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Aruba Central

Aruba Central provides simple, cost-effective, wireless, wired and WAN management for Aruba Instant APs, switches, and gateways. Central also offers value added services such as customized guest access along with detailed location and service assurance analytics. Simple, functional, workflow-driven features simplify traditional management tasks, allowing administrators to focus less on infrastructure and more on value creation.

Device Inventory

Each purchased Aruba device is automatically added to the device inventory in the Central account. The device inventory can include Aruba gateways, Aruba Instant Access Points (IAPs) and ArubaOS switches. A purchased device may be manually added if it does not show up in the device inventory. Aruba Central supports two recommended methods for adding devices into the device inventory:

1. Add a maximum of 32 devices using Media Access Control (MAC) addresses and serial numbers
2. Retrieve devices associated with an Aruba Activate account

Aruba recommends using the cloud activation key to manually add devices into a Central account. This method allows for the manual addition of multiple devices without restrictions.

![Figure 2-1 Device Inventory Page](image)

<table>
<thead>
<tr>
<th>DEVICE INVENTORY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEVICE</strong></td>
</tr>
<tr>
<td>00:01:00:00:00:00</td>
</tr>
<tr>
<td>00:02:02:00:02:02</td>
</tr>
<tr>
<td>00:03:03:03:03:03</td>
</tr>
<tr>
<td>00:04:04:04:04:04</td>
</tr>
</tbody>
</table>

Aruba Central | 4
**MAC Address/Serial Number**

Aruba Central allows manual addition up to 32 devices into the device inventory by entering MAC Addresses and Serial Numbers. This option can be invoked by navigating to **Global Settings > Device Inventory** in the Central Web-based User Interface (WebUI), selecting the blue **ADD BY MAC/SN** button, and entering the MAC Addresses and Serial Numbers of the devices. Once the 32 device limit has been reached, additional devices will need to be added using the Cloud Activation Key.

**ADD DEVICES**

Central supports adding up to 32 total devices manually.

If the devices are present in Aruba Activate, they must be moved into the “default” Activate folder before they can be added to the Central device inventory.

The MAC Address and Serial Number for each Aruba device can be obtained from either the Aruba device packaging or the sticker on the device itself.

**Aruba Activate**

Central permits retrieval of multiple devices associated with a separate Activate user account. This option can be invoked by navigating to **Global Settings > Device Inventory** in the Central WebUI, selecting the blue **ADD USING ARUBA ACTIVATE** button, and providing valid Aruba Activate credentials. This is the recommended method when devices need to be added to the Central inventory that exist in an Activate account that is not currently linked to the Central account. When Aruba Activate credentials are used to synchronize the Central account, all devices in the default Activate folder will appear in in the Central device inventory.
ACTIVATE
When you use your Aruba Activate credentials to synchronize your Central account, all devices in your default Activate folder will appear in your Central device inventory.

ACTIVATE USER NAME   PASSWORD

Add
Cancel

Figure 2-3 Adding Devices via Activate

Adding devices through Activate will only add devices that have been placed into the “default” Activate folder.

Devices can be automatically added to Central through Activate however only one set of Activate credentials may be entered for device importation. Once Activate credentials have been added to Central only devices from that account may be imported using Activate.

Subscription Assignment
Central offers two categories of licenses for IAPs and ArubaOS switches:

- **Device Management** – A device management subscription entitles IAPs and ArubaOS switches to be managed in Aruba Central and enables most functionality. One device management subscription is required for each IAP and ArubaOS Switch.

- **Network Service** – A Network Service subscription permits IAPs to participate in Cloud Guest networks, to be included in Presence Analytics, and to be monitored through Clarity. One subscription is required for each IAP to enable a particular network service.

Aruba’s SD-Branch solution introduces three new subscription licenses for Aruba Central which allow Aruba Gateways to be managed by Central and enable base SD-Branch functionality:

- **Foundation 72XX** – Allows 72XX Series Aruba Gateways to operate as VPNCs. One subscription is required for each 72XX Series Aruba Gateway.

- **Foundation 70XX** – Allows 70XX Series Aruba Gateways to operate as Branch Gateways (BGWs) or VPNCs. One subscription is required for each 70XX Series Aruba Gateway.

- **Foundation-Base Capacity** – Allows 7005/7008 Aruba Gateways to operate as Branch Gateways (BGWs) supporting a maximum of 75 clients (defined by MAC addresses). One subscription is required for each 7005/7008 Aruba Gateway.
Each Gateway operating as a VPNC or BGW requires a foundation subscription license. Central allows device management and foundation subscription keys to either be automatically or manually assigned. Automatic subscription applies keys on a first come first served basis, while manual subscription requires manual selection and license application for each device.

Regardless of whether or not Auto-Subscribe is enabled, any subscribed device that has an expired subscription will automatically be assigned a new valid subscription (if available). Available subscriptions can be viewed on the Key Management page.

When Auto-Subscribe is enabled, each gateway will be automatically assigned a device management license and not a foundation license. If a gateway has been assigned a device management license it will be automatically removed when you assign a foundation license assigned in its place.

**Auto Subscription**

Aruba Central will automatically assign a device management subscription key to IAPs and ArubaOS Switches in the inventory by default. This feature can be controlled by navigating to GLOBAL SETTINGS > Subscription Assignment > DEVICE SUBSCRIPTIONS and toggling the AUTO SUBSCRIBE DEVICE SUBSCRIPTION KEYS option. Aruba recommends using auto subscription as a best practice since it eliminates the need to manually assign device management subscription keys to devices.

**Manual Subscription**

If automatic subscription is disabled then device management subscription keys must be manually assigned to each managed device. There are two ways to manually assign device subscriptions for IAPs and ArubaOS Switches:

1. Navigate to GLOBAL SETTINGS > Subscription Assignment > NETWORK SERVICE SUBSCRIPTIONS and dragging the new device into the ALL DEVICES group.

2. Click the SELECT DEVICES button under GLOBAL SETTINGS > Subscription Assignment > DEVICE SUBSCRIPTIONS and then select SUBSCRIBED.
Device management subscriptions can also be unassigned this way if required.

**APPLY SUBSCRIPTIONS**

with auto-apply disabled, you'll need to manually select which devices you'll manage in Aruba Central

<table>
<thead>
<tr>
<th>SUBSCRIBED</th>
<th>SERIAL #</th>
<th>MAC</th>
<th>MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>CNF4K9TI0D</td>
<td>38:17:5C:B1:38</td>
<td>AP-303-US</td>
</tr>
<tr>
<td>YES</td>
<td>CND4JSW19K</td>
<td>C8-B5:AD:CE:6B:80</td>
<td>AP-365-US</td>
</tr>
<tr>
<td>YES</td>
<td>CM0205462</td>
<td>94:84:0F:CC:02:36</td>
<td>IAP-205-US</td>
</tr>
<tr>
<td>YES</td>
<td>CM0186955</td>
<td>94:84:0F:CB:72:40</td>
<td>IAP-205-RW</td>
</tr>
<tr>
<td>YES</td>
<td>CR00000097</td>
<td>00:08:B4:AE:06</td>
<td>7030-US</td>
</tr>
<tr>
<td>YES</td>
<td>CN711H215D</td>
<td>F4:03:43:07:99:40</td>
<td>2830F</td>
</tr>
</tbody>
</table>

0 to be subscribed 0 to be unsubscribed

Total number of devices: 114

**Figure 2-5 Manual Subscription Assignment Using “Select Devices”**

**NETWORK SERVICE SUBSCRIPTIONS**

DRAG AND DROP DEVICES INTO A SERVICE TO ASSIGN

TO SELECT MULTIPLE DEVICES SHIFT+CLICK OR CTRL+CLICK

TO REMOVE MULTIPLE DEVICES FROM A SERVICE, USE BATCH REMOVE

<table>
<thead>
<tr>
<th>SUBSCRIPTIONS</th>
<th>DEVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL DEVICES</td>
<td>114</td>
</tr>
<tr>
<td>NO SUBSCRIPTIONS</td>
<td>74</td>
</tr>
<tr>
<td>Clarity</td>
<td>33</td>
</tr>
<tr>
<td>Cloud Quest</td>
<td>17</td>
</tr>
<tr>
<td>Presence Analysis</td>
<td>32</td>
</tr>
<tr>
<td>UCC</td>
<td>18</td>
</tr>
</tbody>
</table>

529 TOTAL SUBSCRIPTIONS 300 AVAILABLE

<table>
<thead>
<tr>
<th>SERIAL #</th>
<th>NAME</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN752DP0KN</td>
<td>INTROSPCT-DW</td>
<td>boc</td>
<td>Waterloo, Canada</td>
<td>0</td>
</tr>
<tr>
<td>CDD01008</td>
<td>Aruba7000_00_20</td>
<td>boc</td>
<td>Quebec, Canada</td>
<td>0</td>
</tr>
<tr>
<td>CP0000002</td>
<td>705-5W-00-03:00:FCE:7F:7F</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CP0025941</td>
<td>705-5W-00-03:00:FCE:7F:7F</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CP0035202</td>
<td>-</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CNP4890911</td>
<td>-</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CND480W19K</td>
<td>-</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CNNC250Y40</td>
<td>-</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CT0471730</td>
<td>-</td>
<td>boc</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>CM0205462</td>
<td>94:84:0F:CC:02:86</td>
<td>iap</td>
<td>Fremont, United States</td>
<td>1 (Clarity)</td>
</tr>
<tr>
<td>CM0186955</td>
<td>-</td>
<td>iap</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Figure 2-6 Manual Subscription Assignment Using “Drag and Drop”**

Foundation subscriptions can be manually assigned to individual gateways by navigating to GLOBAL SETTINGS > Subscription Assignment > GATEWAY SUBSCRIPTIONS, selecting the appropriate device, and choosing either the Foundation-Base or Foundation subscription from the ASSIGNMENT column.
Foundation-Base or Foundation subscriptions can be optionally assigned to multiple Aruba Gateways by holding down the Control key, clicking on two or more Aruba Gateways, and then selecting **BATCH ASSIGNMENT**.

**Organization**

The fundamental aggregation and grouping elements in Aruba Central are as follows:

- Groups
- Devices
- Sites
- Labels

The filter in Central determines the scope of devices and users that are selected in each Central application. The filter can be used to select a group, device, site, or label.
The **Monitoring and Reports** application is opened by default with the **All Groups** filter selected upon initially connecting to Central. The **All Groups** filter scope includes all the devices and users in the network. The scope can be further refined within an application by selecting a group, device, site, or label (Figure 2-9).

There are some restrictions as to which filters are display and can be selected per application:

- **Monitoring & Reports** – Supports the selection of a Device, Group, Site or Label
- **Wireless Management** – Supports the selection of a Device or Group
- **Wired Management** – Supports the selection of a Device or Group
- **Gateway Management** – Supports the selection of a Device or Group
- **Maintenance** – Supports the selection of a Device, Group or Label
- **Install Manager** – Supports the selection of a Site

Configuration tasks can usually only be performed against groups or devices meaning that a group or device can only be selected when using the wired, wireless, or gateway management applications. Monitoring, reporting, and maintenance can be performed against groups, devices, or labels. Sites are specific to SD-Branch and can only be selected in the **Monitoring & Reports** and **Install Manager** applications.
Groups

Central supports allocating devices to groups for scalable configuration, monitoring, and maintenance. A group in Central is a primary configuration element that acts as a container. Groups should be thought of as a superset of one or several devices that share common configuration parameters.

Device groups provide the following functions and benefits:

- **Combine different types of devices under a common group** – E.g., a single group may be created for all branches that includes gateways, IAPs, and switches. Central allows configuration management of these devices in separate applications (i.e. Gateway Management, Wireless Management, and Wired Management) within the group.

- **Assign multiple devices to a single group** – E.g., a group could consist of multiple BGWs of the same model sharing the same switchport, VLAN, WAN, and VPN configuration settings.

- **Manage common configuration settings of devices at the group level** – Quickly modify or push new configuration changes across multiple devices. E.g., deploying a new WAN policy to support a new application across all BGWs.

Each managed device in Aruba Central must be assigned to a group. Devices may be assigned to groups using the **GLOBAL SETTINGS** application in the **Device Inventory** or **Manage Groups** pages.

Group Operations

Central allows various functions to be performed at the All Groups or individual group levels. The following list shows the most common tasks performed at a group level:

- **Configuration** – Add, modify, or delete configuration parameters for devices in a group
- **User Management** – Control user access to device groups and group operations based the type of user role
- **Device Status and Health Monitoring** – View device health and performance for devices in a specific group
- **Report Generation** – Run reports per group
- **Alerts and Notifications** – View and configure notification settings per group
- **Firmware Upgrades** – Enforce firmware compliance across all devices in a group

Tasks that are not performed at a group level include device-specific configurations such as assigning static IP addresses and hostnames. Device-specific parameters may be learned by Central upon onboarding a new gateway if manual provisioning is employed, or can be provisioned prior to adding a gateway using bulk provisioning.
VPNC Groups

VPNC groups include one or more Aruba Gateways operating as VPN Concentrators. The group type must be set to VPNC the first time the group is selected in the Gateway Management application (Figure 2-10). Groups marked as VPNC may only contain VPNCs and must not include gateways deployed in branches.

VPNC groups include one or more gateways operating as VPNCs. The group type must be designated as a VPNC the first time it is selected in the Gateway Management application (Figure 2-11). Groups marked as VPNC can only contain VPNCs and must not include gateways deployed in branches.
**Branch Groups**

Branch groups can include gateways, switches and/or IAPs. The group type must be designated **Branch Gateway** the first time it is selected in the **Gateway Management** application (Figure 2-12). Groups marked as **Branch Gateway** must not include gateways operating as VPNCs.

### SET GROUP TYPE

Group needs to contain all devices which have a Gateway or VPNC persona. Group cannot have a mix of Gateway and VPNC devices. Once a Group is configured to be a Gateway or a VPNC group then it cannot be changed.

![Figure 2-12 Designating a Branch Group](image)

Determining the number of groups requiring implementation for branch sites can be challenging. There is no right or wrong answer and the approach taken will be specific to each organization’s requirements and business needs.

Aruba recommends creating separate groups for different types of branch sites in the following scenarios:

1. The deployment supports branch sites with unique configuration needs. E.g., a retailer with stores consisting of multiple brands where each brand requires different Service Set Identifiers (SSIDs), Roles, and VLAN assignments.

2. The deployment includes small and medium branches where each branch implements different gateway and switch models. E.g., small branches which include Aruba 7005 gateways with 24-port Switches while the medium branches include Aruba 7008 gateways and 48-port Switches.

3. The deployment includes branch sites across multiple regions and time zones. Separation may be helpful to accommodate different maintenance windows in each region.

4. An organization wishes to reduce the risk when new configuration changes are applied. E.g., a deployment includes test sites where new configurations are tested and vetted prior to being rolled out across all the branch sites.
If a deployment is relatively small and the branches consist of common hardware and configurations, then Aruba recommends implementing a single group to configure, manage, and monitor gateways, switches, and IAPs across all branch sites. Additional groups may be created and branch devices may be moved in the future as the number of branches increase or business needs evolve.

Assigning Devices to Groups

Aruba Central has two methods for assigning new devices into groups:

1. Device Inventory Page
2. Manage Groups Page

Device Inventory

New devices may be assigned to a group and existing devices can be moved to a new group under Device Inventory in the Global Settings application. New devices can be assigned to a group by selecting one or more devices in the table then selecting Assign Group. Multiple devices may be selected in the table by holding the Shift or Control keys while selecting devices.

1. Select the device(s) which need to be assigned or need to be reassigned to a new group.
2. Click Assign Group. This will display the Assign a Group to the Selected Devices window.
3. Select the name of the group where the selected devices need to be assigned. Click Assign Device(s).

**Figure 2-14 Assigning Devices to Groups Using the Device Inventory Page**

**Figure 2-15 Assigning Devices to Groups Using the Device Inventory Page (Cont.)**
Manage Groups Page

Devices may be moved to a new group by navigating to **Global Settings > Manage Groups**. The table on the left side of the page provides a list of groups while the table on the right displays the device membership for the selected group. To move devices into a new group in the **Managed Groups** page:

1. Click on the group name where the device(s) that need to be moved reside.
2. Select the device(s) the need to be moved. Note that multiple devices may be selected by holding the Shift or Control keys.
3. Drag then drop the selected device(s) to the new group.

**Figure 2-16 Assigning Devices to Groups Using the Manage Groups Page**

Group Requirements and Recommendations

The number of groups that are defined in Aruba Central will be specific to each organization and deployment. At a minimum, Aruba Central requires one group to be defined for VPNCs and one group to be defined for BGWs. The role of each group (Branch or VPNC) is determined when devices are initially assigned to their groups.

The number of groups that defined in Central will influence how the Aruba devices are configured, managed, and monitored. Considerations that will influence those decisions include:
1. The number of data centers that will include VPNCs
2. The number of branches in the deployment and their location
3. The different branch deployment models requiring support

Device Level Configuration

Aruba Central provides two levels of configuration hierarchy. A device's final configuration is a result of configuration that is applied at the device level along with configuration that is applied at a group level. Most configuration parameters performed at the device level will override the configuration performed at the group level. The exceptions to that rule are reordering of entries in ACLs or the removal of group level configurations. If the same configuration is performed at both device and group levels, the configuration performed at the device level will be applied. Since configurations can be applied at two levels, some best practices need to be defined. Aruba recommends performing the bulk of the configuration using groups unless specific device level configuration is required. Common configuration parameters which will be applied to the device level include:

1. Hostnames
2. VLAN or Loopback Interfaces with Static Internet Protocol Version 4 (IPv4) Addresses
3. Local DHCP Pools
4. OSPF Router IDs
5. VRRP Priorities
6. Redundant Gateway Peer Configuration
7. Marking ports as WAN in active-active redundant gateway deployments
8. Manual override of firewall aliases (if more scalable mechanisms can't be used)
9. Uplink configuration inherited from Zero Touch Provisioning
10. Configuration defined using the Full-Setup
11. Bulk configuration imported from the CSV

Each device in Central will have some device level configuration. The amount of device level configuration that is learned by Central is dependent on how the device is provisioned. Usually, each configuration parameter defined during the full-setup for a device or each field that is populated in the bulk provisioning CSV will be added as a device level configuration parameter. There are also some best practices that should be followed when determining which configuration parameters to apply at the group level vs. the device level. Configuration parameters that should never be applied to a group include device static IP addresses, loopback interfaces, OSPF router IDs, and local dynamic host configuration protocol (DHCP) pools. These parameters are device specific and may result in unpredictable behavior or un-reachable devices.
Labels

Labels provide an additional useful grouping method in Aruba Central to further simplify the monitoring, maintenance, and reporting of branch devices and users. Labels provide an orthogonal way of organizing devices for administrative purposes without impacting the configuration hierarchy.

Each Aruba device in Central can be assigned one or more labels. This could be a single label to indicate a region name or multiple labels to indicate city, state, country or even service provider. A label may then be selected as a filter in the Monitoring & Reports and Maintenance applications to select a specific target group of devices. E.g., selecting a city would allow an administrator to monitor and generate reports for all the clients and devices across all sites assigned to the selected city.

The number of labels defined and assigned to devices will be specific to an organization’s monitoring, maintenance, and reporting needs.

NOTE

Aruba Central allows a maximum of 5 labels to be assigned per device.
It is important to note that labels are not used for device configuration. The configuration of devices will be handled using the group-device hierarchy. Labels are primarily used as a mechanism to simplify monitoring, maintenance, and reporting tasks. Effectively, labels provide a tool that makes it easier to keep track of data center and branch devices without the need for creating separate groups.

Labels are created and managed by the following process:

1. Navigate to **Global Settings > Labels and Sites**
2. Ensure that the blue slider in the upper right hand corner of the page is moved over to Labels
3. Click the **Add Label** button in the bottom left hand corner

Each label must include a unique name. Devices are assigned to labels by dragging and dropping one or more devices from the list on the right to the respective label on the left. Multiple devices can be selected at the same time by holding the Shift or Control keys while selecting the devices.
Sites

Sites are a specific type of label in Central that groups and organizes devices by their location. Each site can contain Aruba Gateways, Switches, and IAPs. Aruba recommends that creating one site for each branch location. Each site includes the name and physical address of the site, and is used by Central to provide monitoring, maintenance and reporting at a branch level. Sites are also used by the Install Manager application for assigning installers and monitoring the status of each branch sites installation.

Sites are created and managed by navigating to Global Settings > Labels and Sites. Toggle the blue slider in the upper right hand corner of the page from Labels to Sites to display the Site options.

Sites can be manually added one at a time or bulk added using a CSV file. The bulk upload option allows a maximum of 1,000 sites to be uploaded at a time. A template file can be downloaded by selecting the Bulk Upload icon.
Devices can either be manually assigned to a site using Drag and Drop or be assigned by the installer via the Aruba Install Manager mobile application. The application simplifies deployments as it allows organizations to designate an installer for each branch site who can then scan the new Aruba devices. Each scanned Aruba Gateway, Switch, and IAP is automatically geotagged and assigned to the correct site and group.

Aruba Central provides a convenient option to convert existing labels or groups into sites for existing deployments. Both methods allow a CSV file to be downloaded which contains all of the existing labels or groups. Each CSV contains address fields that must be populated before uploading the CSV file back into Central.

The conversion of labels is a one way process and cannot be undone. All the historical data for each converted label will be retained, but will only be available when monitoring and reporting for a site. The converted labels and assignments will be removed. The conversion of groups into sites will leave existing groups unchanged. The conversion process will simply create a new site for each group and will automatically assign all the devices in each group to their respective sites.