

MANAGED DEVICE AT BRANCH OFFICE (BOC)

Technical Climb Webinar

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Branch Controller – A quick intro

What is a branch controller ? How it works?

- Branch controllers enable customers to directly plug the controller into a broadband internet modem and establish communication to Master controller in the corporate data centers
- From behind an internet mode, Branch controller reaches the Master controller just like a RAP or an IAP VPN.
- Branch controllers are designed for small to medium-scale where only 1-64 APs are required
- Branch controller finds the Master by static configuration or ZTP.
- All configuration of the Branch controller including VLAN creation are done from the Master controller or MM.

Branch Office Deployment in 6.x

1

IPsec of BOC always terminates on Master controller

2

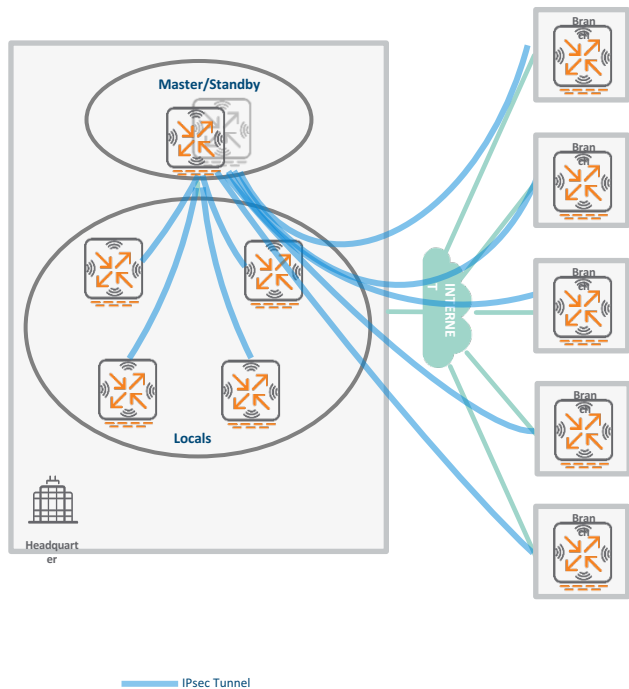
ZTP supported via Activate server

3

BOC whitelist can be manually added in the master

4

BOC configurations are made through Smart Config Wizard



Branch deployment 6.x - Manual (full-setup)

Auto-provisioning is in progress. Choose one of the following options to override or debug...

'enable-debug' : Enable auto-provisioning debug logs

'disable-debug' : Disable auto-provisioning debug logs

'mini-setup' : Stop auto-provisioning and start mini setup dialog for branch role

'full-setup' : Stop auto-provisioning and start full setup dialog for any role

Enter Option (partial string is acceptable): **full-setup**

Are you sure that you want to stop auto-provisioning and start full setup dialog? (yes/no): **yes**

Enter System name [Aruba7005]: **branch01-7005**

Enter Switch Role (master|local|standalone|branch) [master]: **branch**

Enter Branch Master switch IP address or FQDN [172.16.0.254]: **10.69.129.100**

Enter Branch wired uplink port [GE 0/0/0]: **GE 0/0/3**

Enter Branch wired-vlan Type (pppoe|dhcp|static) [static]: **dhcp**

This controller is restricted to Country code US for United States, please confirm?: **yes**

Enter Time Zone [PST-8:0]:

Enter Time in UTC [00:24:38]:

Enter Date (MM/DD/YYYY) [5/5/2015]:

Smart Config in 6.x

The screenshot shows the Aruba Mobility Controller web interface. The browser address bar displays `https://10.10.10.1:4343/screens/switch/remote_node_config.html`. The page title is "Smart Config" and the version is "Rajaguru-6.4.3.9". The navigation menu on the left includes sections for WIZARDS, NETWORK, SECURITY, and WIRELESS. The main content area is titled "Branch > Smart Config" and contains tabs for Management, System, Networking, Routing, VPN, WAN, Summary, and Whitelist. The "Management" tab is active, showing a "Branch Config Group List" table with columns for Name, Status, and Reboot Required. The table lists three branches: "Rajaguru-Dynamic-Branch", "7005-Dynamic-Branch", and "7030-Static-Branch", all with a status of "Validated" and "No" reboot required. Below the table are buttons for "New", "Clone", and "Delete". The "Basic Info of: 7005-Dynamic-Branch" section shows the "Model" as "7005" and "IP Address Management" as "Dynamic". An "Apply" button is located at the bottom right of this section. A "Commands" section at the bottom has a "View Commands" link.

Smart Config

https://10.10.10.1:4343/screens/switch/remote_node_config.html

aruba MOBIILITY CONTROLLER | Rajaguru-6.4.3.9

Log out admin

Dashboard Monitoring **Configuration** Diagnostics Maintenance Save Configuration

WIZARDS

- AP
- Controller
- Campus WLAN
- Remote AP
- AirWave

NETWORK

- Controller
- VLANs
- Ports
- Cellular Profile
- IP

SECURITY

- Authentication
- Access Control

WIRELESS

- AP Configuration
- AP Installation

Branch > Smart Config

Management System Networking Routing VPN WAN Summary Whitelist

Branch Config Group List

Name	Status	Reboot Required
Rajaguru-Dynamic-Branch	Validated	No
7005-Dynamic-Branch	Validated	No
7030-Static-Branch	Validated	No

New Clone Delete

Basic Info of: **7005-Dynamic-Branch**

Model: 7005

IP Address Management: Dynamic

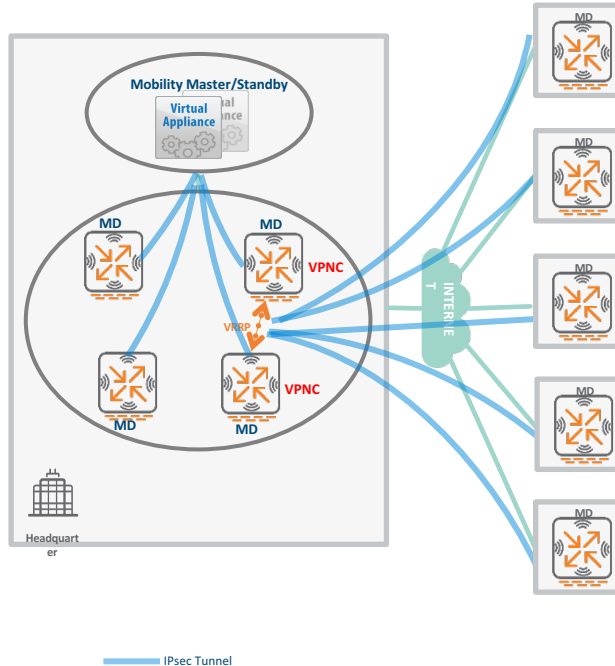
Apply

Commands View Commands

Branch Office Deployment in 8.x

- VPN Concentrator -- VPNC

- 1 MM manages all the MDs in the network
- 2 One or a pair of MDs as VPNC to terminate branch office controller IPsec
- 3 Multiple Branch office controllers establish IPsec tunnel to VPNC
- 4 Only one IPsec tunnel from the VPNC to MM
- 5 BOC in 8.x is just an MD and configuration are made at node level



BOC Initial setup in 8.x

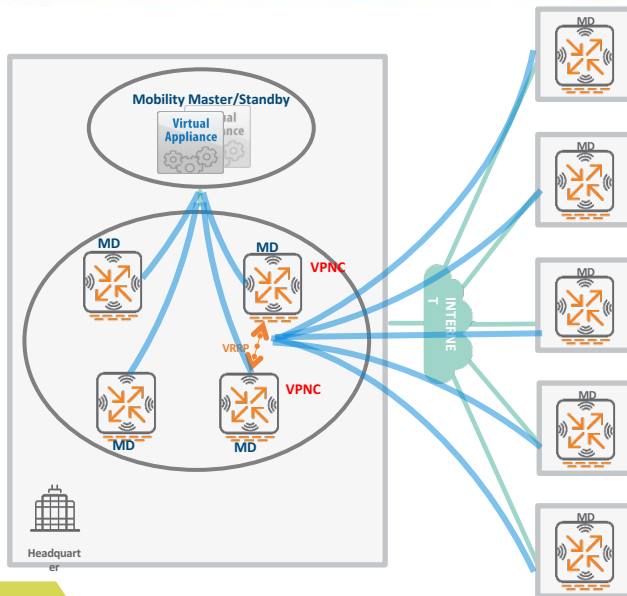
1 MM not optimized for bulk IPsec

Enter System name [Aruba7030]:
Enter Switch Role (master|standalone|md) [md]: **md**
Enter IP type to terminate IPsec tunnel (ipv4|ipv6) [ipv4]:
Enter Master switch IP address or FQDN: 10.70.92.5
Is this a VPN concentrator for managed device to reach Master switch (yes|no)[no]:
This device connects to Master switch via VPN concentrator (yes|no)
[no]: yes
Enter VPN concentrator IP address: 10.70.92.15
VPN concentrator Authentication method (FactoryCert|PSKwithMAC) [FactoryCert]:
Enter VPN concentrator MAC address: 00:0B:86:B5:88:67
Enter Redundant VPN concentrator MAC address [none]: 00:0B:86:B5:87:77

VPNC is a MD which can terminate IPsec tunnels from other MDs.

ADD THE MAC ADDRESS OF THE BOC ON THE VPN CONC:

```
[mynode] (config) #cd /md/VPN-Con-Group  
[VPN-Con-Group] (config) #vpn-peer peer-mac 00:0b:86:bc:03:27 cert-auth factory-cert
```



ZTP – Zero Touch Provisioning for a MD

This method requires interactions of MD with activate server to get MM information.

User has to configure Activate credentials on MM for ZTP to work. MM uses it to register itself and upload its certificate on Activate.

```
(ArubaMM) [mm] #show activate
```

```
activate
```

Parameter	Value	Set
Activate Whitelist Service	Enabled	
Activate URL	https://activate.arubanetworks.com	
Provision Activate URL	https://device.arubanetworks.com	
Activate Login Username	apingale	
Activate Login Password	*****	
Periodic Interval for WhiteList Download	1	
Add-Only Operation	Enabled	
Custom cert to upload to Activate	CustomCACert	
Server cert to be used for IPSEC	CustomServerCert	

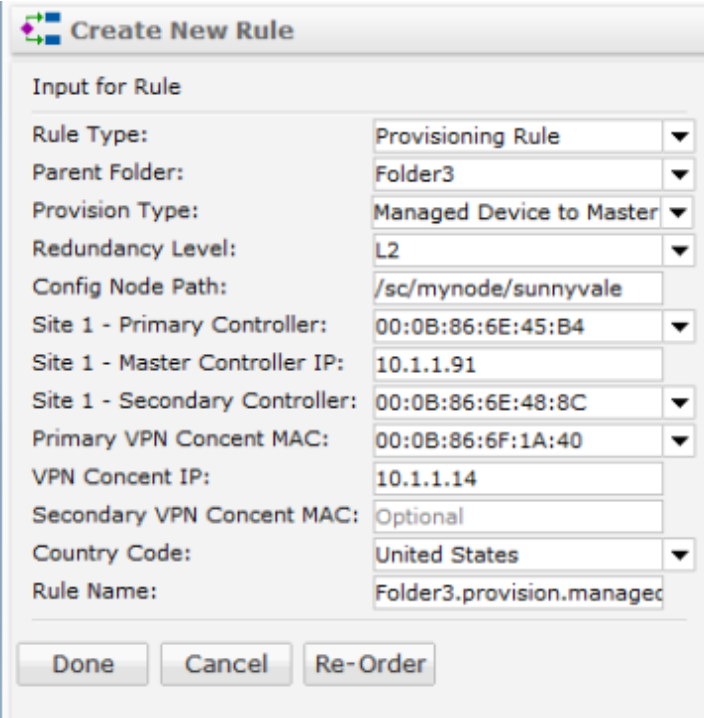
You will have to connect last copper port of Branch Controller as Uplink for controller which will have vlan 4094 configured with dhcp client working on it.

- MD establishes HTTPS connection with the activate server (device.arubanetworks.com) and posts provision request to it.
- Activate server authenticates the controller and on successful authentication provides MM information, Country Code to the MD and downloads Trust Anchor to MD.

ZTP – Zero Touch Provisioning for a MD

- You will have to connect last copper port of Branch Controller as Uplink for controller which will have vlan 4094 configured with dhcp client working on it.
- MD establishes HTTPS connection with the activate server (device.arubanetworks.com) and posts provision request to it.
- Activate server authenticates the controller and on successful authentication provides MM information, Country Code to the MD and downloads Trust Anchor to MD.
- Branch MD establishes IPsec with VPNC and connects with MM through MD-VPNC IPsec.
- MD establishing connection with MM through VPNC is supported only with Factory-certs on VPNC and MD.
- MM will have reverse route to MD through VPNC-MM IPsec which will be installed automatically.
- VPNC will have PSK based IPsec tunnel with MM. VPNC will be added to activate Manually.
- Command below will be added to VPNC automatically:
`vpn-peer peer-mac "00:0b:86:bf:83:d0" cert-auth factory-cert`

Activate Configuration



Create New Rule

Input for Rule

Rule Type:	Provisioning Rule
Parent Folder:	Folder3
Provision Type:	Managed Device to Master
Redundancy Level:	L2
Config Node Path:	/sc/mynode/sunnyvale
Site 1 - Primary Controller:	00:0B:86:6E:45:B4
Site 1 - Master Controller IP:	10.1.1.91
Site 1 - Secondary Controller:	00:0B:86:6E:48:8C
Primary VPN Concent MAC:	00:0B:86:6F:1A:40
VPN Concent IP:	10.1.1.14
Secondary VPN Concent MAC:	Optional
Country Code:	United States
Rule Name:	Folder3.provision.managed

Done Cancel Re-Order

Debugging

Commands to see Status of MD on MM:

- `Show crypto isakmp sa`
- `Show crypto ipsec sa`
- `Show switches`

For debugging IPSec issues use debugging levels below:

- `Logging level debugging security`
- `Logging level debugging security process crypto subcat ike`
- `Show log security all`
- `Logging level debugging system process bocmgr`
- `Logging level debugging system process cpsec`
- `Show log system all`

Branch Controller Configuration in 8.0

The screenshot displays the Aruba Configuration web interface in a browser window. The URL is <https://10.29.161.210:4343/screens/switch/configuration.html#/managednodes?configpath=%2Fr>. The interface includes a top navigation bar with the Aruba logo and status indicators for Controllers (5), Access Points (1), Clients (0), and Alerts (1). The breadcrumb trail shows the path: Managed Network > Boson-Branch-Group > BOC-MD. The left sidebar contains a tree view with categories like Mobility Master, Managed Network (6), Boson-Branch-Group (2), BOC-MD, BOC2-MD, cluster (2), Photon-MD-Group (1), and VPN-Con-Group (1). The main content area is divided into three sections: a 'Dashboard' menu on the left, a 'Configuration' menu in the center, and a 'Controller' configuration form on the right. The 'Controller' form is currently active, showing options for Deployment (Campus or Branch), Vpn ip address (10.29.164.202), Peer mac, Mobility master IPV4 address (10.29.161.210), Authentication (Certificate), Certificate type (Factory), FQDN (optional), MAC address of master (00:0b:86:bc:04:87), MAC address of redundant master, and Source IP address. At the bottom right of the form are 'Cancel' and 'Submit' buttons. The version 'ArubaMM, 8.0.0.0' is visible at the bottom left of the configuration area.

Configuration

Not Secure | <https://10.29.161.210:4343/screens/switch/configuration.html#/managednodes?configpath=%2Fr>

Apps Bookmarks Airheads Bugzilla Arubapedia TAC Cases Aruba Others Aruba Logins Aruba HR Info KB Other bookmarks

aruba

CONTROLLERS 5 0 ACCESS POINTS 1 0 CLIENTS 0 ALERTS 1 Admin

Managed Network > Boson-Branch-Group > BOC-MD

Mobility Master

Managed Network (6)

Boson-Branch-Group (2)

BOC-MD

BOC2-MD

cluster (2)

Photon-MD-Group (1)

VPN-Con-Group (1)

Dashboard

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WLANS

Roles & Policies

Access Points

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Controller

Deployment: ☐ Campus ☒ Branch (with VPN Concentrator)

Vpn ip address: 10.29.164.202

Peer mac:

Mobility master IPV4 address: 10.29.161.210

Authentication: Certificate

Certificate type: Factory

FQDN (optional):

MAC address of master: 00:0b:86:bc:04:87

MAC address of redundant master:

Source IP address:

Cancel Submit

ArubaMM, 8.0.0.0

8.X FEATURES FOR BRANCH

Address Pool Management and Pool carving

- IP Address Pools are used for Dynamic IP address carving for,
 - VLAN pool
 - TUNNEL pool
 - NAT pool
 - DHCP pool
- Pool config can be added at node level .
- Pool needs to be assigned to an interface for it to take effect
- Pool carving comes into effect when a device is added under the node
- Each device under node will get its IP's /subnet carved dynamically
- Deletion of device free up the ips and gets added back to pool
- Device addition is prevented if there are no free IP in the pool

VLAN Pool configuration

Configuration -> interfaces -> pool management

Managed Network > shegde > boc

Mobility Master

SC-VRRP-STBY-SHEGDE

SC_VM_10.16.12.22

Managed Network (7)

abhi (1)

shegde (6)

boc (5)

7005

aa:bb:cc:aa:bb:cc

grappa (1)

shegde_MN_70

ouzo (1)

Aruba7005

ouzoplus (1)

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Ports

VLANs

IP Routes

IPv6 Neighbors

GRE Tunnels

Pool Management

OSPF

Multicast

> NAT Pools

> VLAN Pools

NAME	START ADDRESS	END ADDRESS
bocpool	102.2.1.1	102.2.1.12
testsetpool	172.222.222.1	172.222.222.16

+
VLAN Pools

> Tunnel Pools

Pending Changes

VLAN Pool Assignment

- Assigning VLAN POOL to interface vlan under configurations->interfaces->vlan

Managed Network > shegde > boc Pending Changes

Mobility Master

- SC-VRRP-STBY-SHEGDE
- SC_VM_10.16.12.22

Managed Network (7)

- abhi (1)
- shegde (6)
 - boc (5)**
 - 7005
 - aa:bb:cc:aa:bb:cc
 - grappa (1)
 - shegde_MN_70
 - ouzo (1)
 - Aruba7005
 - ouzoplus (1)
 - Aruba7008
 - vpnc (1)
 - Aruba7010

Configuration

- WLANs
- Roles & Policies
- Access Points
- AP Groups
- Authentication
- Services
- Interfaces**
- Controllers
- System
- Tasks

Ports	VLANs	IP Routes	IPv6 Neighbors	GRE Tunnels	Pool Management	OSPF	Multicast	
ID	IPv4 ADDRE...	IPv6 ADDRE...	ENABLE NAT	PORT MEM...	ADMIN STA...	OPERATION...	PD CLIENT	DHCP SETT...
1	--	--	--	--	--	--	Disabled	None
111	--	--	--	0/0/2	Enabled	N/A	Disabled	None
222	--	--	--	0/0/1	Enabled	N/A	Disabled	None
1111	--	--	--	--	--	--	Disabled	None

Port Members **IPv4** **IPv6** **More**

IP Address Assignment

IP assignment: VLAN Pool

VLAN pool: bocpool

Option-82: MAC

MTU: 1500

Supress ARP: Enabled

Pool reference check using bocmgr in MM

- VLAN Pool reference details

```
(SC_VM_10.16.12.22) [boc] (config-submode)#show bocmgr pool vlan pool-name bocpool
```

```
Vlan Pool(s)
```

Pool Name	Vlan Id	Start IP	End IP	Next IP	Number of Hosts	Intf ref count	DeviceRefcount	PoolNode
bocpool	111	102.2.1.1	102.2.1.12	0		1	5	/md/shegde/boc

- Interface reference count is 1 , since its assigned only to vlan 111
- 5 devices exist under node level /md/shegde/boc . Hence total device reference is 5

- VLAN IP Assignment to BOC

```
(shegde_MN_7010) #show configuration effective | begin "interface vlan 111"
```

```
interface vlan 111
```

```
    ip address 102.2.1.1 255.255.255.255
```

```
    description test
```

```
!
```

Tunnel Pool Configuration

- Configuring Tunnel Pool

Managed Network > shegde > boc

Pending Changes

Mobility Master

SC-VRRP-STBY-SHEGDE

SC_VM_10.16.12.22

Managed Network (7)

abhi (1)

shegde (6)

boc (5)

7005

aa:bb:cc:aa:bb:cc

grappa (1)

shegde_MN_70

ouzo (1)

Aruba7005

ouzoplus (1)

Aruba7008

vpnc (1)

Aruba7010

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VLANs

IP Routes

IPv6 Neighbors

GRE Tunnels

Pool Management

OSPF

Multicast

> VLAN Pools

> Tunnel Pools

Tunnel Pools		
NAME	START ADDRESS	END ADDRESS
abcd	33.33.33.3	33.33.33.33
abc	33.33.33.1	33.33.33.64
tunnelpool	22.22.22.0	22.22.22.19

+

Tunnel Pool > tunnelpool

Pool name: tunnelpool

Start IP address: 22.22.22.0

End IP address: 22.22.22.19

Tunnel Pool assignment to GRE tunnel

- Configuration -> interfaces -> GRE tunnels

The screenshot displays a network management interface with a sidebar on the left and a main configuration area on the right. The sidebar shows a hierarchy: Managed Network > shegde > boc. The main area has tabs for Ports, VLANs, IP Routes, IPv6 Neighbors, GRE Tunnels (selected), Pool Management, OSPF, and Multicast. The GRE Tunnel configuration for Tunnel 1 is shown with the following settings:

- IPversion: Ipv4
- Tunnel ID: 1
- Mode: L3 (selected)
- IPv4 address type: Dynamic
- Dynamic IP address pool: tunnelpool (with a red note: "tunnel pool created under pool management tab")
- MAC address of peer device: 00:0b:86:9a:6b:37 (with a red note: "required to autogenerate config for peer tunnel")
- Enable: Enabled
- Trusted: Trusted
- MTU: 1200
- Tunnel source: vlan
- Vlan: 222 (with a red note: "must be vlan which is assigned with ip address from tunnelpool")
- Tunnel destination: 172.66.30.1
- Route ACL name: -None-

The interface also includes a top navigation bar with "Managed Network > shegde > boc" and a "Pending Changes" link. The left sidebar lists various network elements under "Managed Network (7)", including "abhi (1)", "shegde (6)", "boc (5)", and several Aruba devices.

L3 GRE tunnel – Autogenerated tunnel interfaces

Peer IP autogenerated at boc/md

```
(shegde_MN_7010) #show interface tunnel 1

Tunnel 1 is up line protocol is up
Description: Tunnel Interface
Internet address is 22.22.22.5 255.255.255.252
Source 172.16.222.65 (Vlan 222)
Destination 172.66.30.1
Tunnel mtu is set to 1500
Tunnel is an IP GRE TUNNEL
Tunnel is Trusted
Inter Tunnel Flooding is enabled
Tunnel keepalive is enabled
Keepalive type is Default
Tunnel keepalive interval is 10 seconds, retries 3
    Heartbeats sent 2, Heartbeats lost 1
    Tunnel is down 2 times
Rx access list -None- is configured
```

Autogenerated peer tunnel config at destination VPNC

```
(Aruba7010) #show interface tunnel 64001
Tunnel 64001 is up line protocol is down
Description: Tunnel Interface
Internet address is 22.22.22.6 255.255.255.252
Source 172.66.30.1
Destination 172.16.222.65
Tunnel mtu is set to 1500
Tunnel is an IP GRE TUNNEL
Tunnel is Trusted
Inter Tunnel Flooding is enabled
OSPF is enabled on this interface
Tunnel keepalive is enabled
Keepalive type is Default
Tunnel keepalive interval is 10 seconds, retries 3
    Heartbeats sent 51, Heartbeats lost 50
    Tunnel is down 3 times
```

Tunnel pool reference details

```
(SC_VM_10.16.12.22) [boc] (config) #show bocmgr pool tunnel pool-name tunnelpool
```

Tunnel Pool(s)										
Pool Name	Tunnel Id	Start IP	End IP	Next IP	Number of Hosts	Intf ref count	Device ref count	Pool Node	Autogen	PeerDev
tunnelpool	1	22.22.22.0	22.22.22.19		1	1	5	/md/shegde/boc	true	00:0b:86:9a:6b:37

NAT Pool

- NAT POOL configuration

Managed Network > shegde > boc

Pending Changes

Mobility Master

SC-VRRP-STBY-SHEGDE

SC_VM_10.16.12.22

Managed Network (7)

abhi (1)

shegde (6)

boc (5)

7005

aa:bb:cc:aa:bb:cc

grappa (1)

shegde_MN_70

ouzo (1)

Aruba7005

ouzoplus (1)

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IPv6 Neighbors

GRE Tunnels

Pool Management

OSPF

Multicast

NAT Pools

NAME	START ADDRESS	END ADDRESS	DESTINATION NAT IP	FLAGS
dynamic-srcnat	0.0.0.0	0.0.0.0	--	--
NATPOOL	10.10.10.1	10.10.10.20	20.20.20.1	Static

+

> VLAN Pools

> Tunnel Pools

NAT Pool

- NAT POOL configuration in session ACL

Managed Network > shegde > boc

Mobility Master

- SC-VRRP-STBY-SHEGDE
- SC_VM_10.16.12.22

Managed Network (7)

- abhi (1)
- shegde (6)
 - boc (5)
 - 7005
 - aa:bb:cc:aa:bb:cc
 - grappa (1)
 - shegde_MN_70
 - ouzo (1)
 - Aruba7005
 - ouzoplus (1)
 - Aruba7008
 - vpnc (1)
 - Aruba7010

Dashboard

Configuration

- WLANs
- Roles & Policies
- Access Points
- AP Groups
- Authentication
- Services
- Interfaces
- Controllers
- System
- Tasks

Roles Policies Applications

+

Roles > natpool > New forwarding Rule

IP version: IPv4

Source: Any

Destination: Any

Service/app: Any

Action: Source and Destination NAT

NAT pool: natpool

Port:

TOS:

Time range: - None - Reset

802.1p priority:

Options: ☐ Log ☐ Mirror ☐ Blacklist ☐ Disable Scanning

DHCP Pool Configuration

- Configuration -> services -> dhcp server

The screenshot shows a network management interface with a sidebar on the left and a main configuration area on the right. The sidebar contains a tree view under 'Mobility Master' with nodes for 'SC-VRRP-STBY-SHEGDE', 'Managed Network (7)', and various sub-nodes like 'abhi (1)', 'shegde (6)', '7005', 'aa:bb:cc:aa:bb:cc', 'grappa (1)', 'shegde_MN_70', 'ouzo (1)', 'Aruba7005', 'ouzoplus (1)', 'Aruba7008', 'vpnc (1)', and 'Aruba7010'. The main area has a top navigation bar with tabs: Cluster, Redundancy, VPN, Firewall, IP Mobility, External Services, **DHCP Server**, and WAN. Below the tabs is a configuration form for the DHCP Server. The form includes fields for IP version (IPv4), Pool name (clientpool), Default routers, DNS servers, Import from DHCP/PPPoE (checkbox), Domain name, WINS, Import from DHCP/PPPoE (checkbox), Lease days, Lease hrs, Lease mins, Lease secs, Network IP address type (Dynamic), Starting network IPv4 address (172.16.222.1), Ending network IPv4 address (172.16.222.254), and Hosts (16).

Configuration

Cluster Redundancy VPN Firewall IP Mobility External Services **DHCP Server** WAN

IP version:

Pool name:

Default routers: (Multiple Default Routers should be separated by spaces)

DNS servers: (Multiple DNS Servers should be separated by spaces)

Import from DHCP/PPPoE: ☐

Domain name:

WINS: (Multiple WINS Servers should be separated by spaces)

Import from DHCP/PPPoE: ☐

Lease days:

Lease hrs:

Lease mins:

Lease secs:

Network IP address type:

Starting network IPv4 address:

Ending network IPv4 address:

Hosts:

DHCP Pool Assignment

- Configuration -> interfaces -> VLAN

Mobility Master

SC-VRRP-STBY-SHEGDE

SC_VM_10.16.12.22

Managed Network (7)

abhi (1)

shegde (6)

boc (5)

7005

aa:bb:cc:aa:bb:cc

grappa (1)

shegde_MN_70

ouzo (1)

Aruba7005

ouzoplus (1)

Aruba7008

vpnc (1)

Aruba7010

Dashboard

Configuration

WLANs

Roles & Policies

Access Points

AP Groups

Authentication

Services

Interfaces

Controllers

System

Tasks

ArubaMM, 8.0.0.0-svcs-ctrl

Ports	VLANs	IP Routes	IPv6 Neighbors	GRE Tunnels	Pool Management	OSPF	Multicast	
111	--	--	--	0/0/2	Enabled	N/A	Disabled	None
222	--	--	--	0/0/1	Enabled	N/A	Disabled	None
1111	--	--	--	--	--	--	Disabled	None

+

Port Members

IPv4

IPv6

More

IP Address Assignment

IP assignment: DHCP Pool

DHCP pool: clientpool

Option-82: MAC

MTU: 1500

Supress ARP: Enabled

IGMP

Other Option

Cancel

Submit

DHCP Pool Carving

- DHCP Pool Carving

IP address Range : 192.168.23.1 - 192.168.23.254 with 16 to 30 hosts will be carved into eight networks as below

Example 16 to 30 hosts:

- Network 192.168.23.0 /27 First IP 192.168.23.1
- Network 192.168.23.32 /27 First IP 192.168.23.33
- Network 192.168.23.64 /27 First IP 192.168.23.65
- Network 192.168.23.96 /27 First IP 192.168.23.97
- Network 192.168.23.128 /27 First IP 192.168.23.129
- Network 192.168.23.160 /27 First IP 192.168.23.161
- Network 192.168.23.192 /27 First IP 192.168.23.193
- Network 192.168.23.224 /27 First IP 192.168.23.225

WAN health check config

- Configuration->services->WAN

The screenshot displays the 'Managed Network' configuration interface. The left sidebar shows a navigation menu with 'Managed Network (1)' selected. The main content area is divided into a left sidebar with 'Configuration' selected, and a right sidebar with 'WAN' selected. The 'WAN' section is expanded, showing 'Health Check' settings. The 'Health Check' section includes a checkbox for 'Health check' and a text input for 'Remote host IP/FQDN:'. Below this, the 'WAN' section is expanded, showing 'Probe mode' set to 'Ping', 'Probe interval' set to '10' seconds, 'Packet burst per probe' set to '5', and 'Probe retries' set to '3'. The 'PBR' section is also expanded, showing 'Probe mode' set to 'Ping', 'Probe interval' set to '10' seconds, 'Packet burst per probe' set to '5', and 'Probe retries' set to '3'. At the bottom, there are links for 'WAN Optimization' and 'WAN Scheduler'.

Managed Network Pending Changes

Mobility Master

Managed Network (1)

aa:bb:cc:aa:bb:cc

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Cluster Redundancy VPN Firewall IP Mobility External Services DHCP Server **WAN**

▼ Health Check

Health check: ☐

Remote host IP/FQDN:

WAN

Probe mode:

Probe interval: Sec

Packet burst per probe:

Probe retries:

PBR

Probe mode:

Probe interval: Sec

Packet burst per probe:

Probe retries:

> WAN Optimization

> WAN Scheduler

Configuring WAN uplinks

- Configuration -> services -> WAN -> uplink

Managed Network > shegde > boc > grappa > shegde_MN_7010

Pending Changes

Mobility Master

SC-VRRP-STBY-SHEGDE

SC_VM_10.16.12.22

Managed Network (7)

abhi (1)

shegde (6)

boc (5)

7005

aa:bb:cc:aa:bb:cc

grappa (1)

shegde_MN_70

ouzo (1)

Aruba7005

ouzoplus (1)

Aruba7008

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WAN

> WAN Optimization

> WAN Scheduler

> Uplink

Enable uplink: ☒

Default wired priority:

Default cellular priority:

Load balancing: ☐

Uplink VLANs

LINK	ID	DESCRIPTION	OPERATION STATE	PRIORITY	WEIGHT
link2	4093	uplink4093	✓	150	--
link1	4094	priuplink4094	✓	200	1

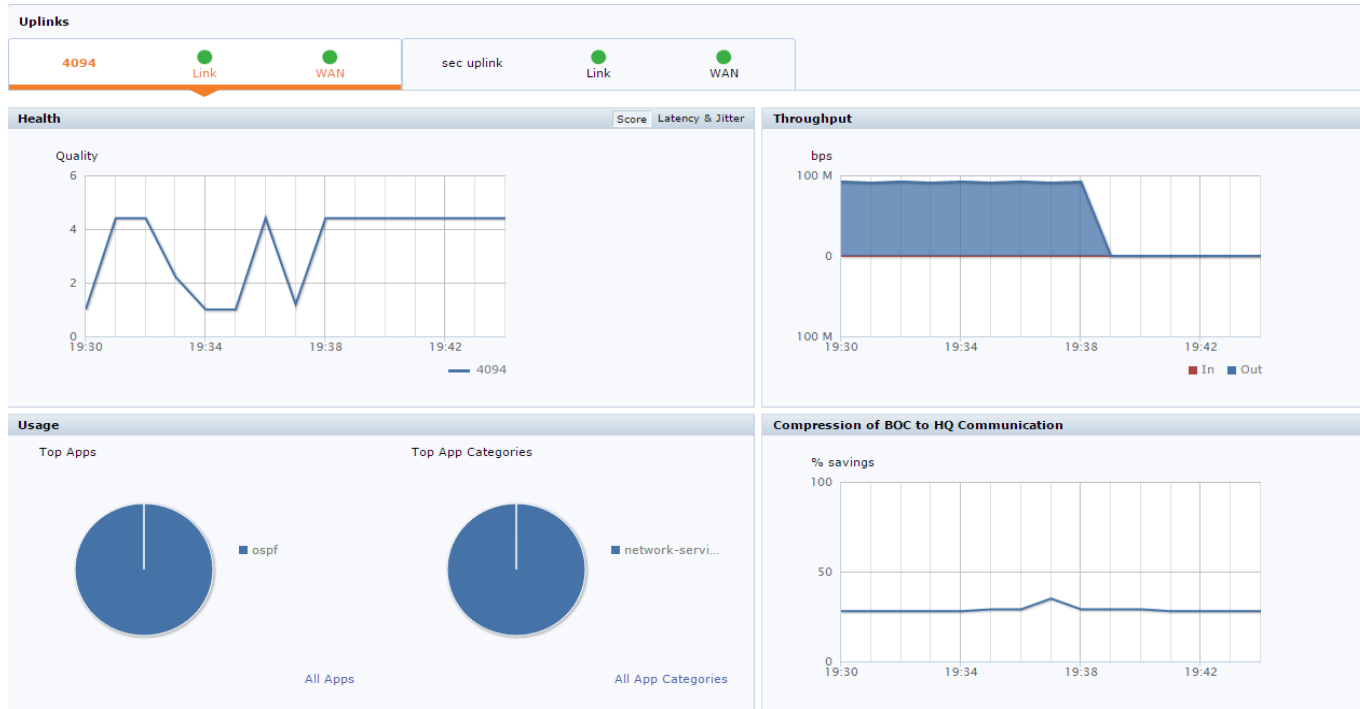
Checking WAN uplink status

```
(host) #show uplink
Uplink Manager: Disabled
Uplink Health-check: Enabled
Uplink Health-check IP/FQDN: 192.0.2.14
Uplink Management Table
```

```
-----
Id  Uplink Type  Properties      Priority  State      Status      Reachability
--  -
1   Wired        vlan 4094       200      Connected  Active       Reachable
2   Cellular     Novatel_U727    100      Standby    Ready        Reachable
```

WAN Dashboard

- BOC's WAN Dashboard



THANK YOU