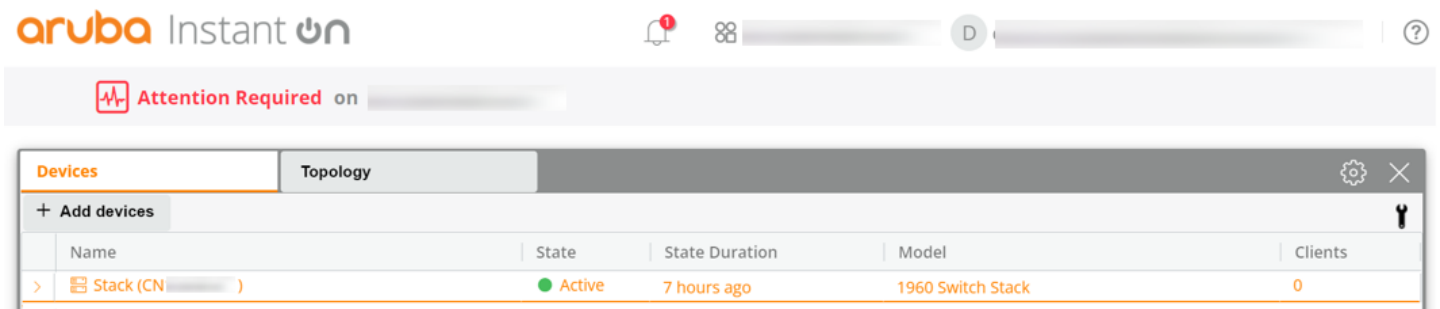
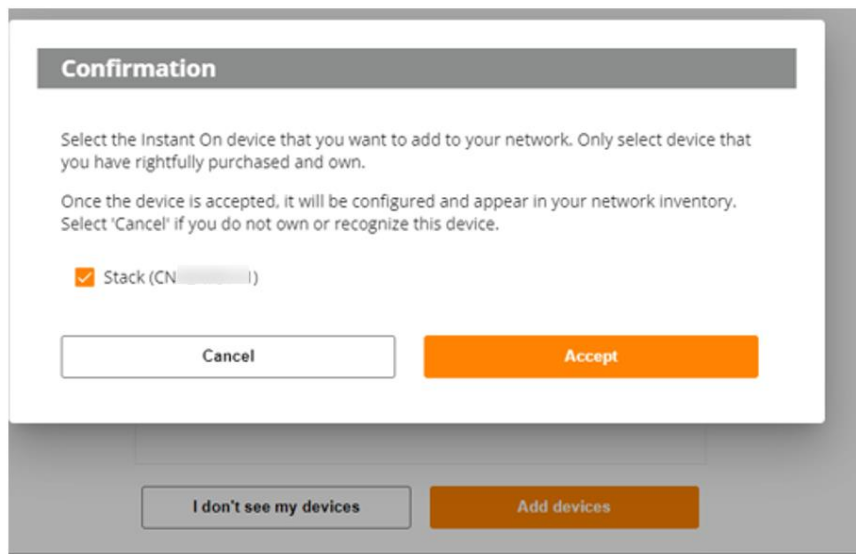
7. Clicking on *Search for devices* on both scenarios should bring up a screen similar to the picture below where a stack has been auto discovered

The screenshot shows the 'Add new devices' interface. On the left is a vertical navigation menu with icons and labels: Site, Topology, Connectivity, Device, Network, Country, and Ready! (with a checkmark). The 'Device' option is currently selected. The main content area has the title 'Add new devices' and instructions: 'Enter the serial number (S/N) information located on any Instant On device in your network.' Below this is a text input field labeled 'Serial number (S/N)' with 'CN' entered. A message states: 'The following Instant On device has been detected in this area.' Below the message is a card for a 'Stack (CN [redacted])' with a 'View details' link. At the bottom right of the card is a green icon. At the bottom of the main area is a 'Search again' button with a refresh icon. At the very bottom are two buttons: 'Cancel setup' and 'Add devices'.

8. Clicking on *View details* will show the number of switches and their auto-assigned roles in the stack. A switch connected directly to an uplink will be auto-assigned the role of a Conductor and this as well as other auto-assigned roles can be changed later.

This screenshot shows the same 'Add new devices' interface as before, but with the 'View details' modal open for the detected stack. The modal contains the text: 'The following Instant On 1960 switches will be added as a stack to your site'. It lists four roles with their corresponding serial numbers and capacities: **Conductor** (CN [redacted] (48G PoE 2XGT)), **Backup** (CN [redacted] (24G PoE 2XGT)), **Member** (CN [redacted] (24G 2XGT)), and **Member** (CN [redacted] (48G 2XGT)). A 'Ca' label is visible next to the last role. The modal has a close button in the top right corner.

9. Click on the *Add devices* button followed by *Accept*. The switches will be onboarded, and there should be a confirmation that the switches have been added to the site.




Manual Stack Onboarding

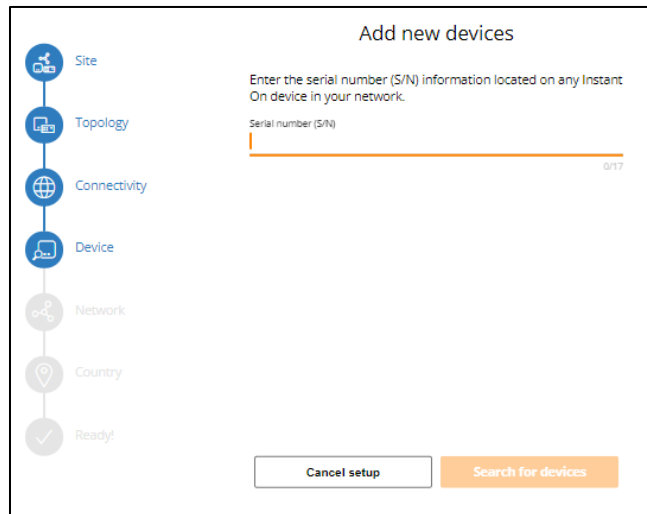
Manual stack onboarding allows Instant On 1960 switches to be onboarded as standalone switches to the site followed by configuring them into a stack. This is advantageous when building a stack in a piecemeal manner over a period of time. Note that Instant On 1960 switches support True Stacking in both Local Web GUI and Cloud managed modes and hence the standalone switches need to be physically connected to each other. In the case of manual stack creation, the standalone switches need to be connected in a chain topology. In the following example, we will create a stack out of two switches connected in a chain topology.



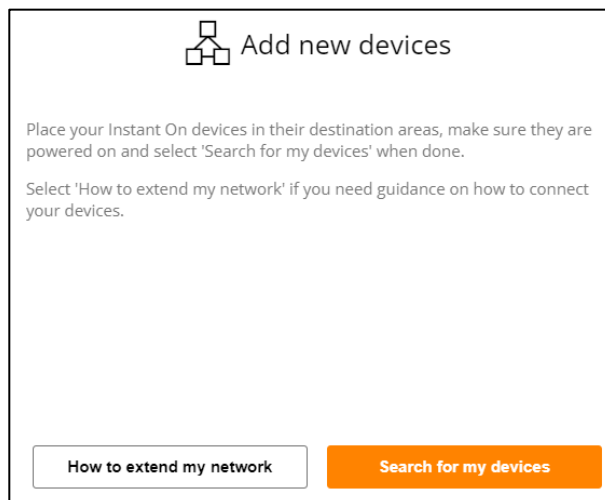
In this section, we will configure out-of-box Instant On 1960 switches in factory-default state. Please carefully read [Site Preparation and Switch Installation Precautions](#)

1. Install the two switches in a rack and connect them in a chain topology on the ports that will be used for stacking. Instant On 1960 supports 10G ports for stacking and it is recommended that these ports are used to build a reliable, high-bandwidth stack connection.
2. Connect an uplink cable to one or both switches in the stack. Ideally the uplinks should be connected to the members that will play the role of a Conductor or Backup. The uplink should be capable of providing reachability to the Internet.
3. Turn on both the 1960 switches – note that there is no need to sequence this operation and the switches can be turned on all at once or one-by-one.

- Wait for the switches to boot up and connect to the Cloud management portal. This can be confirmed when all the switches have their Cloud LED alternating between green and amber. This could take a couple of minutes from the time of turning on the power.
- Login to the Web Application (Cloud Management portal) and go to the site associated with this installation.
- Click on *Inventory* tile  and click on *Add devices*. If this is a new site with no devices in it, the following screen will be seen. Enter the serial number of any of the switches in the stack. The serial number is available on the luggage tag in the front panel of the switch.

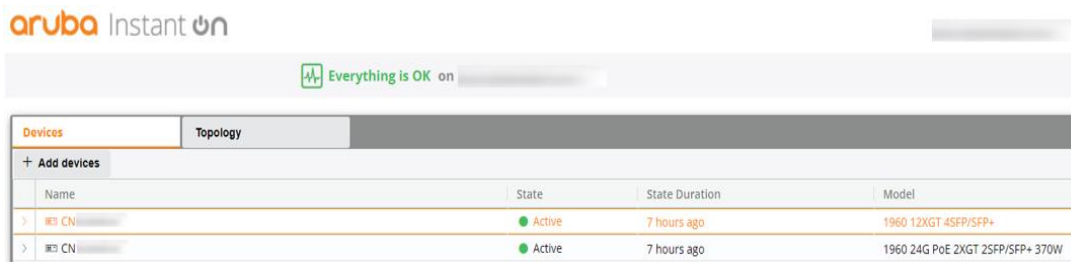


- In the case where a site has already been setup with other devices present, there is no need to enter the serial number for discovery. In that case, the following screen will be displayed.

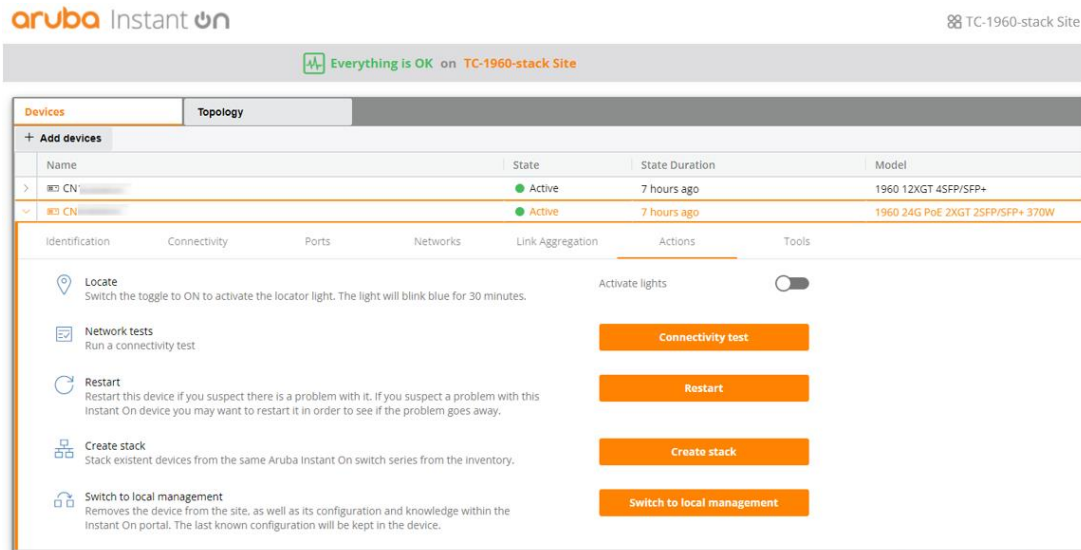


Clicking on *Search for devices* should bring up a screen where both 1960 have been detected as standalone switches

- Click on *Add devices* option and the switches will be added to the site as standalone switches.



- Select the switch which should be made the Conductor and click on the *Create stack* option under the Actions Menu



- Create stack will show the standalone 1960 switches and allow the option for the user to select the switches which needs to be part of the stack. Pick the switches and click on *Add device* button



- On clicking *Add devices* the stack will be setup with a Conductor and Backup. Since in this example, there are only two switches, the first switch will be the Conductor and the second switch will be the Backup as shown below

The screenshot displays the Aruba Instant On Cloud Management Portal interface. At the top, the 'aruba Instant On' logo is visible on the left, and a status bar indicates 'Everything is OK on'. Below this, a navigation bar shows 'Devices' and 'Topology' tabs. The 'Devices' tab is active, displaying a table with columns: Name, State, State Duration, Model, and Clients. A single entry is shown: 'Stack (CN)' with a state of 'Active', '7 hours ago', model '1960 Switch Stack', and '1' client.

Below the table, a detailed configuration view for the 'Stack (CN)' is shown. It includes sections for 'Identification', 'Connectivity', 'Ports', 'Networks', 'Link Aggregation', 'Stack', 'Actions', and 'Tools'. The 'Identification' section shows the stack name 'Stack (CN)', device name '19/32', and CN. The 'Connectivity' section shows 'Local network' and 'Uplink' settings. The 'Stack' section shows 'Local network IP' for 'Conductor, (CN)' and 'Backup, (CN)'. The 'Power over Ethernet' section shows 'Total budget' and 'Power consumption' for 'Conductor, (CN)'. The 'Ports' section shows 'Conductor' and 'Backup' ports with their respective models and versions.

This concludes the chapter on building an Instant On 1960 stack from scratch. As visible from the procedures above, Automatic Stack Onboarding is a simple and recommended method of onboarding stacks to the Cloud management portal.

Chapter 5

Adding Switches To a Stack

This chapter will cover the process of adding additional switches to an existing Instant On 1960 stack using the Local Web GUI and Cloud Management. 1960 switches support a stack height of 4 switches, and this means that, on a stack with a Conductor and Backup, two additional switches may be added.

Adding a Switch Using Local Web GUI

In this example, we will add a new switch to an existing 2-member switch stack in a Chain topology. Note that only Chain topology is supported in a 2-member stack even if there are multiple physical and logical links between the two members.

With a new factory-default Instant On 1960 switch, follow steps 1 through 10 in section Chapter 4 *Building a stack using Local Web GUI in Chapter 4*.

While following the above steps, the unit ID of the new switch can be left at its default value of Auto or be manually assigned as unit ID 3.

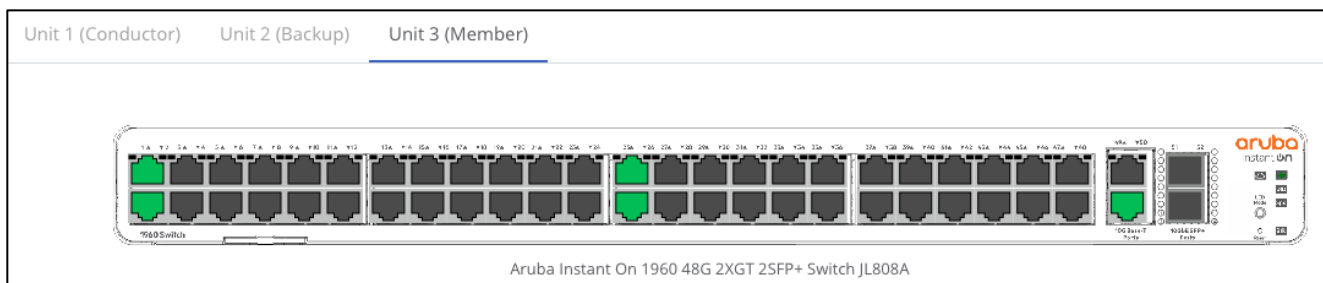
Connect stack cables from the existing stack to the new switch on the stacking ports after the new switch reboots.

The stack should recognize and absorb the new switch with the following resultant configuration:

Switch 1 – Unit ID 1 (Conductor)

Switch 2 – Unit ID 2 (Backup)

Switch 3 – Unit ID 3 (Member)



Similar process may be followed to add one more member to the stack but note that an Instant On 1960 stack can have no more than 4 switches in it.



In the case where a user tries to add a fifth switch to a locally managed stack, that new stack member will be put in an error state and the new switch can only be recovered after a factory reset.

During the process of adding a new member, there should not be any disruption to the existing two-member stack and reboots, if any, will be applicable only to the new switch being added. However, the above statement holds true only when all stack members use manual unit ID numbering and are assigned unique unit IDs. In the case where all switches have been assigned automatic unit ID numbering, addition of a new switch has the potential to trigger the stack's election process, causing the Conductor to be re-assigned, potentially disrupting the existing stack.

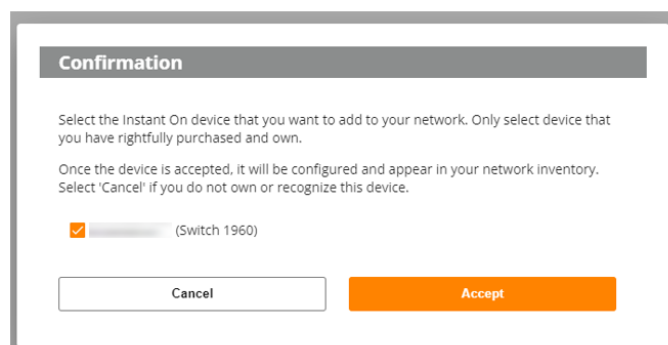
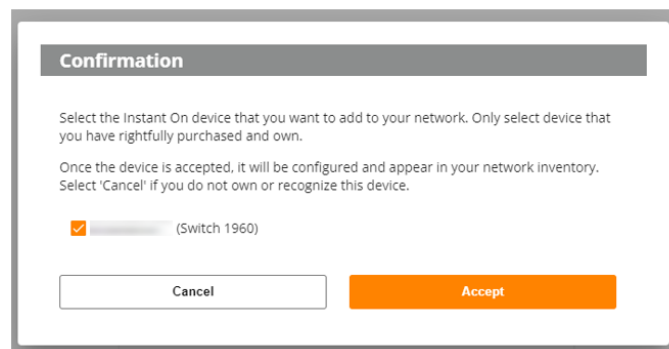
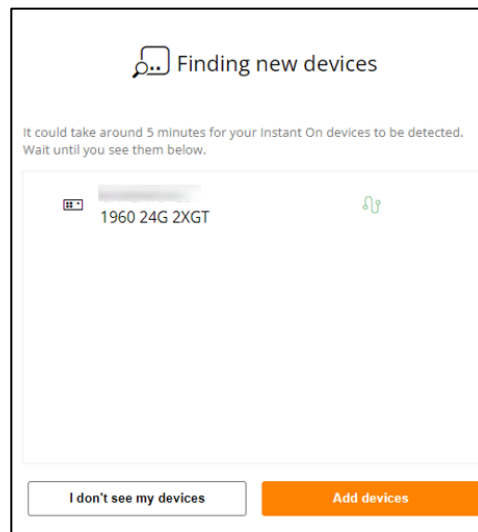
Hence, it is highly recommended to use manual unit ID numbering to ensure that the building of a

new stack as well as member addition is predictable. For details on the stack's election process, refer to *Chapter 3: Stacking Overview*.

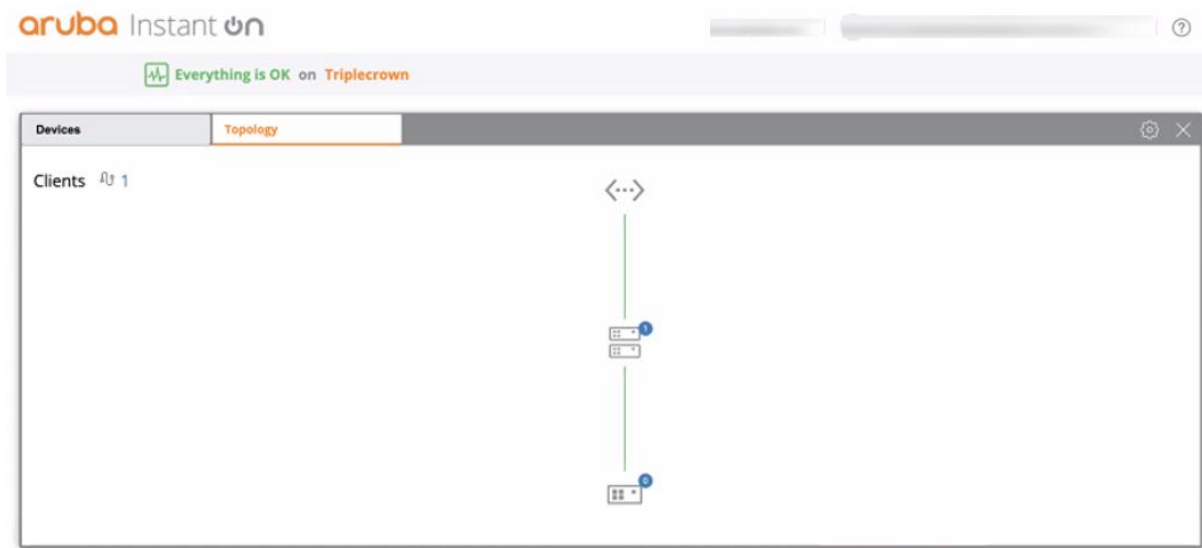
Adding a switch using Cloud Management

In this example, we will add a third switch to an existing 2-member stack.

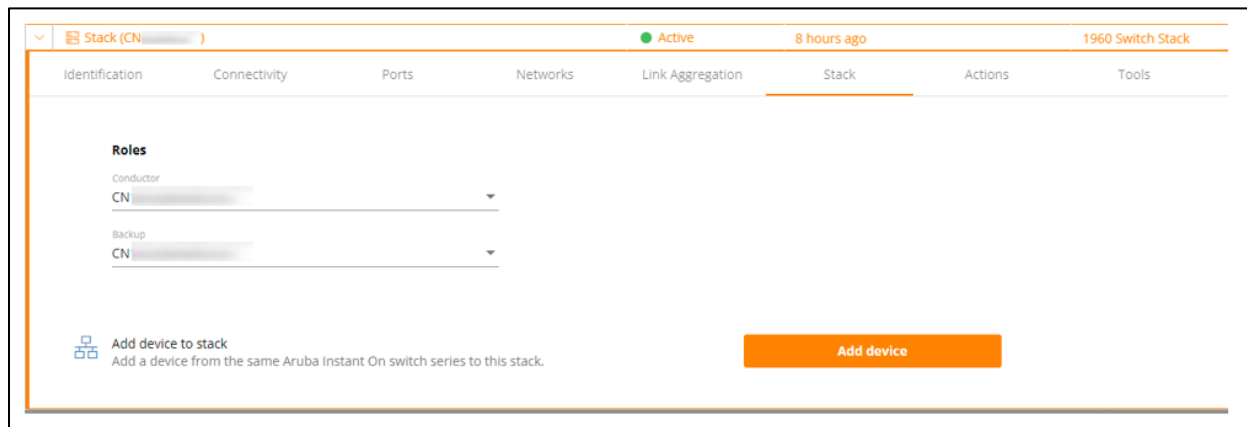
1. Connect a factory-default switch to a 2-member stack that is already managed by the Cloud management portal. Note that there is no need for uplink (internet) connectivity from this new switch since the 2-member stack should already be connected to the Internet.
2. Wait for the new switch to go into alternating green and orange on its Cloud LED. Click on *Inventory* tile and click on *Add devices*. Once the new switch is discovered, you should see a confirmation dialog calling out the serial number of the switch. Click on *Accept*.



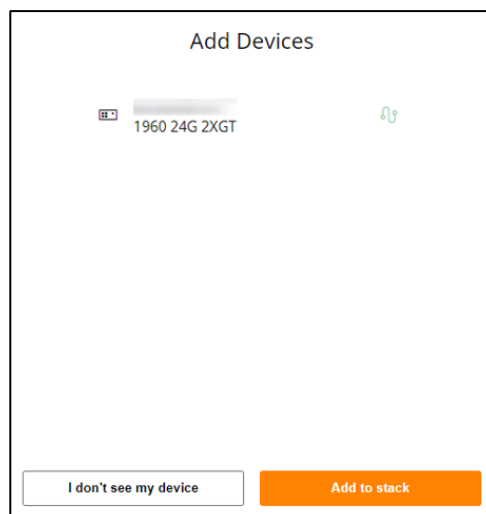
- Once onboarded, the Topology view should show a stack connected to a standalone switch as below.



- Navigate to the 2-member stack and click on Add device



- Select the newly added switch and choose *Add to stack*



6. Confirmation of a 3-member stack is shown



In the case where the stack already has the maximum number of switches, *add devices* option will not be displayed in the configuration page.

This concludes the chapter on adding switches to an Instant On 1960 stack.

Chapter 6

Identifying a Stack and its Members

This chapter talks about physically locating a switch or an entire stack using the Locator LEDs on the Instant On 1960 switch as well as identifying the roles played by the switches in a stack from the LEDs on the front panel of the switches. During installation as well as troubleshooting from a remote location, it is important for the person present at the site to have visibility into the stack or switch being configured and the role that they play in the stack.

Understanding Stack Status Using the Local Web GUI

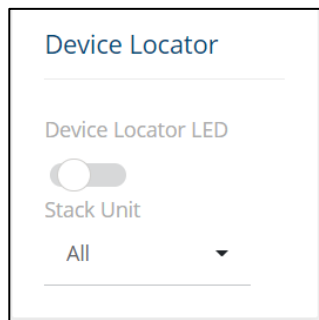
Aruba Instant On 1960 switches have a stack LED (with the label “Stk” on them) that indicates the status of stacking. The following table captures the list of LED patterns and their meanings when using the Local Web GUI.

The front panel has a button to select LEDs in the front panel and is called the LED Mode button. Depending on what the user wants to see, the LED mode button needs to be pressed a few times to set it to the right setting to observe status of different features on the front panel LEDs. On the 1960, the LED Mode button needs to be pressed five times to set LED Mode to “Stk” or stacking status. Doing this ensures that the front panel LEDs can be used to learn about the status of stacking including member roles.

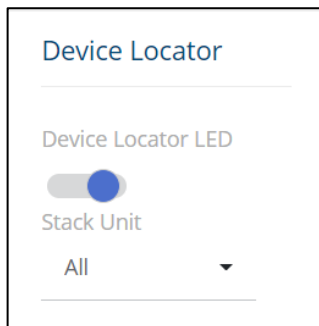
Situation	LED Behavior	Switch / Stack Status
Normal Operation	Off	Stacking is not enabled or LED Mode is not set to Stk.
	Solid Green	LED Mode is set to Stk and switch is a Conductor
	Slow Flash Green	LED Mode is set to Stk and switch is a Backup or Member
Fault Condition	Solid Orange	LED Mode is set to Stk and one of the following faults occur. One or more stacking ports are in fault state or not connected. Duplicate Unit ID numbering (in Local Web GUI mode)
	Slow Flash Orange	LED Mode is not set to Stk and one of the following faults occur. One or more stacking ports are in fault state or not connected. Duplicate Unit ID numbering (in Local Web GUI mode)

Turning on Locator LEDs using Local Web GUI

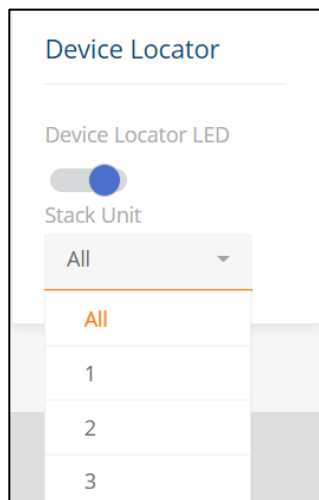
The Device Locator LED option can be seen on the main dashboard of the Local Web GUI. By default, this locator LED is off as shown below.



To enable the locator LED slide the button to the right which will make the UID (Unit Identification or Locator) LED to blink for 30 minutes for the entire stack (unless cancelled by the user).



This LED can also be turned on to identify a particular switch of the stack by selecting the Unit ID as shown below.




Understanding Stacking Status using Cloud Management

Aruba Instant On 1960 switches have a stack LED (with the label “Stk” on them) that indicates the status of stacking. The following table captures the list of LED patterns and their meanings when using Cloud management.

The front panel has a button to select LEDs in the front panel and is called the LED Mode button. Depending on what the user wants to see, the LED mode button needs to be pressed a few times to set it to the right setting to observe status of different features on the front panel LEDs. On the 1960, the LED Mode button needs to be pressed five times to set LED Mode to “Stk” or stacking status. Doing this ensures that the front panel LEDs can be used to learn about the status of stacking including member roles.

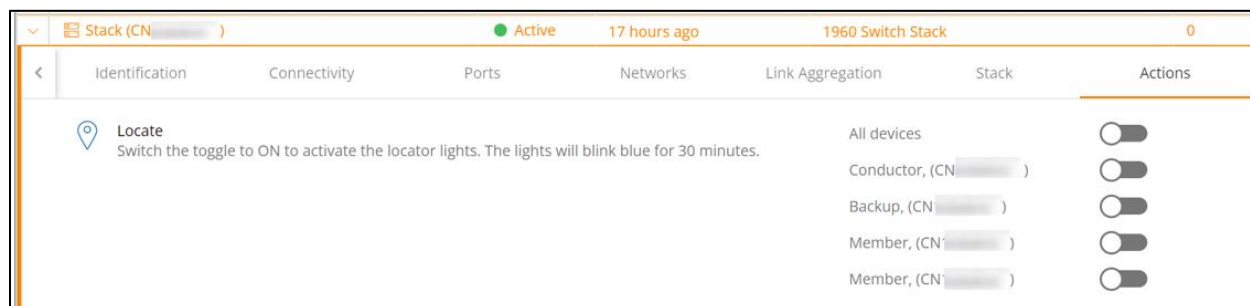
Situation	LED Behavior	Switch / Stack status
Normal Operation	Off	Stacking is not enabled or LED Mode is not set to Stk.
	Solid Green	LED Mode is set to Stk and switch is a Conductor
	Slow flash Green	LED Mode is set to Stk and switch is a Backup or member.

Turning on Locator LEDs using Cloud Management

Click on Inventory tile  and on the home page or click the Site Health banner and then click on Show inventory.

Click the (>) arrow next to the stack in the Inventory list and then click on *Actions* tab.

The light is turned off by default. The toggle switches for the devices in the stack are displayed next to the Locate field.



Slide the toggle switch to the right for all devices to turn on the Locator LED on all switches of the stack. The Locator LED can be turned on only for a particular switch by using the sliders next to them. The UID or Locator LED will continue blinking for 30 minutes unless turned off.

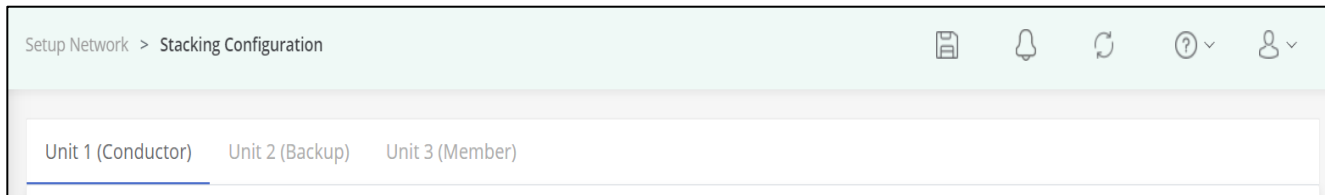
This concludes the chapter on identifying a stack and its members using the Local Web GUI as well the Cloud management portal.

This chapter will focus on monitoring Instant On 1960 stacks to determine the status and health of the stacks using Local Web GUI and Cloud Management.

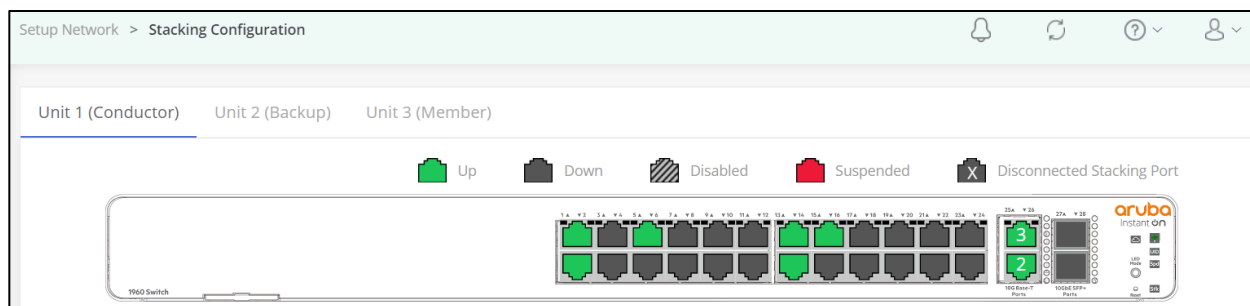
Monitoring a Stack using Local Web GUI

Stacks can be monitored on the Local Web GUI by navigating to home page, clicking *Setup Network* followed by *Stacking Configuration*. The page allows the user to monitor as well as configure stacking parameters.

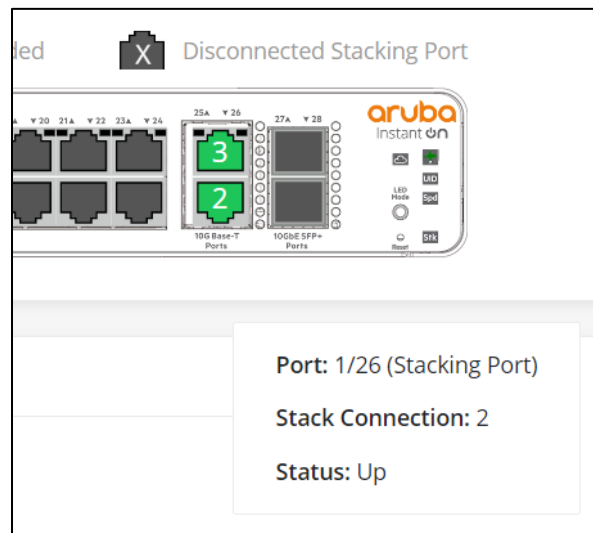
Top section of the page displays the number of switches as well as their roles (Conductor, Backup, Member) as clickable tabs. The page also shows the unit IDs of the switches that were either assigned manually or automatically. Clicking on these tabs allows the user to investigate the stacking settings for each switch.



The following picture shows the status of regular ports and ports configured for stacking.

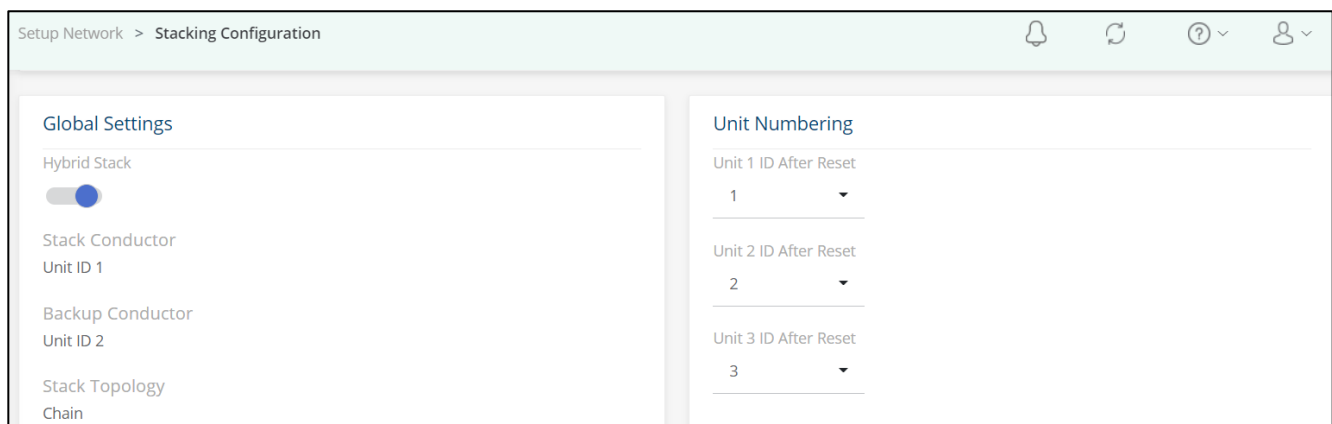


The downlink (1G) ports' status indicates up, down, disabled, and suspended. Stacking ports are numbered or have an X over them (if the cable is not present or down). Mousing over the numbered ports reveals that they are stacking ports and the number indicated on the port refers to the unit ID of the switch connected to the port. In the above example, the top port (numbered 3) is connected to the Member with unit ID 3 and the bottom port (numbered 2) is connected to the Backup with unit ID 2.



X indicates a disconnected stacking port, which means the port is configured as a stack port but the link is down.

Further down the page, status of options such as Hybrid Stacking, Topology and the unit ID numbering scheme are shown. In the picture below, you can see that the Hybrid Stacking has been turned on (meaning that this stack has at least one 1960 12-port 10GBT switch), shows the unit IDs of the Conductor and Backup of this stack as well as the topology. It also shows that all the unit IDs were manually assigned by the user. While automatic unit ID numbering is convenient, it is recommended that users choose manual numbering if they have specific switch that should take on the role of a Conductor during a failover. Manual unit ID number provides the predictability and control on which switch controls the stack after a failover.



Towards the bottom of the Stacking Configuration page, the table displays the current stacking ports as well as options to change them.


Unit ID	Role	Current Stacking Ports	Stacking Ports After Reset
<input type="checkbox"/> 1	Conductor	23,24,25,26	25,26
<input type="checkbox"/> 2	Backup	11,12	11,12
<input type="checkbox"/> 3	Member	49,50	49,50



Any changes done to unit numbering, stacking ports, or modifying the hybrid mode option will need a reboot to take effect.

Monitoring a Stack using Cloud Management

Below shows the process of how to monitor a 1960 Stack which are managed via the cloud

Portal. Click on Inventory tile  and on the home page or click the Site Health banner and then click on Show inventory. Next to (>) stack name shows the status of the stack.

A stack that is reachable from the Cloud management portal will be shown as *Active*.

>	Stack (CN)	● Active	17 hours ago	1960 Switch Stack
---	-------------	----------	--------------	-------------------

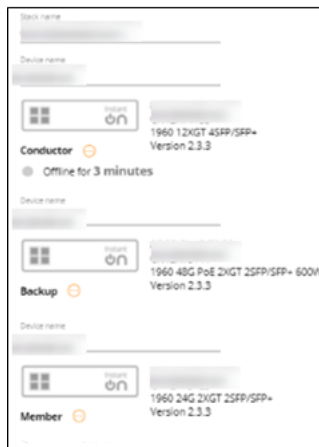
If a stack is not reachable from the Cloud management portal, the status will be *Offline*. There could be a couple of reasons for this – either the entire stack is down or the Internet connection to the site is down. Note that stack does not need an Internet connection to either switch locally or handle link or switch failures and will continue to work normally even when there is no uplink Internet connection. Offline here only means that the stack cannot be modified or monitored by the Cloud portal due to its lack of reachability.

>	PoE-Stack	● Offline	9 days ago	1960 Switch Stack
---	-----------	-----------	------------	-------------------

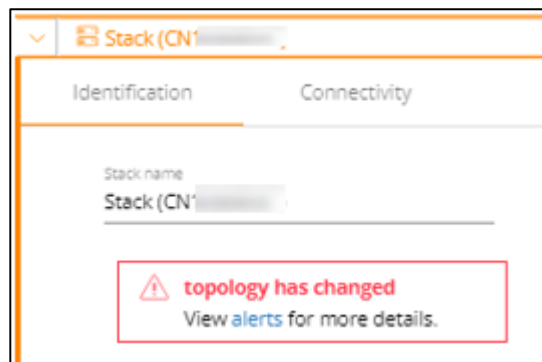
For a stack which has one of more of its switches down, the status will be shown as *Active* but with a warning sign, as below.

▼	CN	⚠ Active
---	----	----------

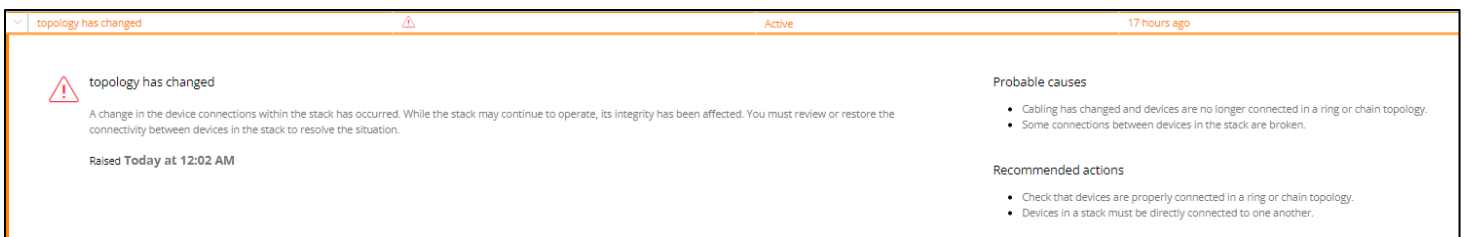
Expanding the status shows the details of the individual switches in the stack. The following picture shows an example where the Conductor is down, but the Backup and Member are up in a 3-member stack.












Stacking alerts are added to notify the user about any changes to the stack, its members or its topology. Here's an example of a notification seen after a topology change.



Clicking on the alerts, user will be redirected to the site health alerts section where more details about the cause and recommended actions are provided.



 Everything is OK on 			
 Site Health			
 Alerts (1)			
	Name	Severity	State
>	New software is available		Active
>	 topology had changed		Cleared
>	Member, of stack was offline		Cleared
>	 stack was offline		Cleared
>	Some devices of stack were offline		Cleared
>	Site was unreachable		Cleared

This concludes the chapter on monitoring a stack with the Local Web GUI as well as the Cloud management portal.

Replacing a Switch in a Stack

Aruba Instant On 1960 switches exceed the reliability needs of small businesses and have mean-time-between-failure (MTBF) of several decades. Yet, in the extremely rare case of switch failure, replacement is simple if the stack is locally managed, and it is downright trivial if the stack is cloud managed. This chapter will cover the steps needed to replace a failed switch from a functioning stack.

Replacing a Switch using Local Web GUI

It is important to note that only a switch that is offline can be replaced. If the failed switch was a Conductor, the Backup will take over and continue to provide services for the stack. The procedure for replacing a failed Conductor, Backup or a Member is the same. In the following example, we will replace a failed Conductor in a 4-switch stack.

1. Unplug the failed Conductor and remove the stack cables physically connecting to the rest of the stack.




It is highly recommended to use the same model switch to replace a failed switch. Replacing a 48-port 1960 with a 24-port 1960 will cause the configuration for the remaining 24 ports to be lost. The same could happen when replacing a 1960 PoE switch with a 1960 non-PoE switch, causing devices dependent on PoE to not power up.

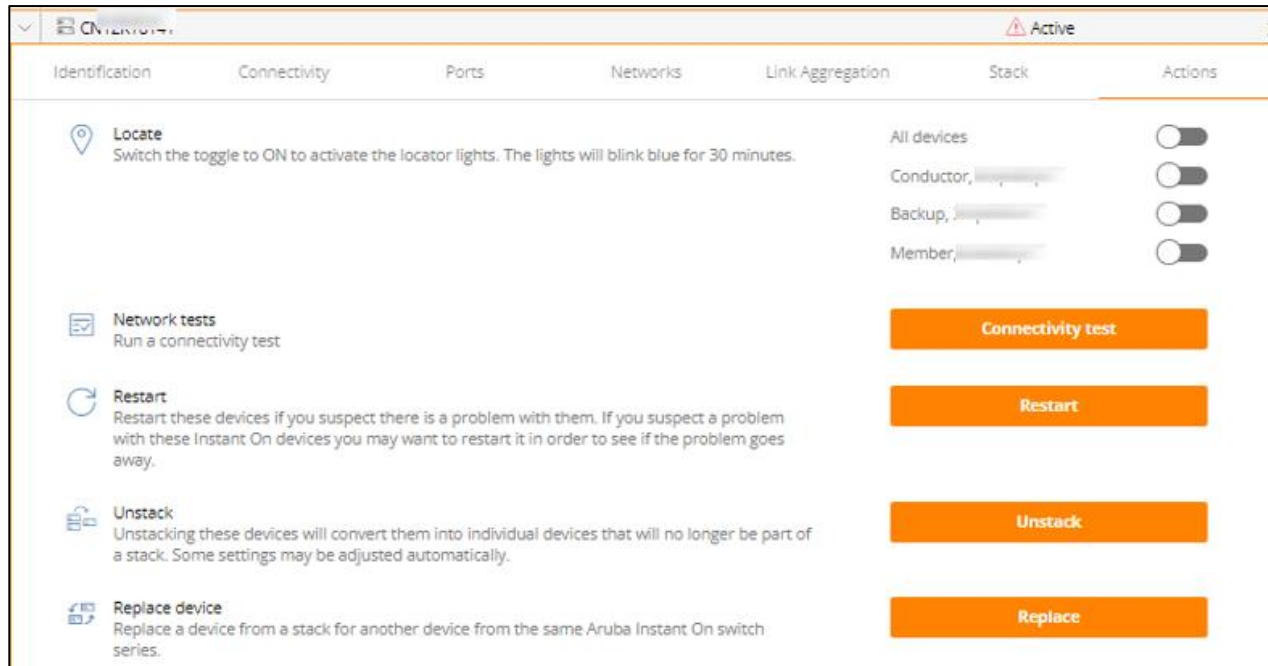
2. Configure the replacement switch using steps 1 through 11 in the section on *Building a stack using Local Web GUI* in Chapter 4. Configure the same stacking ports, hybrid option (yes/no) and unit ID (auto or a particular unit ID) as the failed switch.
3. After the replacement switch reboots, connect the stacking cables on the configured ports and attach it to the rest of the stack.
4. The stack should absorb the replacement switch into the stack. In this case, where we are replacing a failed Conductor, the new switch should typically take on the role of the Backup and there should be no disruption to the existing stack, assuming that all switches have been manually provided a unit ID. In the case where all switches have auto ID, the replacement could trigger a stack election with the result dependent on multiple factors. Please go through the *Chapter 3: Stacking Overview* to better understand this election process.

Replacing a Switch using Cloud Management

It is important to note that only a switch that is offline can be replaced. If the failed switch was a Conductor, the Backup will take over and continue to provide services for the stack. The procedure for replacing a failed Conductor, Backup or a Member is the same. In the following example, we will replace a failed Member in a 4-switch stack.

1. Click on *Inventory* tile  and on the home page or click the *Site Health* banner and then click on *Show inventory*.

2. Click the (>) arrow next to the stack in the Inventory list and then click on *Actions* tab. Note that the status shows Active with a warning symbol (indicating that at least one of the switches in the stack is offline).
3. Click on *Replace* button to trigger the replacement workflow.



It is highly recommended to use the same model switch to replace a failed switch. Replacing a 48-port 1960 with a 24-port 1960 will cause the configuration for the remaining 24 ports to be lost. The same could happen when replacing a 1960 PoE switch with a 1960 non-PoE switch, causing devices dependent on PoE to not power up.

4. On clicking replace, the cloud management portal will show an option to discover the replacement switch which is new switch added physically to the network.
5. Once the replacement switch is chosen, the cloud management portal transfers the configuration of the failed switch to the replacement switch within a few seconds and the stack should be available without a reboot.

This concludes the chapter on replacing a switch in a stack with the Local Web GUI as well as the Cloud management portal.

Chapter 9

Removing a Switch from a Stack

This chapter will cover the process of removing the switch from an existing 1960 Stack using the Local Web GUI and cloud management.

Removing a Switch using Local Web GUI

1. In this example, we will remove a switch from a 3-member 1960 switch stack. As a best practice it's better to plan to remove the switch which is playing the role of member which has unit ID to 3 or 4. Identify the member which is planned to be removed. Locator LED option can be used to identify the member in the stack.
2. remove stack cables physically which is connecting from this member switch to the stack

This will remove the switch from the stack.


During this process of removing a member, there should not be any disruption to the stack as we have removed the member switch, however its good practice to remove the configs whenever a switch is removed as during the stack sync there would have configuration exchanges which includes system names and IP configurations etc. which may create duplicate IP address or other issue when switch is connected elsewhere.

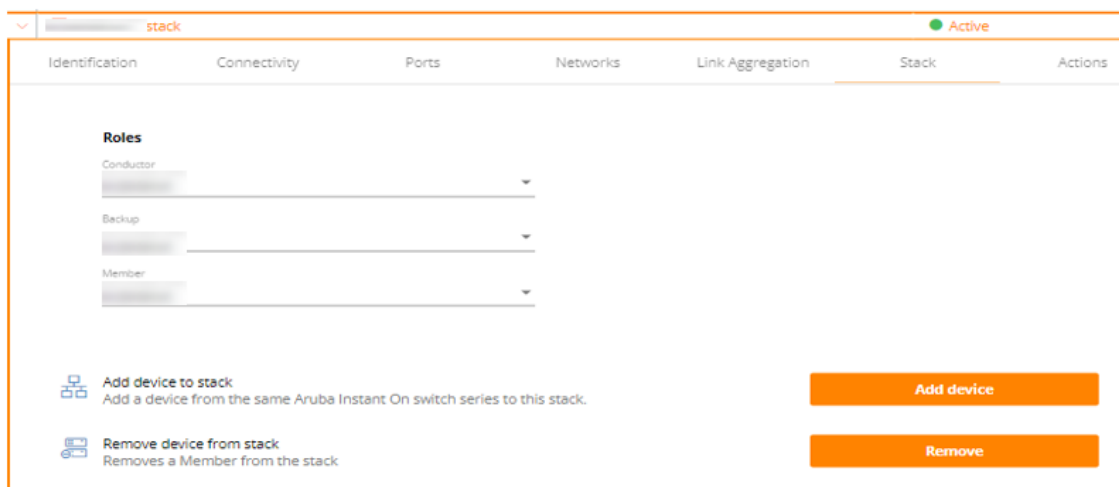
Use one of the below options to avoid any unexpected errors before connecting the removed member to the network.

Option 1: Factory reset via UI or hard reset using pin

Option 2: Changing the switch configs by connecting a laptop on the same subnet of the switch and configuring with different IP address/basic configurations using the UI.

Removing a Switch using Cloud Management.

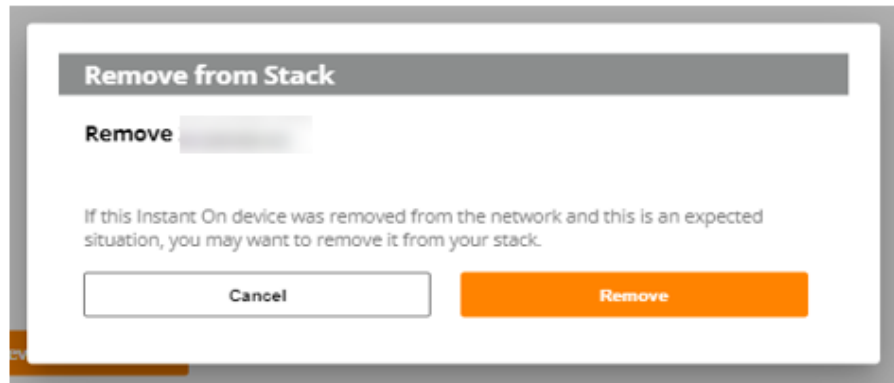
1. In the below example, we will remove a member from 3-member 1960 switch stack. Click on Inventory tile  and on the home page or click the Site Health banner and then click on Show inventory.
2. Click the (>) arrow next to the stack in the Inventory list and then click on Stack tab.
3. Click on remove option to remove the member switch from the stack:





Remove option is only for switches which are acting as a member and in the case of 2-member stack with conductor and backup, remove options does not exist

On clicking remove button, below warning pops up to confirm the action and shows that the member SKU which will be removed from stack:



In the case where the stack has 2 members, users will be provided with options to select a member to be removed


Shows that the member is removed from stack and becomes as a standalone SK along with a 2-member stack:

Devices		Topology
+ Add devices		
Name	State	
> [icon] [blurred]	Synchronizing	
> [icon] [blurred]	Synchronizing	
> [icon] [blurred]	Synchronizing	

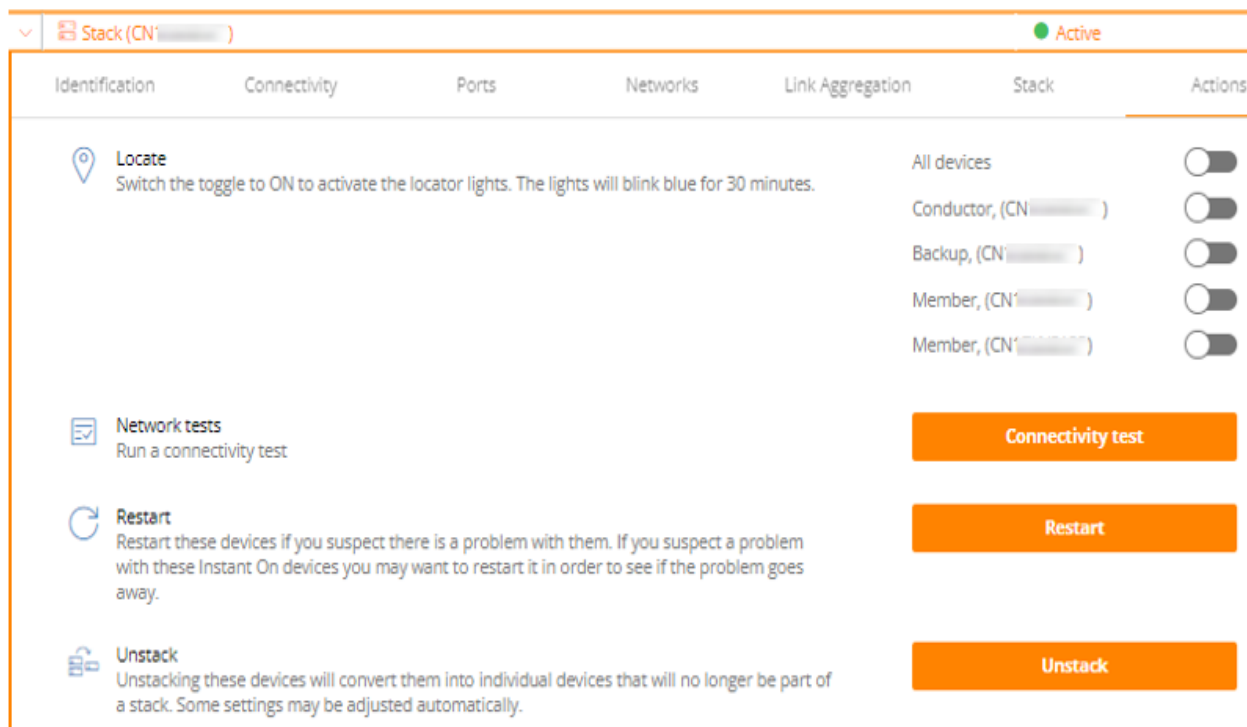


In the case where the conductor or backup to be removed, users can change their roles to members and use the remove option. Refer to section "Chapter 10 Stack Management" where roles are discussed

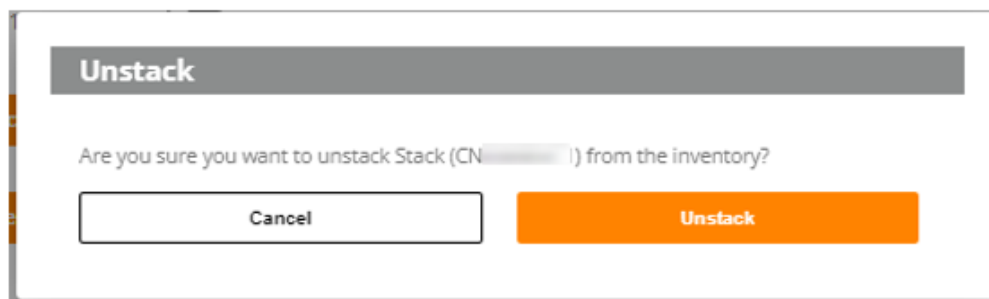
Steps for Unstacking: Cloud portal also provides another feature to un-stack the complete stack setup and will make the stack to split and switches become standalone switches.

1. Click on Inventory tile  and on the home page or click the Site Health banner and then click on Show inventory.
2. Click the (>) arrow next to the stack in the Inventory list and then click on Actions tab.

- Click Unstack option to unstack switches from the stack



- On clicking unstack, there will be a popup to confirm that the Unstack action being done.



- On clicking unstack option, a 4-member stack becomes standalone switches.

Devices		Topology		
+ Add devices				
	Name	State	State Duration	Model
>	1960 CN	Active	18 hours ago	1960 24G PoE 2XGT 25FP/SFP+ 370W
>	1960 CN	Active	18 hours ago	1960 48G 2XGT 25FP/SFP+
>	1960 CN	Active	18 hours ago	1960 12XGT 45FP/SFP+
>	1960 CN	Active	18 hours ago	1960 48G PoE 2XGT 25FP/SFP+ 600W

This chapter will cover on the options on how to manage an Instant On 1960 using the local Web GUI and Cloud Management.

Unit ID numbering Using a Local Web UI

Unit ID numbering defines the roles of the switch in a stack and helps user to have a predictable switch stack if manually numbered. Unit ID can be configured by the user on the Web GUI as per their need like. Unit ID 1 configured on a switch plays the role of conductor, Unit ID 2 plays the role of backup and Unit ID 3 & 4 plays the member roles. There is no Unit ID 5 option as max stack support is 4.

There are two types of Unit ID numbering options available,

- AutoID numbering (is the default)
- Manual ID numbering



Any change on the numbering from auto to manual or Unit ID renumbering needs a reboot for the switch to take effect of the configuration change applied.

Auto numbering:

- Is the default Unit ID numbering
- Numbering happens based on the switch boot sequence i.e., 1st switch gets unit ID 1 as 1 and switch gets unit ID 2



In case of auto-numbering conductor / backup switch members can vary when the numbering is not configured and when switches reboot or a member is added or removed.

Manual numbering:

- Is the not default Unit ID numbering
- Numbering is done by the user based on the network needs.

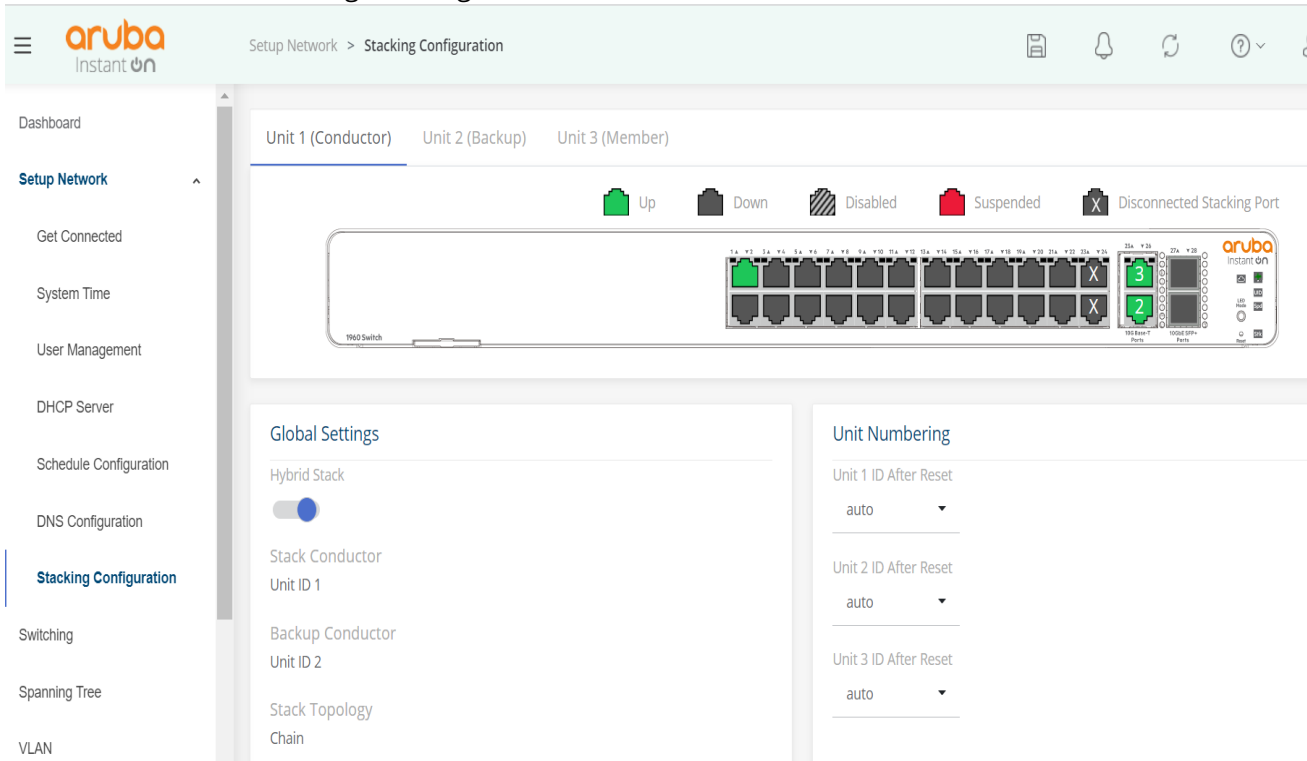


Any change on the numbering or changing from auto to manual will take effect only after a reboot.

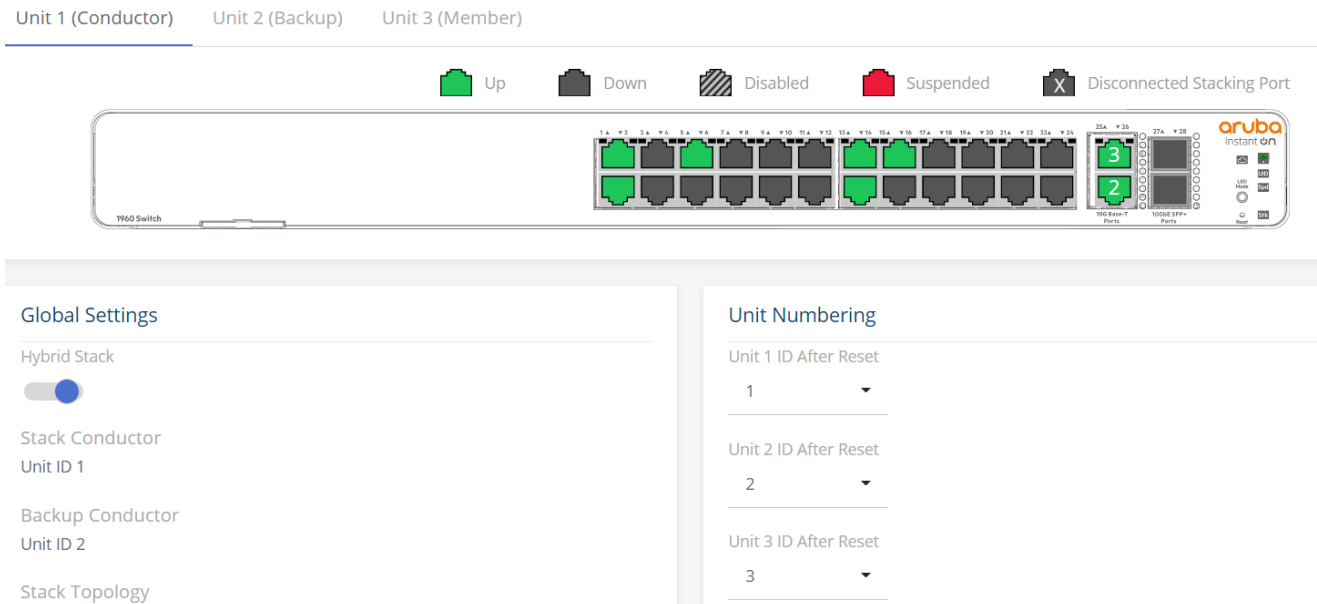
Configuring Unit ID numbering,

- a. Open the browser of the switch web GUI home page
- b. On the navigation panel on the left, go to Setup Network followed by Stacking Configuration.

- c. on this page, options under Unit Numbering allows user to manually configure the numbering or change from auto to manual.




Below is an example of ring topology on a 3-member stack where manual Unit ID numbering is configured.

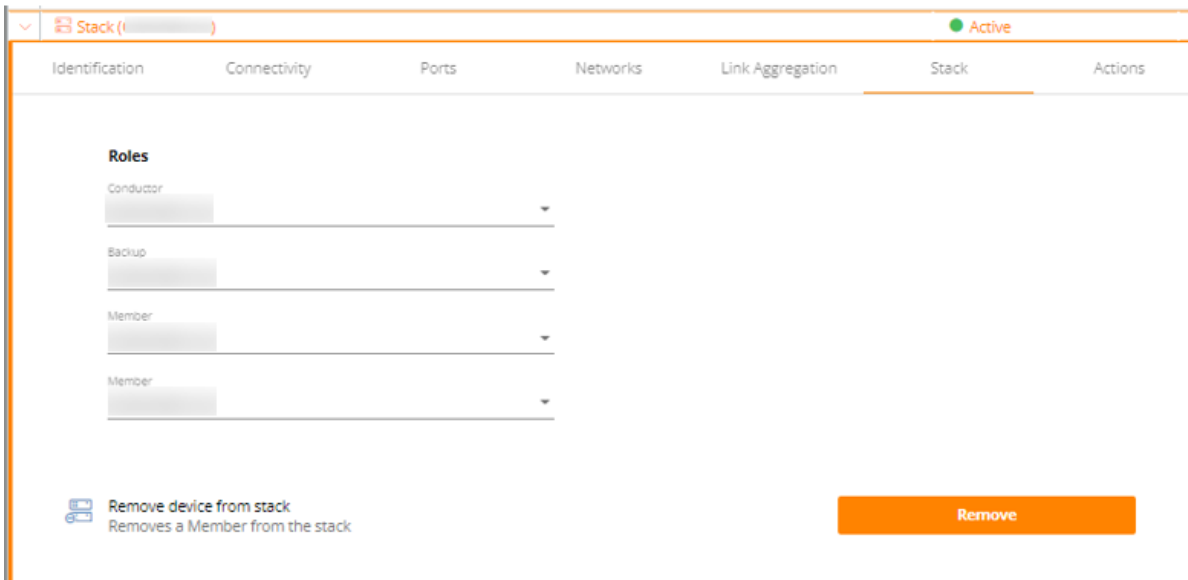


Stack Management Using Cloud Portal

Defining roles of the switches in a stack for a cloud managed stack is done using the Stack option.

Below are the steps to change roles.

- Click on Inventory tile  and on the home page or click the Site Health banner and then click on Show inventory.
- Click the (>) arrow next to the stack in the Inventory list and then click on Stack tab.
- This page shows the current roles of each device and provides option to change the roles as per needs
- On clicking save button after changing the roles, stack config gets synchronized and the stack come active on the portal.






Switches will not go for a reboot, just a synchronization happens, and switches changes the roles immediately.

Additionally, when building a stack with 3 or 4 members, portal allows user to select a switch which can be the backup for the stack.

Roles

Select the device that will be acting as a Backup

 1960 12XGT	<input checked="" type="radio"/>
 1960 48G 2XGT	<input type="radio"/>
 1960 24G PoE 2XGT	<input type="radio"/>

Continue

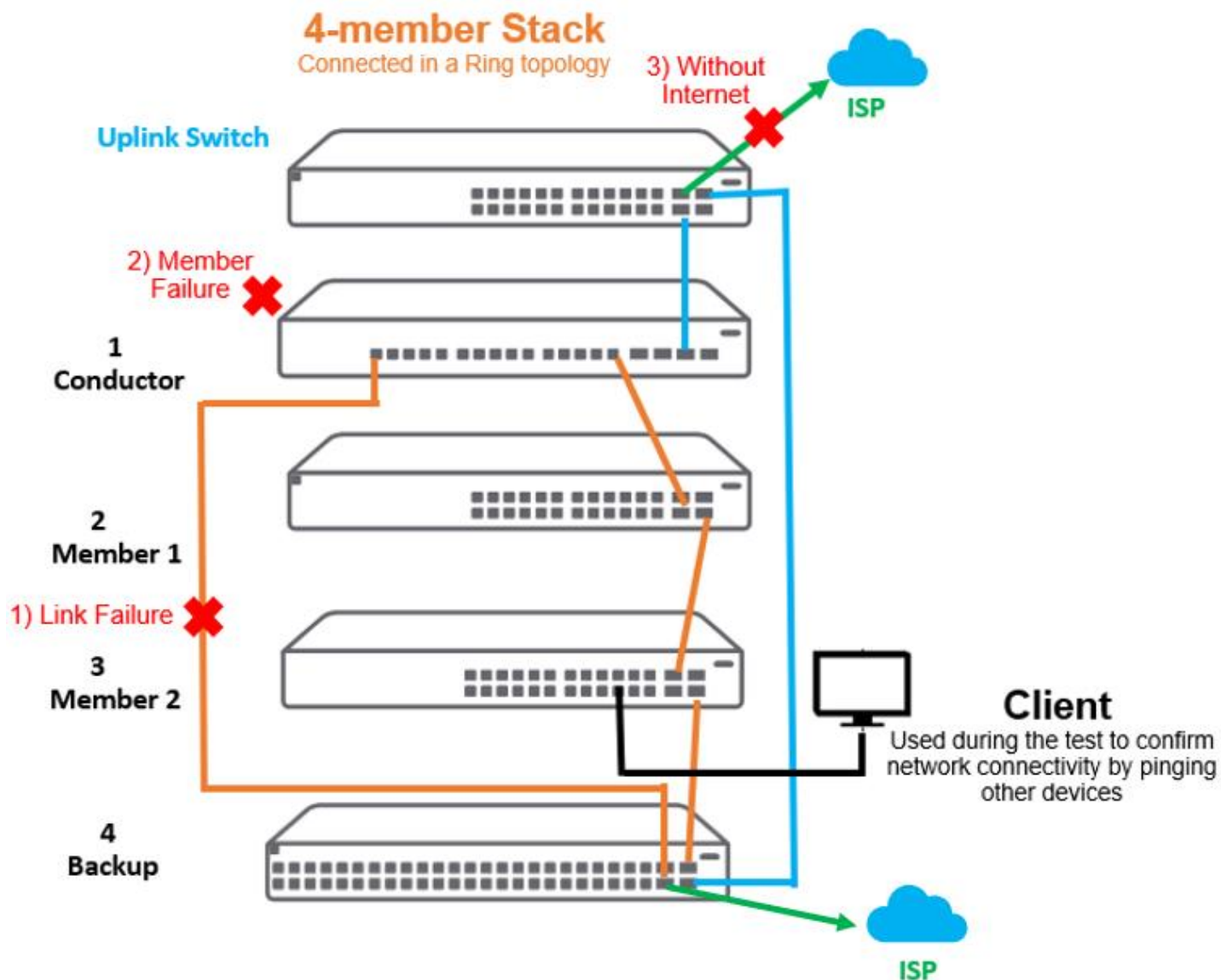
Chapter 11

High Availability

This chapter will discuss on the high availability scenarios on an Instant On 1960 stack using Local Web GUI and Cloud Management. High availability refers to a system or component that is continuously operational for extended periods of time. For organizations today, this translates to 24x7 uptime with no disruption to network access or performance.

Let's use the below topology to cover in this section and see different use cases like:

1. Scenario 1 – link failure with Internet
2. Scenario 2 – member failure with Internet
3. Scenario 3 – above failure scenarios without Internet



High Availability Scenarios of Locally Managed Stack

In this section let's discuss the scenarios in detail of an Aruba Instant On 1960 stack which is managed locally.

Scenario 1: When a link failure occurs within the stack:

Link Fails between	Result
Conductor and backup	Backup renames itself as conductor taking over the roles of the conductor including services to keep the network live. Also stack topology changes from ring to chain.
Backup and members	Conductor will still take care of the members as there is an alternate connection in case of ring topology. Also stack topology changes from ring to chain.
Members	No impact on conductor or backup, the member connected device will be served by conductor or backup using the alternate link. Stack topology changes from ring to chain.

Scenario 2: When a switch failure happens due to power or hardware issue:

If the failed switch is a	Result
Conductor	Backup renames itself as conductor taking over the roles of the conductor including services to keep the network live. Client devices connected to the conductor will have an impact.
Backup	Conductor will still take care of the members as there is an alternate connection in case of ring topology. Devices connected to backup switch will have an impact as the switch failed.
Member	No changes on the stack, the other member connected device will be served by conductor or backup using the alternate link.

Scenario 3: When an uplink fails:

If the uplink connection failed to	Result
Conductor	Conductor will still take care of the stack decisions and only traffic will go through the alternate link to keep the network live.
Backup	Conductor will manage the stack and the traffic will go through the primary uplink.

'High Availability Scenarios of Cloud Managed stack

Let's discuss the same scenarios if the 1960 stack is managed using the cloud portal either using the web portal or mobile App.

Scenario 1: When a link failure occurs within the stack:

Link Fails between	Result
Conductor and backup	Backup takes over the roles of the conductor including services to keep the network live, however will not rename itself as conductor.
backup and members	Conductor will still take care of the members as there is an alternate connection in case of ring topology.
Members	No changes on the stack, the member connected device will be served by conductor or backup using the alternate link.

On the same test having a client connected to member (refer topology above) and trying reachability test to other devices on the network, below are the results

Link fails between	Result
Conductor and backup	no packet drops are expected as it's a ring topology.
Conductor and uplink switch	Failure in the primary link causes around 10 secs of network (around 5 to 6) ping drop and then network resumes without any issues.

Scenario 2: When a switch failure happens due to power or hardware issue:

If the failed switch is a	Result
Conductor	Conductor is marked offline. Backup takes over the roles of the conductor including services to keep the network live. Client devices connected to the conductor will have an impact.
Backup	Backup is marked offline. Conductor will still take care of the members as there is an alternate connection in case of ring topology. Client devices connected to the backup will have an impact.
Member	Failed Member is marked as offline. No changes on the stack conductor or backup, the other member connected device will be served by conductor or backup using the alternate link. Client devices connected to the failed member alone will have an impact.

On the same scenario having a client connected to member (refer topology above) and trying reachability test to other devices on the network, below are the results

If the failed switch is a	Result
Conductor	Around 15 secs (9 to 10) packet drops are seen, and network resumes without any issues .
Backup	No drops are observed as the primary link is still active.

Scenario 3: When an uplink fails:

If the uplink connection failed to	Result
Conductor	Conductor will still take care of the stack taking stack decisions and only traffic will go through the alternate link to keep the network live.
Backup	Conductor will manage the stack and the traffic will go through the primary uplink.
Both conductor and backup	Stack will be working without any issues and will be providing local network services and will have impact to traffic destined outside the network.

Best Practices for High Availability

Below are some of the best practices when designing high available networks.

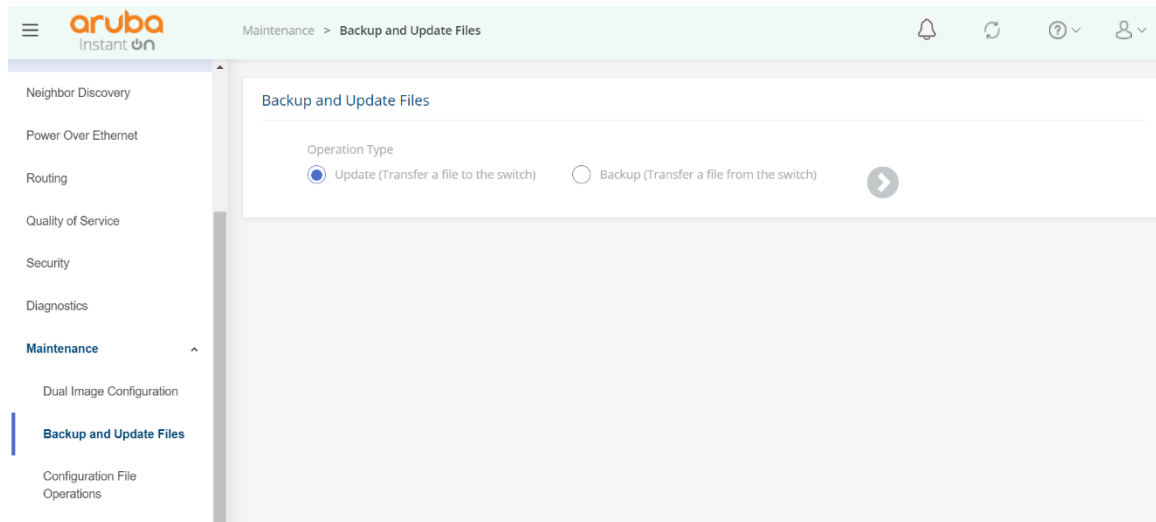
- i. Ring Topology is recommended as it provides redundant links to members to prevent a failure and avoids stack split.
- ii. For link level redundancy, connect uplink cables from both conductor and backup so that the alternate path is taken in case of failures.
- iii. To maximize the network bandwidth, always use 10G ports for stacking even as there are no restrictions to use 1G or 10G cables.
- iv. Connect DC power or UPS from different sources to conductor and backup so that in case of power failures either one of the switches can still be active.

This chapter will guide on how to do firmware upgrade on an Instant On 1960 stack using the Local Web GUI and Cloud Management.

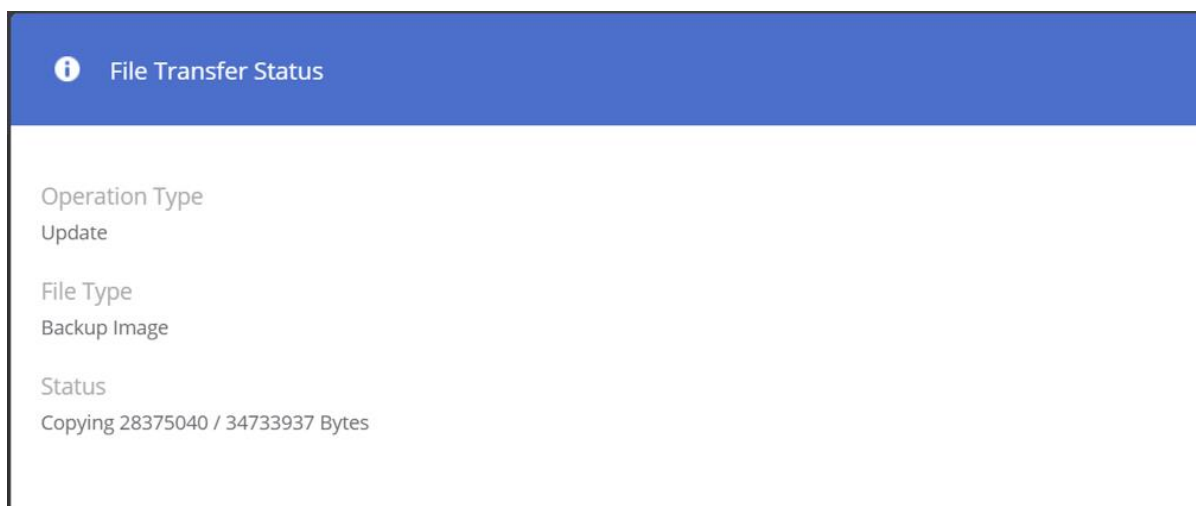
Managing Software Upgrades using Local Web GUI

In this example we will guide on the steps to load a firmware on a 1960 2-member Switch stack which is managed via local management web GUI,

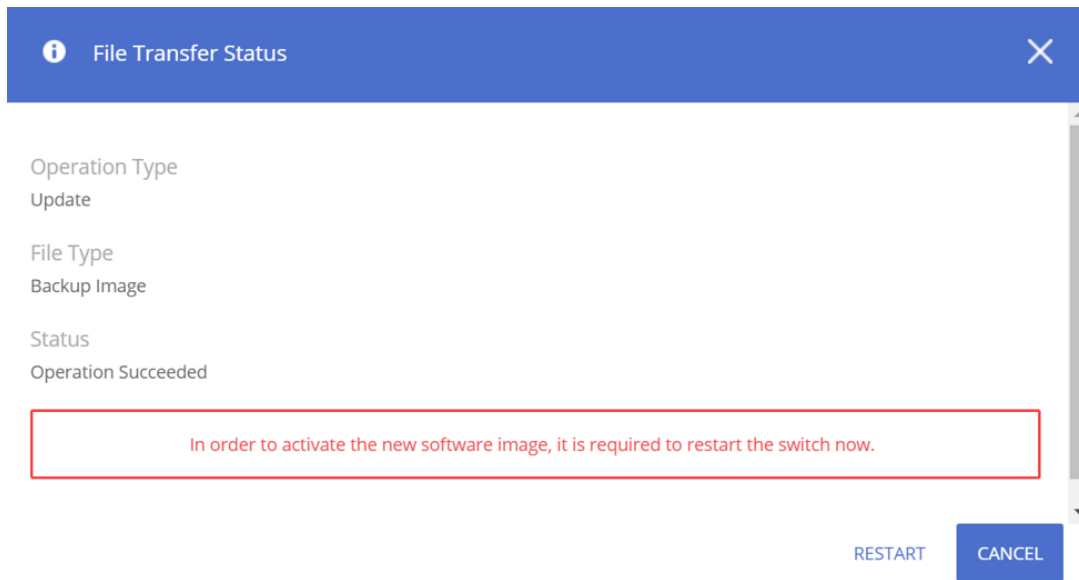
1. Open the browser of the switch web GUI home page using the conductor switch IP address.
2. On the navigation panel on the left, go to Maintenance followed by Backup and update files option



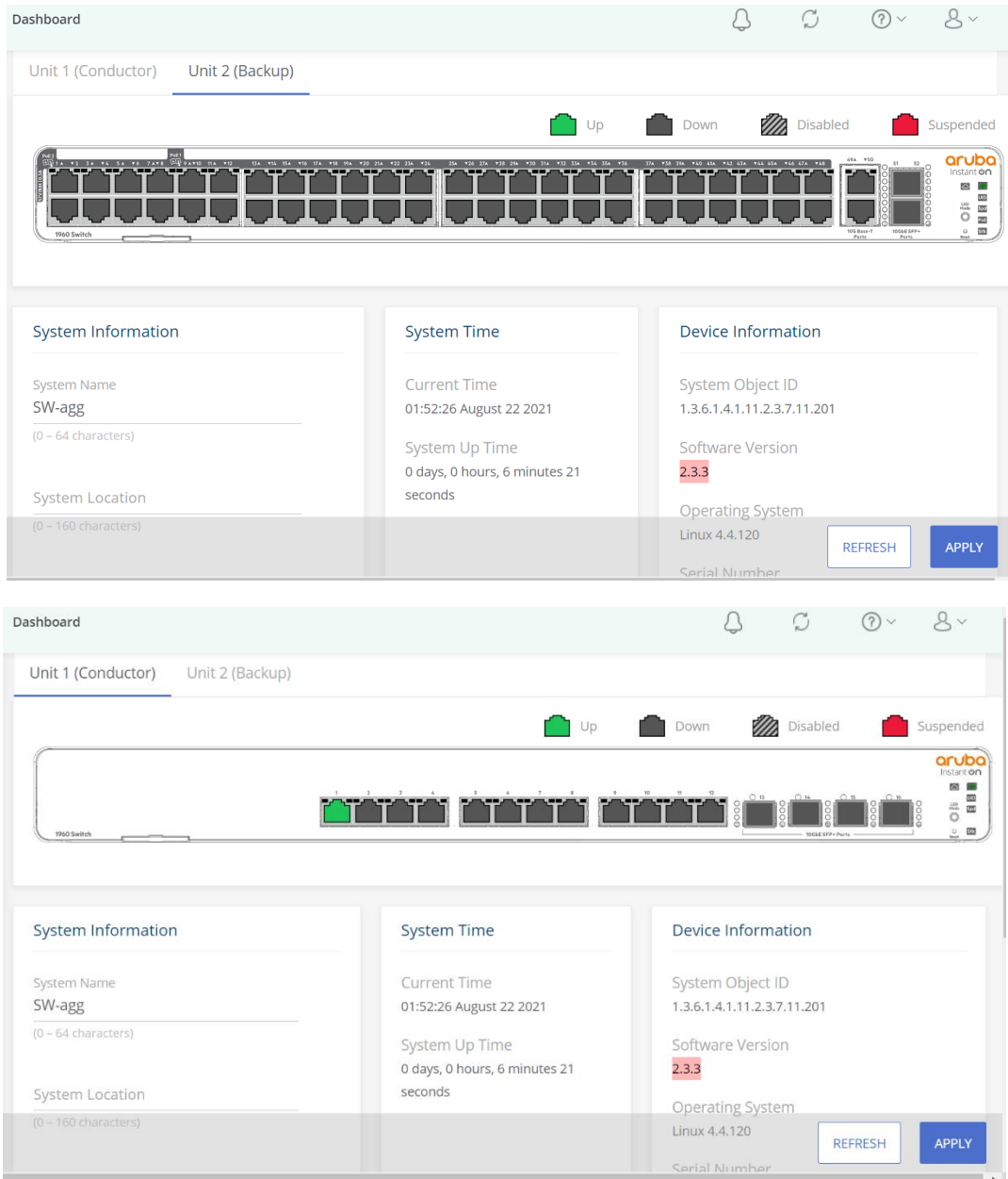
3. Click next -> select backup image -> HTTP -> choose file (1960 firmware image file) -> click start file transfer
4. After click start file transfer, image transfer will start as shown below:



5. After file transfer operation succeeds, warning will be seen to restart for the new firmware image to take effect:



6. On Clicking restart, new firmware image loads on the Conductor and when switch boots it pushes the image to backup also.
7. Entire stack goes for a reboot and all members will get the new firmware image.




- Upgrading the conductor will upgrade the other members of the stack as well
- If the switches run different version of firmwares during initial stack sync up, the conductor will push the image to back and they both run the same firmware.
- Adding a new member which has older firmware version will also get the new image during stack sync up

Managing Software Upgrades Using Cloud Management

Every version of the Instant On software image is uploaded and stored in a cloud-based image server that is hosted by Aruba and are upgraded to the new software image version. When an AP or switch is deployed into the network, it joins an Instant On site switch automatically syncs its Instant On software image with the software image version configured on the site

Instant On allows you to control when a software update on the site needs to take place.

1. Click the settings menu () icon on the Aruba Instant On header and select **Site management** from the drop-down menu. The **Site management** page is displayed.
2. Click the Software update tab to view the scheduling options.
3. Select the Preferred day of the week * for the software update to be installed automatically.
4. Select a suitable Time * from the drop-down menu.

The real-time status of the upgrade is displayed in the **Software update** page, indicating the software update is in progress. When the software is up to date, the page will show the current Instant On software version and the date of the last update.

The page also includes the scheduled time for the update and the options—**Install now** or **Postpone by a week**.



The **Postpone by a week** option can only be used once to extend the duration of the software update by a week.

Software Update

A new software version 2.4.0-82031 is available

What's new:

- Build 82031

Update will occur **in 2 days at 3:00 AM**



Update preferences

Select a convenient time for available updates to be installed automatically
Software updates take approximately 10 minutes to complete. Your network will be unavailable during that time.

Preferred day of the week *



Time *

3:00 ▾ am ▾

* Critical software updates may override these settings and will be installed within 24 hours.

For a 1960 switch stack managed via cloud,

- Same as other Instant On devices software upgrades happen automatically or can be scheduled.
- All switches of the stack auto upgrades to the newer version and no manual upgrade are needed

Troubleshooting Overview

This section describes how to troubleshoot the stack switch. For more information on general troubleshooting, see Aruba Instant On 1960 Switch Series Management and Configuration Guide.

This chapter describes the following:

- basic troubleshooting tips – [Basic Troubleshooting Tips](#)
- diagnosing with the LEDs – [Diagnosing with the LEDs](#)
- forgotten IP address or password – [Restoring to Factory Defaults](#)
- testing the switch by resetting it – [Testing the Switch by resetting it](#)
- support page – [Aruba Instant On Support Services](#)

Basic Troubleshooting Tips

Common problems and their solutions are listed in the following table for Local Managed stacking

Problem	Resolution
Switch fails to form a stack	Confirm that the stacking ports are correctly configured and physically connected followed by a switch reboot.
Link light does not glow when a cable is connected.	Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.
Stack is not getting formed	Confirm if both the stack ports used are either 10G or 1G interfaces
Stack not forming when creating a stack with aggregator and access switches	Confirm if the hybrid stacking is enabled on both the SKUs
Issues with manual unit ID numbering	Confirm if there is no duplicate unit ID numbering being configured, if so, the switch will not join the stack.
Unit ID or stacking ports were changed but this change doesn't take effect	Confirm if the configuration was saved and reboot was issued after change of the unit ID or stacking ports.
Adding more than 4 switches to a stack	Max stack capacity is 4 units only.
Stack conductor changes when a stack is formed. Can I pick a particular switch to always be the Conductor?	In case of default auto numbering, conductor is picked based on uptime, unit with lowest ID or lowest MAC. Use manual unit ID numbering to ensure that a certain switch always is the Conductor.

If the stack LED doesn't light up	Press the LED mode button to toggle to enable the stacking LED feature.
-----------------------------------	---

Some common problems and their solutions are listed in the following table for Cloud Managed stacking

Problem	Resolution
Portal couldn't detect the 1960 out of box switches as a stack	Confirm that switches are connected in ring topology as cloud portal will detect a stack only when the switches are connected in ring. In case of chain, portal will detect as normal switches which can be later added to form a stack. Please refer chapter building a stack using cloud portal section.
Couldn't find add option on the 1960 switch stack section	If the stack has already had 4 switches, then that's the maximum number of switches in a stack, hence no add option will be displayed. Other case where the add option would be missing is if the stack only has 3 switches i.e. conductor, backup, member and there is no standalone 1960 left in the site.
Couldn't find remove option on the 1960 switch stack section	If the 1960 stack has just the 2 switches (conductor & backup), remove option will not be available as remove is possible only when a stack has a switch member. Alternatively unstack option can be used to remove the switches from stack.

Diagnosing with the LEDs

The below section shows LED patterns on the switch that indicate problem conditions for stacking and troubleshooting.

LED Patterns for Local Managed Stacking

Procedure

1. Check in the table below for the LED pattern you see on your switch.
2. Refer to the corresponding diagnostic tip in the below section.

LED Pattern Indicating Problems			Diagnostic Tips
Situation	Stack LED status	Reason	
Normal operation	Off	Stacking mode is not selected	① —
Fault condition	Solid Orange	Check stacking ports	② —
Fault Condition	Slow flash orange	Check stacking mode and ports	③ —
* This stack LED is not important for the diagnosis.			

Diagnostic Tips

Tip	Problem	Solution
①	The stack LED is not blinking on the 1960 switch even though the switch is part of the stack.	Check if the stacking LED mode is selected. To enable stacking LED refer section Identifying LED.
②	Stack LED blinks solid orange.	Check the stacking ports and confirm if they are connected and if they are connected confirm they are connected to similar port speed i.e. either 1gig or 10gig on both the sides.
③	Stack LED blinks slow flash orange.	Check the stack LED mode button is selected and the confirm if the stacking ports connected and if they are connected confirm they are connected to similar port speed i.e., either 1gig or 10gig on both the sides.

LED Patterns for Cloud Managed Troubleshooting

Currently when a 1960 switch stack is managed via cloud portal, in case of any fault condition the LED will not report any status. This will be enhanced in the upcoming releases.

Testing the Switch by Resetting It

If you believe the switch is not operating correctly, you can reset the switch to test its circuitry and operating code. To reset the switch, unplug and plug in the power cord (power cycling).

Power cycling the switch will cause the switch to perform its power-on self test. Resetting the switch can also be invoked from the Web interface.

Resetting the switch can also be invoked by either, 1) Pressing the recessed front panel reset button with a blunt object for less than 5 seconds or, 2) via the web interface.

Restoring to Factory Defaults

If you forget the switch IP address or password, you can restore the factory default configuration by pressing the Reset button or delete (remove) the switch from the site which will initiate a factory reset in case of cloud managed switch.

To execute the factory default reset on the switch, perform these steps:

Procedure

1. Using a small, thin tool with blunt ends (such as a paper clip), press the Reset button on the front of the switch.
2. Continue to press the Reset button until the UID LED light begins to flash.
3. Release the Reset button.
The switch will then complete its self-test and begin operating with its configuration restored to the factory default settings.

After completing this procedure, the IP address will be returned to the default 192.168.1.1 with username as admin and no password, and all configuration settings will be returned to factory defaults.

Frequently Asked Questions

1. Can I run a stack with different switch models?

Yes, Stacking is possible with a mix of different SKUs within 1960 switch series.

2. Can I Stack an Aruba Instant On 1960 and a 1930 or 1830 Switch?

No, Aruba Instant On 1930 or 1830 series switches does not support stacking.

3. Can stack members run different software versions?

No. All stack members must run the same software version.

When switches running different software versions the backup and member switches automatically synchronize the software version of the Conductor switch. Then all stack members run the same software version.

4. How Many Switches Can a Stack Contain and what topologies are supported?

A stack can contain a maximum of four switches and support either Ring or Chain Topology.

5. How are stacking ports different from regular ports?

Stacking ports are treated differently from regular ports. These ports cannot be configured via GUI with any networking settings. They cannot be members of network trunks, cannot be members of a VLAN and no statistics are collected/visible to the user. If a configuration is applied to a network interface and then the network interface is set as a stack interface - the commands are retained in the running configuration, but they are not active. These commands will be active once the interface is removed from stacking interface list.

6. What is recommended: Ring or Chain Topology?

In a ring topology, stack cables are connected between all switches to form a ring. If one of the stack cables is disconnected while the other stack cables are still connected, which is called chain topology. In a chain topology, if a stack cable is disconnected, the stack splits. To ensure high availability, you are advised to use the ring topology. A ring topology requires one more stack cable than a chain topology.

7. How Is the role of a Stack Member Determined?

In a local managed stack, Unit ID determines the role of a stack member and they can be manually configured or automatically assigned. Unit ID 1 plays the role of conductor, Unit ID 2 plays the role of backup and Unit ID 3 & 4 plays the role of members.

In case of cloud-managed stack, roles can be set on stack management either on the web cloud portal or the mobile App.

8. Which Switch's Configuration File Is Used After a Stack Is Set Up in local Web GUI managed stacking ?

After a stack is set up, the configuration file of the conductor switch is used as the stack configuration file in local managed stacking In case of cloud managed stacking each switch which plays the role of conductor, backup or member have its own configuration.

9. How many Stack interfaces can be setup in a switch?

Up to 4 stacking interfaces on each unit.

10. What Are the Changes in Ports After a Stack Is Set Up?

After a switch joins a stack, the port numbers of the switch change according to the stack ID of the switch in the stack. For example, if its second switch, the port numbers of the switch will be 2/0/0, 2/0/1, and so on in case of local Web GUI managed stack.

11. What happens if 1G to 10G interfaces are stacked?

Stack interfaces are functional only if connected to another port of the same speed (1G to 1G or 10G to 10G).

12. How many conductors, backup switches are configurable in 1960 stack?

One 1960 stack can have only one conductor and one backup switch at a time and maximum of two member switches can be added as the maximum stack height is four.

13. Once a stack is configured, is it possible to change the conductor or backup switch?

Yes, changing the role of conductor or backup is possible on both management modes of stacking. In case of locally managed stack, by changing the unit IDs of the switch followed by saving the configuration and reload of the switch. The switch will play defined roles - for example if Unit ID is set as 1 then the switch acts as conductor and backup if Unit ID is set as 2. In case of Cloud Managed stack, the options provided under the stack option helps to configure the conductor, backup of the stack.

14. What will be the IP address of the stack when a stack is formed?

In case of locally managed stack, the IP address of the conductor will be IP address of the stack and once the stack is formed the config gets synchronized and all of the switches will have the same configuration including system name and IP address. In case of cloud managed stacking, each switch will have a separate IP address as each switch needs to onboard and reach cloud individually before being stacked.

15. Are all switches individually accessible when they are stacked?

In case of local managed stack, only the management interface of the conductor is active, by opening the web GUI of the conductor management IP address all other stack member can be configured or viewed for its config. In the case of cloud managed stacking, configurations changes can be made to any switch or port on the stack directly by accessing the cloud portal or mobile App.

16. What happens when the Conductor goes down in a Stack?

In case of local managed stack, if a Conductor fails due to a link or power failure the backup renames itself as conductor and manages the remaining part of the stack.

In case of cloud managed stack if Conductor fails due to a link or power failure, conductor is marked as offline, and the backup will take over the stack but the Backup does not call itself the Conductor at this time.

17. What is the role of the members in a stack?

All devices other than conductor or backup are called members. These devices don't have any management plane functions. Their interfaces are controlled by the conductor or backup switch and in case of a stack which has no conductor or backup, the members wait for a Conductor before resuming their functions.

18. Why Does a Stack Split?

The possible causes of a stack split are stacking ports going down, stack cables becoming faulty, and stack members do not receive stack heartbeat packets in time (due to issues with stacking cables). The recommendation is to always use a Ring topology to prevent a stack from splitting due to the

fault from a single cable or port.

19. How does image upgrade for a locally managed stack work?

To upgrade a locally managed stack to a new firmware image, download the image to the stack by navigating to main dashboard -> Maintenance -> backup and update files and selecting the backup image and then selecting the file transfer option. This will download the image first on conductor and then the conductor synchronizes this image with other members of the stack. After rebooting the conductor other members also gets the new image.

20. Can I add a member to the 1960 stack when the member is running an image with a different version than the stack?

When a device joins a stack and its firmware version is different from the version on the conductor, the conductor will push its firmware copy to the device. Once the device receives a copy of the firmware, it will reboot and rejoin the stack, now running the same version as the conductor.

21. Why the Stk LED is not On?



By default, Stk LED is off and pressing the mode button will toggle between Speed, PoE (in case of PoE SKU's only PoE LED will be present) and Stack LED.

22. How to locate a switch which is part of the stack?

Use the Locate LED feature, by turning on this feature the switch will start blinking the UID LED of the switch which is part of the stack. This feature can be turned on for the completed stack or individual member of the stack and available in both local and cloud managed stacking.

23. Is there a way to identify the conductor switch using LED?

Yes, stack (Stk) LED will glow in solid green to indicate that the switch is acting as a stack for both local managed stack and cloud managed stack.

Support Information

Main Instant On site

<https://www.arubainstanton.com/>

Support

<https://support.arubainstanton.com/>

Instant On social forums and knowledge base

<https://community.arubainstanton.com/>

Security bulletins

<https://www.arubanetworks.com/support-services/security-bulletins/>

End-user license agreement

<https://www.arubainstanton.com/eula/>

Support contact numbers

<https://www.arubainstanton.com/contact-support/>