

RADIUS Configurations

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Configure the node for the RADIUS Endpoint Pod

This section describes how to specify the node or host where the RADIUS endpoint must spawn the pod.

Note Configuration changes to the RADIUS endpoint cause the endpoint to restart automatically. Cisco recommends making such changes only within the maintenance window.

Mandatory RADIUS configuration

To configure the RADIUS server with essential parameters for optimal network performance and security, use the following configuration:

```
radius bind-ip <bind IP address>
radius replicas 2
radius settings request-timeout-ms 5000
radius settings max-tries  1
radius async-threading-configuration default-processing-threads 100
radius async-threading-configuration default-action-priority 5
radius async-threading-configuration default-action-threads 100
radius async-threading-configuration default-action-queue-size 400000
radius async-threading-configuration default-action-drop-oldest-when-full true
radius device-group ASR9K
  default-shared-secret     <secret value>
  default-coa-shared-secret <secret value>
  coa-port                  3799
 coa-timeout-seconds       3
```

```
  device <BNG Device Name>
   ip                 <BNG IP Address>
   shared-secret      <secret value>
   coa-shared-secret  <secret value>
   loopback-addresses [ <loopback addresses> ]
 exit
radius server-group <Server Group Name>
 servers <server name>
   primary              <primary OCS IP Address>
   secondary            <secondary OCS IP Address>
   nas-ip               <nas p address>
   accounting-port      1803
   authorization-port   1802
   auth-protocol        PAP
   radius-password      <radius password>
   shared-secret        <secret value>
   timeout-seconds      3
   test-message         false
   test-userid          test
   test-password        test123
   thread-pool-size     330
   max-proxy-queue-size 50000
       server-type   online (or) offline
   retries              0
 exit
radius properties grpc.executors
  value 5
exit
radius properties grpc.timeoutMs.processing
 value 5000
exit
radius properties io.netty.eventLoopThreads
  value 16
exit
radius properties parallelChannelCount
  value 5
exit
radius properties prometheusPort
  value 9099
exit
radius properties radiusCorePoolSize
  value 20
exit
radius properties radiusMaxQueue
  value 4000
exit
radius properties traps.tps
  value 4000
exit
radius properties udpMaxQueue
  value 4000
exit
radius properties udpPoolSize
 value 20
exit
```

RADIUS Initialization Delay

Use the `radius init-delay` command to configure the wait before the RADIUS pod starts.

The initialization container waits for the configured number of seconds to allow old UDP conntrack and NAT entries to expire. The default delay is 0 seconds, so the container starts without this wait.

radius init-delay

Command mode: Global Configuration

Syntax:

```
radius init-delay <seconds>
```

Default: 0 seconds. Range: 0 to 240 seconds.

For example, configure a 10-second delay:

```
radius init-delay 10
commit
```

To verify the configured value, enter:

```
do show running-config radius init-delay
```

To restore the default value, remove the command and commit the configuration:

```
no radius init-delay
commit
```

RADIUS Resource Configuration

This section describes how to adjust CPU and memory requests and limits for the RADIUS endpoint pods so that resource allocation matches traffic demands and resource throttling is prevented.

radius resources

Command Modes: Exec > Global Configuration

Syntax Description:

```
radius resources { requests { cpu <cores> | memory <GiB> } | limits { cpu <cores> | memory
 <GiB> }
      }
```

requests cpu: Configures the CPU request in cores (Range: 1-5).

requests memory: Configures the memory request in GiB.

limits cpu: Configures the CPU limit in cores (Range: 5-32).

limits memory: Configures the memory limit in GiB.

Usage Guidelines

Use this command to dynamically configure CPU and memory resources for radius pods.

Ops-Center configuration for enabling IPv6 in RADIUS Endpoint

To enable the IPv6 on the RADIUS Endpoint within CPC, complete the following configurations in Ops-Center.

General RADIUS settings

```
radius accounting-port 1813
```

```
radius authorization-port 1812
radius coa-port    1700
radius bind-ip 2001:ddff::1
radius settings request-timeout-ms 5000
radius settings max-tries  1
radius settings min-processing-time-millis 3000
radius settings backoff-time-millis 1000
```

BNG device group configurations

```
BNG Client Configuration
device bng01
  ip                 2002:20:50:53::100/127
  shared-secret      cisco
  coa-shared-secret  cisco
  loopback-addresses [ 12.0.0.1 ]
 exit
```

RADIUS server group configuration

```
radius server-group grp1
 servers DEL_OCS
  primary              2002:20:50:52::100
  secondary            2002:20:50:52::101
  accounting-port      1803
  authorization-port   1802
  auth-protocol        PAP
  radius-password      test123
  shared-secret        cisco
  timeout-seconds      5
  test-message         false
  test-userid          test
  test-password        test123
  thread-pool-size     400
  max-proxy-queue-size 40000
  server-type   online (or) offline
  retries              3
 exit
exit
```

Configure the RADIUS Endpoint in cnAAA using Ops-Center

To configure the RADIUS Endpoint in cnAAA using Ops-Center, follow these steps:

Procedure

Step 1 Configure the RADIUS Device Group by defining shared secrets and loopback addresses for each BNG device.

```
radius device-group ASR9K
  default-shared-secret sh512
  default-coa-shared-secret aes256
  device dev1
    ip 10.1.2.12
    shared-secret aes128
    coa-shared-secret sh256
    loopback-addresses [12.3.1.2]
  exit
  device dev2
    ip 3.4.5.6
    shared-secret sh345
```

```
    coa-shared-secret aes111
    loopback-addresses [3.4.8.1]
  exit
```

Step 2 Configure the RADIUS Server Group by setting up primary and secondary server IPs, ports, server-type, and authentication protocols.

```
radius server-group grp1
  servers serv1
    primary 3.4.4.4
    secondary 5.5.5.3
    nas-ip 1.1.2.2
    accounting-port 8312
    authorization-port 1312
    auth-protocol PAP
    radius-password test123
    shared-secret sh233
    timeout-seconds 20
    test-message false
    test-userid test
    test-password test123
    thread-pool-size 10
    max-proxy-queue-size 3
    server-type   online (or) offline
  exit
```

Ops Center configuration to enable ULB on RADIUS Endpoint

To enable the ULB in cnAAA, configure the ops-center as follows:

1. Set the ULB parameter to "true" to activate the backend load balancing service.
2. If the ULB parameter is "false" the system uses default Kubernetes capabilities for traffic management.

General RADIUS Settings

```
cnaaa# show running-config radius | nomore

radius accounting-port 1812
radius authorization-port 1813
radius coa-port 2799

radius bind-ipv4 [ bind IPv4 address ]
radius bind-ipv6 [  bind IPv4 address ]
radius replicas 2
radius lbs-service true
radius settings request-timeout-ms 5000
radius settings max-tries 4
radius settings min-processing-time-millis 3000
radius settings backoff-time-millis 1000
```

Configuration Notes

- radius bind-ip host_address: Specifies the host address for the RADIUS binding.
- replicas number_of_replicas: Indicates the number of replicas.
- ULB-service boolean_value: Specifies whether the load balancing service is enabled (true or false).

- settings request-timeout-ms timeout_in_milliseconds: Sets the request timeout in milliseconds.
- settings max-tries max_attempts: Defines the maximum number of retry attempts.
- settings min-processing-time-millis min_processing_time_in_milliseconds: Sets the minimum processing time in milliseconds.
- settings backoff-time-millis backoff_time_in_milliseconds: Sets the backoff time in milliseconds.

RADIUS Device Group: ASR9K

```
radius device-group ASR9K
 default-shared-secret     sh512
 default-coa-shared-secret cisco
 device dev1
  ip                 10.1.2.12
  shared-secret  cisco
  coa-shared-secret  cisco
  loopback-addresses [ 12.3.1.2 ]
 exit
 device dev2
  ip                 3.4.5.6
  shared-secret      cisco
  coa-shared-secret  cisco
  loopback-addresses [ 3.4.8.1 ]
 exit
exit
```

Configuration Notes

- default-shared-secret cisco – Specifies the default shared secret for RADIUS communication.
- default-coa-shared- cisco – Specifies the default shared secret for CoA communication.
- device dev1 – Configures a RADIUS device with specific settings: ip– The IP address of the device.
- shared-secret cisco – The shared secret for communication with the device.
- coa-shared-secret cisco – The shared secret for CoA communication with the device.
- loopback-addresses – Specifies the loopback addresses for the device.

RADIUS Server Group: grp1

```
radius server-group grp1
 servers serv1
  primary              3.4.4.4
```

```
secondary            5.5.5.3

nas-ip               1.1.2.2

accounting-port      8312

authorization-port   1312

auth-protocol        PAP

radius-password      <password>

shared-secret        <secret>
timeout-seconds      20

test-message         false
server-type   online (or) offline
```

Configuration Notes

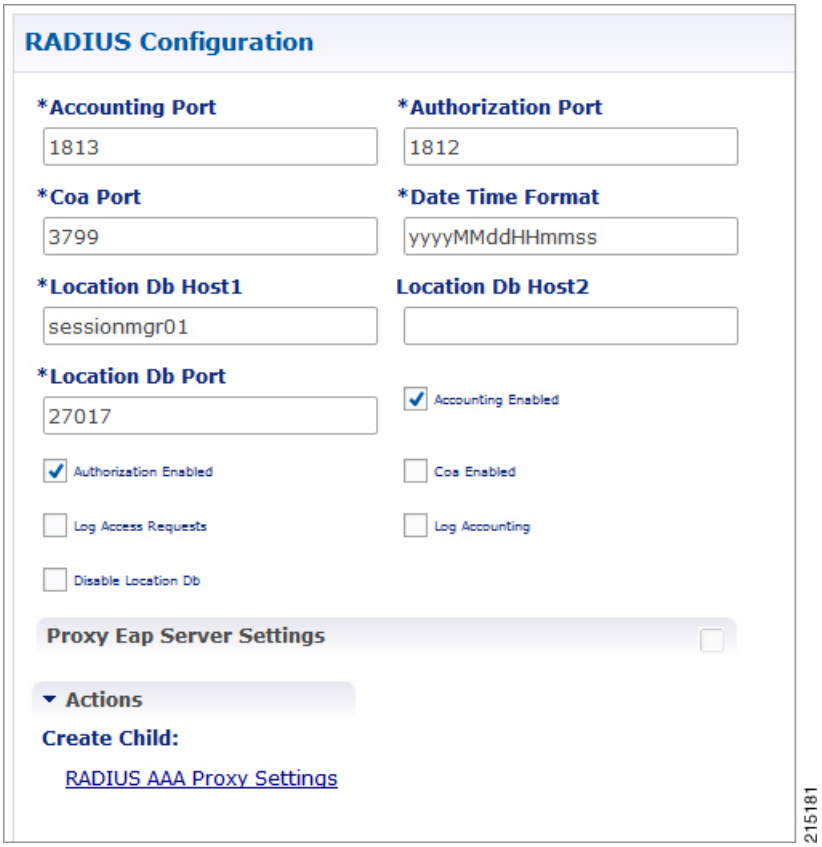
- servers serv1 – Specifies the servers within the group.
- primary– The primary server's IP address.
- secondary – The secondary server's IP address.
- nas-ip– The IP address of the Network Access Server (NAS).
- authorization-port – The port used for authorization requests within the server group.
- auth-protocol PAP – Specifies the authentication protocol used, in this case, PAP.
- radius-password cisco– The password used for RADIUS authentication.
- shared-secret cisco – The shared secret used for communication within the server group.
- timeout-seconds 20 – Specifies the timeout duration in seconds for server responses.
- test-message false – Indicates whether test messages are enabled or disabled.
- test-userid cisco – The user ID used for test purposes.
- test-password cisco – The password used for test purposes.
- thread-pool-size 10 – Specifies the size of the thread pool for handling requests.
- max-proxy-queue-size 3 – Specifies the maximum size of the proxy queue.
- server-type - Specify as "online" for OCS server and "offline" for Passive-MZ server.
- radius properties grpc.executors – Configures properties related to gRPC executors.
- value 40 – Specifies the value for the gRPC executors property.

For more information on ULB, see the *Unified Load Balancer Configuration and Administration Guide*.

RADIUS Configuration

Click **RADIUS Configuration** in the right pane to add the configuration in the system.

Figure 1: RADIUS Configuration



The following parameters can be configured under RADIUS Configuration:

Table 1: RADIUS Configuration Parameters

Parameter	Description
Accounting Port	Port used for incoming radius accounting.
Authorization Port	Port used for incoming radius authorization.
Coa Port	Port used for Change of Authority between CPC and Radius Device.
Date Time Format	Time stamping format for radius transactions.
Location Db Host1	Mongo location for Primary Radius database.
Location Db Host2	Mongo location for Secondary Radius database.
Location Db Port	Port number for the Radius database.

Parameter	Description
Accounting Enabled	Enables CPC to receive incoming Radius Accounting. Default value is True (checked).
Authorization Enabled	Enables CPC to receive incoming Radius Authorization. Default value is True (checked).
Coa Enabled	Enables CPC to send and receive CoAs.
Log Access Requests	Log the radius accounting which is configured in `/etc/broadhop/logback.xml`. The typical default logging location is `/var/broadhop/radius/accounting/accounting.current`.
Log Accounting	Logs radius authorization requests, also configured in `/etc/broadhop/logback.xml`. The typical default logging location is `/var/broadhop/radius/access/rejects.current`.
Disable Location Db	Will not record WLC locations in the Radius mongo DB. Default value is False (unchecked).

For information on proxy settings, refer to RADIUS AAA Proxy Settings.

RADIUS AAA Proxy Settings

Click **RADIUS AAA Proxy Settings** to add the configuration in the system. These proxy settings are used for domain-based subscriber authorization.

Table 2: RADIUS AAA Proxy Settings

Parameter	Description
RADIUS Server	Server Identification which will be mapped between Proxy Settings and Domain/Service.
Accounting Port	AAA Server Accounting Port which will receive and process accounting requests.
Authorization Port	AAA Server Authorization Port which will receive and process authentication requests.
Primary IP Address	Primary AAA Server IP address.
Secondary IP Address	Secondary AAA Server IP address.
RADIUS NAS IP Address	NAS IP address which will be sent in the proxied requests.
RADIUS Auth Protocol	RADIUS authentication protocol used. Default: PAP
RADIUS Password	RADIUS authentication password.

Parameter	Description
Retries	Number of times the requests will be retried in a failure scenario.
Shared Secret	Shared Secret of the AAA Server.
Test User Id	RADIUS username used for testing between CPC and AAA Server.
Test Password	RADIUS password used for testing between CPC and AAA Server.
Thread Pool Size	Number of threads to handle proxying of requests.
Max Proxy Queue Size	Maximum number of requests that can be queued before being proxied.
Send Test Message	Select this option to send a test message to the AAA server when CPC comes up.