

# NMS validation

NMS version 1.6

NMS	Action	Status
NMS	Create an organization	OK
NMS - Administrative tools	Create a user	OK
NMS - Network	Create a network	OK
NMS - Equipment - Gateway	Create a gateway	OK
NMS - Subscriber	Create a subscriber	OK
NMS - Subscriber	Edit a Subscriber	OK
NMS - Traffic - Policies	Create a profile	OK
NMS - Traffic - Policies	Create a policy	OK
NMS - Traffic - APN	Create an APN	OK
NMS - Traffic - Policies	Create an Rating group	OK
NMS - Network	Modify a network	OK
NMS - Network	Enable NAT	OK
NMS - Network	Enable DHCP	OK
NMS - Network	Enable Static IP	OK
NMS - Equipment - Gateway	Modify a gateway	OK
NMS - Equipment - eNodeB	Add an unmanaged eNB	OK
NMS - Equipment - eNodeB	Add an managed eNB	OK
NMS - Equipment - Gateway	Edit Aggregation	OK
NMS - Equipment - Gateway	Edit EPC	OK
NMS - Equipment - Gateway	Edit RAN	OK
NMS - Equipment - Gateway	Edit Header Enrichment	OK
NMS - Call Tracing	Create call trace	OK
NMS - Call Tracing	Download call trace	OK
NMS - Metrics	Check Metrics	OK
NMS - Alerts	Configure Alerts	OK
NMS - Alerts	View Alerts	OK
NMS - Alerts - receivers	Configure Alert receivers	OK

# Create User

Users

Email	Role	Accessible Networks
validation@fb.com	User	ens

Add User

Email  
validation@fb.com

Password  
\*\*\*\*\*

Confirm Password  
\*\*\*\*\*

Role: User ▾

Accessible Networks  
ens

validation@fb.com

Settings

Documentation

Logout

Alerts (0)

Critical(0)

# Create Network

Add Network

Network Epc Ran

Network ID: validation\_net3

Network Name: validation\_net3

Add Description: validation\_net3

Cancel Save And Continue

Add Network

Network Epc Ran

IP Allocation Mode: DHCP\_BROADCAST

Static IP Assignments:

Multi APN IP Allocation:

Policy Enforcement Enabled: Disabled

LTE Auth AMF:  ...

MCC: 001

MNC: 02

TAC: 3

CANCEL Save And Continue

Network Overview

Gateways: 0 eNodeBs: 0 Subscribers: 0 Policies: 0 APNs: 0

Network ID: validation\_net3 Name: validation\_net3 Description: validation\_net3

RAN Bandwidth: 10 RAN Config FDD: EARFCNDL 600, EARFCNUL 18600

EPC Policy Enforcement Enabled: Disabled

LTE Auth AMF: ... MCC: 001 MNC: 02 TAC: 3

# Create Gateway

Add New Gateway

Gateway Aggregation Epc Ran APN Resources Header Enrichment

Gateway Name: handset-test

Gateway ID: handset-test

Hardware UUID: 9b1c3bb-e433-47c4-b82d-d03e171c5a3f

Version: Enter Version

Gateway Description: handset-test

Challenge Key: MHRwGAVHkzTzJCAQYFk4EACDtgASy82zoxJF2+ETJvdl+Lukken6C0QlvxfIUb+HlxPaxPWykpf/J7Rycdnka0cf1gD/cn

Cancel Save And Continue

Add New Gateway

Gateway Aggregation Epc Ran APN Resources Header Enrichment

Net Enabled:

IP Block: 192.168.128.0/24

DNS Primary: 0.0.0.0

DNS Secondary: 0.0.0.0

SIG network Gateway IP address: 10.22.70.1

SIG management Interface IP address: 10.22.70.1/24

SIG management network VLAN id: 270

Cancel Save And Continue

Add New Gateway

Gateway Aggregation Epc Ran APN Resources Header Enrichment

Event Aggregation:

Log Aggregation:

GPRS Monitoring:

Enable Header Enrichment:

Enable Encryption:

Cancel Save And Close

Add New Gateway

Gateway Aggregation Epc Ran APN Resources Header Enrichment

PCI: 260

Registered eNodeBs: Select eNodeBs

Transmit Enabled:

eNodeB DHCP Service:

Cancel Save And Continue

Gateway handset-test

Overview Event Logs Alerts Config Services Config

Gateway

Name: handset-test

Gateway ID: handset-test

Hardware UUID: 9b1c3bb-e433-47c4-b82d-d03e171c5a3f

Version: T.6.0-1822049942-74fe4ab

Description: handset-test

Dynamic Services

Log Aggregation:

Event Aggregation:

GPRS Monitoring:

EPC

IP Allocation: Custom

Primary DNS: 0.0.0.0

Secondary DNS: -

Ran

enable DHCP Service:

XID: 260

registered eNodeBs: 0

Header Enrichment

Header Enrichment:

No records to display

# Create Subscriber

Add Subscribers

Subscriber Name	IMSI	Auth Key	Auth OPC	Service	Data Plan	Active APNs	Active Policies	Actions
validation_sub	IMSI001010123456789	8baef473f2f8fd09487cccb7097c6862	ACTIVE	default				

5 rows | < < -1-1 of 1 > >|

Cancel Save And Add Subscribers

Subscriber/validation\_sub

Overview Event Config

Subscriber validation\_sub

IMSI IMSI001010123456789	Service <span style="color: green;">ACTIVE</span>
-----------------------------	--

Gateway ID Unknown  
Connection Status Unknown

Data Usage

Data Usage Pattern

download upload

# Edit Subscriber

**Edit Subscriber Settings**

**Subscriber**

Subscriber Name: validation\_subs

Service State: Inactive

Data Plan: default

Auth Key:

Auth OPC: Eg. 8e27b6af0e692e750f3:

**Traffic Policy**

Active APNs: val\_apn

Base Names:

Active Policies:

**APNs Static IPs**

**Save**

**Edit Subscriber Settings**

**Subscriber**

Subscriber Name: validation\_subs

Service State: Inactive

Data Plan: default

Auth Key:

Auth OPC: Eg. 8e27b6af0e692e750f3:

**Traffic Policy**

Active APNs: val\_apn

Base Names:

Active Policies:

**APNs Static IPs**

**Save**

**Subscriber/validation\_subs**

**Overview**

**Subscriber**

validation\_subs

IMSI: IMSI001010123456789

Service: INACTIVE

**Status**

Gateway ID: Unknown

eNodeB SN: Unsupported

Connection Status: Unknown

UE Latency: Unknown

**Data Usage**

Data Usage Pattern: 1.0

upload: download:

**Config**

**Subscriber**

LTE Network Access: INACTIVE

Data plan: default

Auth Key:

**Traffic Policy**

Active APNs: 1

val\_apn

Base Names: 0

Active Policies: 0

**APN Static IPs**

APN Name: Static IP

No records to display

# Create APN

Add New APN

APN ID	<input type="text" value="val_apn"/>
Class ID	<input type="text" value="9"/>
ARP Priority Level	<input type="text" value="15"/>
Max Required Bandwidth	
Upload	<input type="text" value="1000000"/> bps
Download	<input type="text" value="1000000"/> bps
ARP Pre-emption-Capability	<input checked="" type="checkbox"/>
ARP Pre-emption-Vulnerability	<input checked="" type="checkbox"/>

Traffic

Policies APNs Create New APN

APNs

Apn ID	Class ID	Priority Level	Max Req UL Bw	Max Req DL Bw	Pre-emption Capability	Pre-emption Vulnerability	Actions
val_apn	9	15	1000000	1000000	false	false	<span>⋮</span>

5 rows | < | < 1-1 of 1 > | > |

# Create Policy

Add New Policy

Policy Flows Tracking Redirect Header Enrichment

Basic policy rule fields

Policy ID A unique identifier for the policy rule  
val\_policy

Priority Level higher priority policies override lower priority ones  
2

Network Wide

QoS Profile val\_profile

[Close](#) [Save And Continue](#)

Add New Policy

Policy Flows Tracking Redirect Header Enrichment

Tracking configuration for the policy

Monitoring Key (base64)  
Enter Monitoring Key

Monitoring Key (hex)  
Enter Monitoring Key

Monitoring Key (ascii)  
Enter Monitoring Key

Rating Group  
1

Tracking Type  
No Tracking

[Close](#) [Save And Continue](#)

Policy Flows Tracking Redirect Header Enrichment

A policy's flows determines how it routes traffic

Flows

Row 1

Action	Direction	Protocol
Deny	Uplink	IP

IPv4 IPv6

[Add New Flow](#) [Close](#) [Save And Continue](#)

Add New Policy

Policy Flows Tracking Redirect Header Enrichment

List of URL targets for header enrichment  
E.g. http://example.com

http://validation.com

[Close](#) [Save And Continue](#)

Traffic

Policies APNs

Create New [▼](#)

Policies Profiles Rating Groups

Search

Policy ID	Flows	Priority	Subscribers	Monitoring Key	Rating	Tracking Type	Network Wide	Actions
val_policy	1	2	0		1	NO_TRACKING	Enabled	<a href="#">⋮</a>

Add New Policy

Policy Flows Tracking Redirect Header Enrichment

If redirection is enabled, matching traffic can be redirected to a captive portal server

Server Address 172.16.254.10

Address Type IPv4

Support optional

[Close](#) [Save And Continue](#)

# Create Profile

Add New Profile

Profile ID

Class ID

Max Bandwidth Downlink(bps)

Max Bandwidth Uplink(bps)

Close Save

Traffic Policies APNs Create New

Profiles

Profile ID	Class ID	Uplink Bandwidth	Downlink Bandwidth	Actions
val_profile	1	8	8	⋮

# Create Rating Group

Add New Rating Group

Rating Group ID  
1

Limit Type  
INFINITE\_METERED

[Close](#) [Save](#)

Traffic

Policies APNs Create New

Policies	Profiles	Rating Groups
Rating Group ID 1	Limit type INFINITE_METERED	<a href="#">Actions</a>

5 rows | < | < 1-1 of 1 > | >

# Edit network

Edit Network Settings

X

Network Epc Ran

Network ID  
handset\_testing

Network Name  
handset\_test\_edit

Add Description  
handset\_test\_edit

Network

Overview

Gateways 2 eNodeBs 3 Subscribers 6

Network

ID handset\_testing

Name handset\_test\_edit

Description handset\_test\_edit

Edit

# Enable NAT

Edit Network Settings

Network Epc Ran

IP Allocation Mode: NAT

Static IP Assignments:

Multi APN IP Allocation:

Policy Enforcement Enabled: Disabled

LTE Auth AMF:  

MCC: 001

MNC: 01

TAC: 1

JSON Config

```
root : { 6 items
  cellular : { 2 items
    epc : { 10 items
      default_rule_id" : "default_rule_1"
      gx_gy_relay_enabled" : false
      hss_relay_enabled" : false
      lte_auth_amf" : "gAA="
      lte_auth_op" : "ERERERERERERERERERREQ=="
      mcc" : "001"
      mnc" : "01"
    mobility : { 2 items
      ip_allocation_mode" : "NAT"
      reserved_addresses" : NULL
    }
  }
}
Jun 29 22:13:56 handset-test td-agent-bit[1747282]: [1] eventd: [1625004832.251335195, {"stream_name": "magmad", "event_type": "processed_updates", "event_tag": "99b1c43b8-e433-47c4-b82d-d03e171c5a3f", "value": {"control_proxy": {"@type": "type.googleapis.com/magma.mconfig.ControlProxy", "logLevel": "INFO"}, "subscriberDb": {"@type": "type.googleapis.com/magma.mconfig.SubscriberDB", "logLevel": "INFO", "lteAuthOp": "ERERERERERERERERREQ==", "lteAuthAmf": "gAA="}, "mobility": {"@type": "type.googleapis.com/magma.mconfig.MobilityD", "logLevel": "INFO", "ipBlock": "192.168.128.0/24"}, "enodebd": {"@type": "type.googleapis.com/magma.mconfig.Enodebd", "logLevel": "INFO", "pci": 260, "bandwidthMhz": 20, "plmnlst": "00101", "allowEnodebTransmit": true, "tac": 1, "tddConfig": {"earfcnDl": 94590, "subframeAssignment": 2, "specialSubframePattern": 7, "embConfigsBySerial": [{"earfcnDl": 9430, "subframeAssignment": 2, "specialSubframePattern": 7, "pci": 60, "transmitEnabled": true, "deviceClass": "Baicells Nova-233 G2 OF FDD", "bandwidthMhz": 10, "tac": 1, "cellId": 17160}, {"earfcnDl": 12020001818BVJ0013, "subframeAssignment": 2, "specialSubframePattern": 7, "pci": 60, "transmitEnabled": true, "deviceClass": "Baicells Nova-233 G2 OF FDD", "bandwidthMhz": 10, "tac": 1, "cellId": 17160}], "ipSessionD": {"@type": "type.googleapis.com/magma.mconfig.SessionD", "logLevel": "INFO", "wlanExhaustDetection": {}, "mme": {"@type": "type.googleapis.com/magma.mconfig.MME", "logLevel": "INFO", "mcc": "001", "mnc": "01", "tac": 1, "mmeGid": 1, "mmeCode": 1, "lac": 1, "attachedEnodebTacs": 1, "mmeRelativeCapacity": 10, "natEnabled": true}, "pipelined": {"@type": "type.googleapis.com/magma.mconfig.PipelineD", "logLevel": "INFO", "ueipBlock": "192.168.128.0/24", "natEnabled": true, "defaultRuleId": "default_rule_1", "services": ["ENFORCEMENT"], "liues": {}, "heConfig": {}}, "dnsD": {"@type": "type.googleapis.com/magma.mconfig.DnsD", "logLevel": "INFO", "dhcpServerEnabled": true, "policyDb": {"@type": "type.googleapis.com/magma.mconfig.PolicyDB", "logLevel": "INFO"}, "eventD": {"@type": "type.googleapis.com/magma.mconfig.EventD", "logLevel": "INFO", "eventVerbosity": -1}, "td-agent-bit": {"@type": "type.googleapis.com/magma.mconfig.TdAgentBit", "logLevel": "INFO", "extraTags": {"gateway_id": "handset-test", "network_id": "handset_testing"}, "throttleRate": 1000, "throttleWindow": 5, "throttleInterval": "1m", "filesByTag": {"mme": "var/log/mme.log"}}, "retry_on_failure": "False", "hw_id": "9b1c43b8-e433-47c4-b82d-d03e171c5a3f", "gateway_id": "handset-test", "network_id": "handset_testing"}}}
```

# Enable DHCP

Edit Network Settings

Network Epc Ran

IP Allocation Mode: DHCP\_BROADCAST

Static IP Assignments: Enabled

Multi APN IP Allocation: Enabled

Policy Enforcement Enabled: Disabled

LTE Auth AMF: ...

MCC: 001

MNC: 01

TAC: 1

JSON Config

```
{
  "root": {
    "cellular": {
      "epc": {
        "default_rule_id": "default_rule_1",
        "gx_gy_relay_enabled": false,
        "hss_relay_enabled": false,
        "ite_auth_amf": "gAa=",
        "ite_auth_op": "EREREREREREREREREREQ==",
        "mcc": "001",
        "mnc": "01",
        "mobility": {
          "enable_static_ip_assignments": true,
          "ip_allocation_mode": "DHCP_BROADCAST",
          "reserved_addresses": null
        },
        "network_services": [...],
        "tac": 1
      },
      "ran": [...]
    }
  }
}
```

Jun 29 23:57:12 handset-test systemd[1]: Started Magma mobilityd service.  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:root:Using GW info: {'default': {2: ('10.22.70.1', 'eth0')}, 2: [('10.22.70.1', 'eth0', True)]}  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:mobilityd.dhcp.sniff:DHCP sniffer started  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:root:Using allocator: 1 static ip: True multi\_ap False  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:root:Adding IPv4 block  
Jun 29 23:57:15 handset-test mobilityd[2117141]: WARNING:root>No need to allocate block for DHCP allocator: 192.168.128.0/24  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:root:Added block 192.168.128.0/24 to the IPv4 address pool  
Jun 29 23:57:15 handset-test mobilityd[2117141]: WARNING:root:IPv6 ip block is not specified in mconfig, skipping  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:root:Starting mobilityd...  
Jun 29 23:57:15 handset-test mobilityd[2117141]: INFO:root:Listening on address 127.0.0.1:60051  
Jun 29 23:57:26 handset-test mobilityd[2117141]: INFO:root:Released IP 192.168.128.27 for sid IMSI001010000051029

# Enable Static IP

**Edit Network Settings**

Network      Epc      Ran

**IP Allocation Mode**  
NAT

**Static IP Assignments**  
Enabled

**Multi APN IP Allocation**  
Disabled

**Policy Enforcement Enabled**  
Disabled

**LTE Auth AMF**  
....

**MCC**  
001

**MNC**  
01

**TAC**  
1

**JSON Config**

```

    "root": { 6 items
      "cellular": { 2 items
        "epc": { 10 items
          "default_rule_id": "default_rule_1"
          "ex_gw_relay_enabled": false
          "hsx_relay_enabled": false
          "lte_auth_amf": "gAa"
          "lte_auth_op": "EREREREREREREREREQ=="
          "mcc": "001"
          "mnc": "01"
        }
        "mobility": { 3 items
          "enable_static_ip_assignments": true
          "ip_allocation_mode": "NAT"
          "reserved_addresses": null
        }
      }
      "network_services": [ ... ] 1 item
      "tac": 1
    }
    "ran": { ... } 2 items
  }
  "description": "handset_test"
  "dns": { ... } 2 items
  "features": { ... } 1 item
  "id": "handset_testing"
  "name": "handset_testing"
}
  
```

**Subscriber/pelican**

Overview      Event      Config

**Config**

**Subscriber**

LTE Network Access  
ACTIVE

Data plan  
default

Auth Key  
.....

**APN Static IPs**

APN Name	Static IP
internet	192.168.100.9

**Subscriber Sessions**

Autorefresh

Name	IMSI	Service	Current Usage	Daily Average	Last Reported Time	Active Sessions	Active APNs	Session IP Address	Actions
pixel_3	IMSI0001010000091114	ACTIVE	0	0	-	1	internet	192.168.128.15	⋮
pelican	IMSI0001010000091009	ACTIVE	0	0	-	1	internet	192.168.100.9	⋮

APN Name	Session ID	State	IP Address	Active Duration	Active Policy IDs
internet	IMSI0001010000091009-404666	SESSION_ACTIVE	192.168.100.9	92 sec	

# Edit Gateway

The screenshot shows the 'Edit Gateway' interface with the 'Config' tab selected. The main area displays configuration details for a gateway named 'handset-test'. Key settings include:

- EPC:** IP Allocation is set to NAT, with Primary DNS at 192.168.128.0/24.
- Ran:** It shows a single registered eNodeB (ENB) with ID #1 and a registered transient address of 260.
- Dynamic Services:** Log Aggregation is enabled, Event Aggregation is enabled, and CPU Monitoring is disabled.
- Header Enrichment:** Header Enrichment is enabled.

This screenshot is identical to the one above, showing the 'Edit Gateway' interface with the 'Config' tab selected. The only difference is the hardware UUID listed under 'Gateway' information, which has been changed to 9b1c43b8-e433-47c4-b82d-d03e171c5a3f (the last 12 digits are highlighted in blue).

### Edit Gateway

**Gateway** **Aggregation** **Epc** **Ran** **APN Resources** **Header Enrichment**

**Gateway Name**  
handset-test123

**Gateway ID**  
handset-test

**Hardware UUID**  
9b1c43b8-e433-47c4-b82d-d03e171c5a3f **999999999999**

**Version**  
1.6.0-1622049942-74f4e5ab

**Gateway Description**  
handset-test123

**Challenge Key**  
MHYwEAYHKOZlzlOCAQYFK4EEACIDYgAESY8ZsoeJIPZ+ETJOvd+Lvkkenr6CbQLxaffU8+HLxPoalPWykjf/t7Ryycc9hkoXcf1gFD7cWU(

**Cancel** **Save**

# Edit Aggregation

**Edit Gateway**

**Aggregation** (selected)

**Gateway** **Epc** **Ran** **APN Resources** **Header Enrich**

**Event Aggregation** **Enabled**

**Log Aggregation** **Enabled**

**CPE Monitoring** **Enabled**

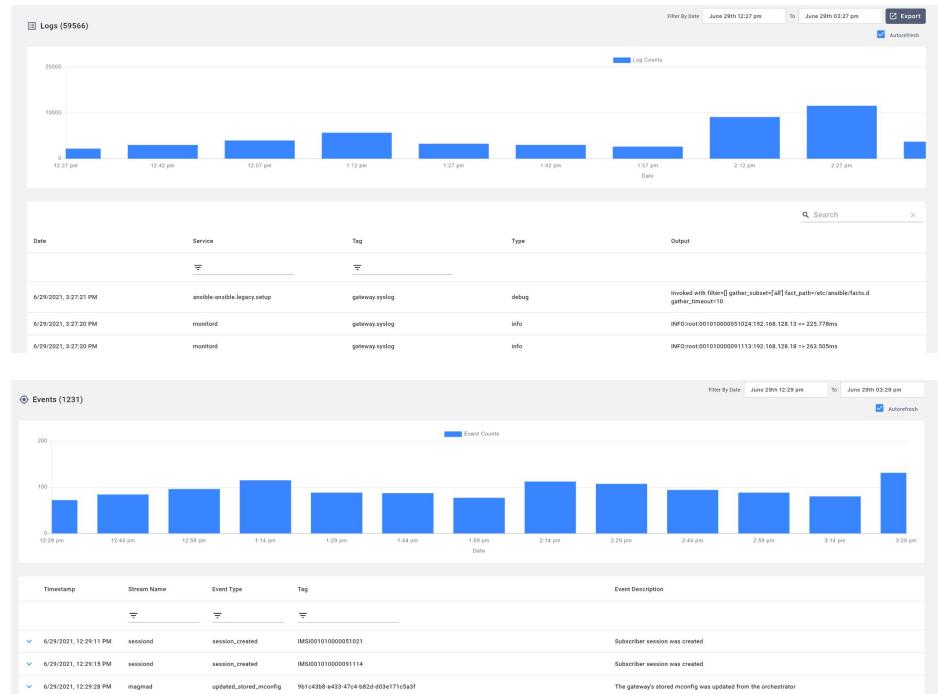
**Dynamic Services**

**Log Aggregation** **Enabled**

**Event Aggregation** **Enabled**

**CPE Monitoring** **Enabled**

**Edit**



# Edit Gateway - Ran

**Edit Gateway**

Gateway	Aggregation	Epc	Ran	APN Resources	Header Enrich
PCI 261					
Registered eNodeBs 120200020718CJP0003					
Transmit Enabled <input checked="" type="checkbox"/>					
eNodeB DHCP Service <input type="checkbox"/>					

**Cancel** **Save**

**JSON Config**

```
{
  "root": {
    "cellular": [
      {
        "dns": {
          "dhcp_server_enabled": false,
          "enable_caching": false,
          "local_ttl": 0
        }
      },
      {
        "epc": [
          {
            "ran": [
              {
                "pci": 261,
                "transmit_enabled": true
              }
            ]
          }
        ]
      }
    ],
    "connected_enodeb_serials": [
      {
        "description": "handset-test",
        "device": [
          {
            "id": "handset-test"
          },
          {
            "magmad": [
              {
                "name": "handset-test"
              },
              {
                "tier": "default"
              }
            ]
          }
        ]
      }
    ]
  }
}
```

Ran		Edit
<b>eNodeB DHCP Service</b> ● Disabled		
PCI 261	eNodeB Transmit Enabled	
Registered eNodeBs 1	120200020718CJP0003	

```
magma@handset-test:/var/opt/magma/configs$ cat gateway.mconfig
{
  "configsByKey": {
    "control_proxy": {
      "type": "type.googleapis.com/magma.mconfig.ControlProxy",
      "logLevel": "INFO",
      "dnsd": {
        "type": "type.googleapis.com/magma.mconfig.DnsD",
        "logLevel": "INFO"
      },
      "enodebd": {
        "type": "type.googleapis.com/magma.mconfig.EnodeBD",
        "logLevel": "INFO",
        "pci": 261,
        "bandwidthMhz": 20,
        "plmnIdList": "00101",
        "allowEnodebTransmit": true,
        "tac": 1,
        "tddConfig": {
          "earfcnD": 44599,
          "subframeAssignment": 2,
          "specialSubframePattern": 7
        },
        "enbConfigsBySerial": {
          "120200020718CJP0003": {
            "tac": 1,
            "cellId": 172160,
            "ipAddress": "10.0.2.251"
          }
        },
        "eventd": {
          "type": "type.googleapis.com/magma.mconfig.EventD",
          "logLevel": "INFO",
          "eventVerbosity": -1
        },
        "l1agentd": {
          "type": "type.googleapis.com/magma.mconfig.L1AgentD",
          "logLevel": "INFO"
        },
        "magmad": {
          "type": "type.googleapis.com/magma.mconfig.Magmad",
          "logLevel": "INFO",
          "checkInInterval": 60,
          "checkInTimeout": 30,
          "autoUpgradeEnabled": true,
          "autoUpgradePollInterval": 60,
          "packageVersion": "0.0.0-0",
          "dynamicServices": [
            "eventd",
            "td-agent-bit"
          ],
          "metricsd": {
            "type": "type.googleapis.com/magma.mconfig.MetricsD",
            "logLevel": "INFO"
          },
          "mme": {
            "type": "type.googleapis.com/magma.mconfig.MME",
            "logLevel": "INFO",
            "mcc": "001",
            "mnc": "01",
            "tac": 1,
            "mmeGid": 1,
            "mmeCode": 1,
            "lac": 1,
            "attachedEnodebTacs": [
              1
            ],
            "mmeRelativeCapacity": 10,
            "natEnabled": true,
            "mobilityd": {
              "type": "type.googleapis.com/magma.mconfig.MobilityD",
              "logLevel": "INFO",
              "ipBlock": "192.168.128.0/24"
            },
            "ovpn": {
              "type": "type.googleapis.com/magma.mconfig.OpenVPN",
              "pipelined": {
                "type": "type.googleapis.com/magma.mconfig.Pipelined",
                "logLevel": "INFO",
                "ueIpBlock": "192.168.128.0/24",
                "natEnabled": true,
                "defaultRuleId": "default_rule_1",
                "services": [
                  "ENFORCED"
                ],
                "titles": {},
                "heConfig": {},
                "policydb": {
                  "type": "type.googleapis.com/magma.mconfig.PolicyB",
                  "logLevel": "INFO"
                },
                "sessiond": {
                  "type": "type.googleapis.com/magma.mconfig.SessionD",
                  "logLevel": "INFO"
                },
                "subscriberdb": {
                  "type": "type.googleapis.com/magma.mconfig.SubscriberDB",
                  "logLevel": "INFO"
                },
                "lteAuthAmf": "gAA=",
                "td-agent-bit": {
                  "type": "type.googleapis.com/magma.mconfig.FluentBit",
                  "extraTags": [
                    "gateway_id": "handset-test",
                    "network_id": "handset_testing"
                  ],
                  "throttleRate": 1000,
                  "throttleWindow": 5,
                  "throttleInterval": "1m",
                  "filesByTag": {
                    "mme": "var/log/mme.log"
                  }
                }
              },
              "metadata": {
                "created_at": 1624920760
              }
            }
          }
        }
      }
    }
  }
}
```

# Edit Gateway - EPC

**Edit Gateway**

- Gateway
- Aggregation
- Epc**
- Ran
- APN Resources
- Header Enrich

**Nat Enabled**

**IP Block**

**DNS Primary**

**DNS Secondary**

**SQI network Gateway IP address**

**SQI management interface IP address**

**Cancel** **Save**

**JSON Config**

```

{
  "root": {
    "cellular": {
      "dns": [
        "192.168.128.0/24"
      ],
      "nat_enabled": true
    }
  },
  "connected_enodeb_serials": [
    "1.1.1.1"
  ],
  "description": "handset-test",
  "device": [
    "1.1.1.1"
  ],
  "id": "handset-test",
  "magmad": [
    {
      "name": "handset-test",
      "tier": "default"
    }
  ]
}
  
```

**EPC**

**IP Allocation**

**NAT**

192.168.128.0/24
------------------

**Primary DNS**

-

**Secondary DNS**

-

```
magma@handset-test:/var/opt/magma/configs$ cat gateway.mconfig
{
  "configsByKey": {
    "control_proxy": {
      "@type": "type.googleapis.com/magma.mconfig.ControlProxy",
      "logLevel": "INFO",
      "dnsd": {
        "@type": "type.googleapis.com/magma.mconfig.DnsD",
        "logLevel": "INFO",
        "dhcpServerEnabled": true,
        "enodebd": {
          "@type": "type.googleapis.com/magma.mconfig.Enodebd",
          "logLevel": "INFO",
          "bandwidthMhz": 20,
          "plmnIdList": "00101",
          "allowEnodebTransmit": true,
          "tac": 1,
          "tdcConfig": {
            "earfcndl": 44590,
            "subframeAssignment": 2,
            "specialSubframePattern": 7
          },
          "enbConfigsBySerial": {
            "120200020718CP0003": {
              "tac": 1,
              "cellId": 172160,
              "ipAddress": "10.0.2.251"
            }
          },
          "eventd": {
            "@type": "type.googleapis.com/magma.mconfig.EventD",
            "logLevel": "INFO",
            "eventVerbosity": -1,
            "liagentd": {
              "@type": "type.googleapis.com/magma.mconfig.LIAgentD",
              "logLevel": "INFO",
              "magmad": {
                "@type": "type.googleapis.com/magma.mconfig.Magmad",
                "logLevel": "INFO",
                "checkinInterval": 60,
                "autoUpgradeEnabled": true,
                "autoUpgradePollInterval": 60,
                "packageVersion": "0.0.0-0",
                "dynamicServices": [
                  "eventd",
                  "td-agent-bit"
                ],
                "metricsd": {
                  "@type": "type.googleapis.com/magma.mconfig.MetricsD",
                  "logLevel": "INFO"
                },
                "mme": {
                  "@type": "type.googleapis.com/magma.mconfig.MME",
                  "logLevel": "INFO",
                  "mcc": "001",
                  "mnc": "01",
                  "tac": 1,
                  "mmeCode": 1,
                  "lac": 1,
                  "attachedEnodebTacs": [
                    "1.1.1.1"
                  ],
                  "mmeRelativityCapacity": 10,
                  "natEnabled": true,
                  "mobilityd": {
                    "@type": "type.googleapis.com/magma.mconfig.MobilityD",
                    "logLevel": "INFO",
                    "ipBlock": "192.168.128.0/24",
                    "ovpn": {
                      "@type": "type.googleapis.com/magma.mconfig.OpenVPN"
                    },
                    "pipelined": {
                      "@type": "type.googleapis.com/magma.mconfig.PipelineD",
                      "logLevel": "INFO",
                      "ueIpBlock": "192.168.128.0/24",
                      "natEnabled": true,
                      "defaultRuleId": "default_rule_1",
                      "services": [
                        "ENFORCEMENT"
                      ],
                      "liUes": {},
                      "heConfig": {},
                      "policydb": {
                        "@type": "type.googleapis.com/magma.mconfig.PolicyDB",
                        "logLevel": "INFO"
                      },
                      "sessiond": {
                        "@type": "type.googleapis.com/magma.mconfig.SessionD",
                        "logLevel": "INFO",
                        "walletExhaustDetection": {}
                      },
                      "subscriberdb": {
                        "@type": "type.googleapis.com/magma.mconfig.SubscriberDB",
                        "logLevel": "INFO"
                      },
                      "lteAuthOp": "EREREREREREREREREREQ==",
                      "lteAuthAmf": "GAA==",
                      "td-agent-bit": {
                        "@type": "type.googleapis.com/magma.mconfig.FluentBit",
                        "extraTags": {
                          "gateway_id": "handset-test",
                          "network_id": "handset_testing"
                        },
                        "throttleRate": 1000,
                        "throttleWindow": 5,
                        "throttleInterval": "1m",
                        "filesByTag": {
                          "mme": "var/log/mme.log"
                        }
                      }
                    },
                    "metadata": {
                      "created_at": 1624922143
                    }
                  }
                }
              }
            }
          }
        }
      }
    }
  }
}
```

# Header Enrichment

**Edit Gateway**

Gateway Aggregation Epc Ran APN Resources Header Enrichment

Enable Header Enrichment

Enable Encryption

Encryption Key C14r0315v0x

Encoding Type BASE64

Encryption Algorithm RC4

Hash Function MD5

**Cancel** **Save**

```
magma@handset-test:/var/opt/magma/configs$ cat gateway.mconfig
{"configsByKey": {"controlProxy": "@type": "type.googleapis.com/magma.mconfig.ControlProxy", "logLevel": "INFO", "dnid": {"@type": "type.googleapis.com/magma.mconfig.Dnid", "logLevel": "INFO", "pc": 269, "bandwidthMbps": 20, "plmnIdList": "90181", "allowEnodebTransit": true}, "tddConfig": {"earfcn1": 44590, "subframeAssignment": 2, "specialSubframePattern": ?}, "embConfigsBySerial": [{"tier": 1, "cellId": 172160, "ipAddress": "10.0.2.251"}]}, "event": {"@type": "type.googleapis.com/magma.mconfig.Event", "logLevel": "INFO", "eventVerbosity": 1}, "lagent0": {"@type": "type.googleapis.com/magma.mconfig.Liaagent", "logLevel": "INFO", "checkinInterval": 60, "autoUpgradeEnabled": true, "autoGradePolicy": "ALWAYS", "packageVersion": "magma-liaagent-0.1.0"}, "dynamicServices": [{"event": "tdd-agent-bitrate-updated", "@type": "type.googleapis.com/magma.mconfig.MetricEvent", "logLevel": "INFO", "metric": "tdd-agent-bitrate-updated", "value": 10, "natEnabled": true}, {"event": "magma-mconfig-OpenVPN", "logLevel": "INFO", "ipBlock": "192.168.128.0/24", "ovpn": {"@type": "type.googleapis.com/magma.mconfig.OpenVPN", "natEnabled": true}}, {"event": "magma-mconfig-MobilityD", "logLevel": "INFO", "ipBlock": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-PipelineD", "logLevel": "INFO", "ipBlock": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Subscribers", "logLevel": "INFO", "subscriber": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-SubscriberIP", "logLevel": "INFO", "ip": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}, {"event": "magma-mconfig-Fluentbit", "logLevel": "INFO", "topic": "Magma-HandsetTesting", "sink": "192.168.128.0/24", "natEnabled": true}], "metadata": {"created_at": "1624920039"}}
```

**JSON Config**

```
{
  "root": {
    "cellular": [
      "dns": [...], "epc": [...]
    ],
    "he_config": [
      "enable_encryption": true,
      "encryption_key": "C14r0315v0x",
      "he_encoding_type": "BASE64",
      "he_encryption_algorithm": "RC4",
      "he_hash_function": "MD5"
    ],
    "ran": [...]
  },
  "connected_enodeb_serials": [...]
}
```

**Header Enrichment**

Header Enrichment	Enabled
Encryption Key	C14r0315v0x
Encryption Algorithm	RC4
Hash Function	MD5

Gateway saved successfully

# Add eNB unmanage

Add New eNodeB

Config Ran

Name: Baicell\_B28\_251

Serial Number: 120200020718CJP0003

Description: Baicell\_B28\_mB53271

Cancel Save And Continue

Add New eNodeB

Config Ran

eNodeB Managed Externally:

Cell ID: 172160

TAC: 1

IP Address: 10.0.2.251

Cancel Save

Equipment/120200020718CJP0003

Overview Config

eNodeb

Name: Baicell\_B28\_251

Serial Number: 120200020718CJP0003

Description: Baicell\_B28\_mB53271

RAN

eNodeB Externally Managed: True

Cell ID: 172160

TAC: 1

IP Address: 10.0.2.251

Reboot Edit JSON Edit

Edit Gateway

Gateway Aggregation Epc Ran APN Resources Header Enrich

PCI: 260

Registered eNodeBs: 120200020718CJP0003

Transmit Enabled:

eNodeB DHCP Service:

Cancel Save

Equipment/handset-test

Overview Event Logs Alerts Config Services Config Actions

handset-test

Status

Health: Good Last Check in: 6/24/2021, 3:07:16 PM CPU Usage: 4.9%

Hardware ULLID: 9b1c43b8-e433-47c4-b82d-d03e171c5a3f

Event Aggregation: Enabled Log Aggregation: Enabled CPE Monitoring: Disabled

Connected eNodeBs

Autorefresh

Name	Serial Number	Health	MME	IP Address	Actions
Baicell_B28_251	120200020718CJP0003	-	Connected	10.0.2.251	⋮

Events

Timestamp	Stream Name	Event Type

# Start Call Trace

### Start Call Trace

Trace ID: 1      Timeout: 300

Trace Type: Gateway

Gateway ID: handset-test

TShark Custom Capture Filters: tcp and (port 80 or port 8080)

TShark Custom Display Filters: http

Example Preset Filters:  HTTP Messages,  DNS Messages,  Limit IP Src

TShark Command: tshark -ni any -a filesize:4000

### Call Traces

Trace ID	State	Gateway ID	Trace Type	Actions
1	COMPLETED	handset-test	GATEWAY	

```
magma@handset-test:~$ service magma@ctraced status
● magma@ctraced.service - Magma ctraced service
  Loaded: loaded (/etc/systemd/system/magma@.service; disabled; vendor preset: enabled)
  Active: active (running) since Thu 2021-06-24 01:26:58 UTC; 4 days ago
    Main PID: 112906 (python3)
      Tasks: 8 (limit: 9341)
     Memory: 93.1M (limit: 300.0M)
        CGroup: /system.slice/system-magma.slice/magma@ctraced.service
                  └─112906 python3 -m magma.ctraced.main

Jun 24 01:26:58 handset-test systemd[1]: Started Magma ctraced service.
Jun 24 01:27:06 handset-test ctraced[112906]: WARNING:root:Service (ctraced) missing in mconfig
Jun 24 01:27:06 handset-test ctraced[112906]: INFO:root:Starting ctraced...
Jun 24 01:27:06 handset-test ctraced[112906]: INFO:root:Listening on address 127.0.0.1:50079
Jun 28 20:23:55 handset-test ctraced[112906]: INFO:root:TraceManager: Starting trace with tshark, command: [tshark -nt any -a filesize:4000 -a duration:30 -W /var/opt/magma/tmp/trace/c
Jun 28 20:23:55 handset-test ctraced[112906]: INFO:root:TraceManager: Successfully started trace with tshark
Jun 28 20:24:26 handset-test ctraced[112906]: INFO:root:TraceManager: Call trace timed out
Jun 28 20:24:26 handset-test ctraced[112906]: INFO:root:TraceManager: Reporting call trace timeout
```

# Download Call Trace

The screenshot shows the NetworkMiner interface. At the top, there's a navigation bar with icons for Home, Call Traces, Call Logs, and Settings. The main area is titled "Call Traces" and displays a table of traces. The table has columns for Trace ID, State, Gateway ID, Trace Type, and Actions. Two entries are listed: one for "1" (COMPLETED, handset-test, GATEWAY) and another for "handset\_testing" (COMPLETED, handset\_testing, GATEWAY). The "Actions" column for the second entry shows options for "Download" and "Stop". Below the table, the file "1.pcapng" is selected. The menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. A search bar at the top right says "Search". The bottom half of the screen shows a detailed packet list with columns for No., Time, Source, Destination, Protocol, Length, and Info. The list contains 12 entries, mostly TCP and DNS packets, with some highlighted in green and yellow.

No.	Time	Source	Destination	Protocol	Length	Info
1	13:23:56	10.0.2.251	192.88.99.142	TCP	2964	35791 → 48080 [ACK] Seq=1 Ack=1 Win=457 Len=2896 TSval=26005957 TSecr=2522275013 [TCP segment of a reassembled F
2	13:23:56	192.88.99.142	10.0.2.251	TCP	68	48080 → 35791 [ACK] Seq=1 Ack=2897 Win=495 Len=0 TSval=2522276758 TSecr=26005957
3	13:23:56	10.0.2.251	192.88.99.142	HTTP/XML	140	POST / HTTP/1.1
4	13:23:56	192.88.99.142	10.0.2.251	TCP	68	48080 → 35791 [ACK] Seq=1 Ack=2969 Win=495 Len=0 TSval=2522276758 TSecr=26005957
5	13:23:56	10.0.2.252	10.0.2.1	DNS	65	Standard query 0x995d A SSL
6	13:23:56	10.0.2.1	10.0.2.252	DNS	65	Standard query response 0x995d No such name A SSL
7	13:23:56	10.22.70.100	8.8.8.8	DNS	87	Standard query 0xecfd A fluentd.ens.fbmagma.ninja
8	13:23:56	8.8.8.8	10.22.70.100	DNS	135	Standard query response 0xecfd A fluentd.ens.fbmagma.ninja A 54.185.63.151 A 34.214.223.238 A 54.68.39.154
9	13:23:56	10.22.70.100	8.8.8.8	DNS	87	Standard query 0x5be9 AAAA fluentd.ens.fbmagma.ninja
10	13:23:56	8.8.8.8	10.22.70.100	DNS	174	Standard query response 0x5be9 AAAA fluentd.ens.fbmagma.ninja SOA ns-1783.awsdns-30.co.uk
11	13:23:56	10.22.70.100	54.185.63.151	TCP	76	35974 → 24224 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=2335886438 TSecr=0 WS=128
12	13:23:56	10.22.70.100	8.8.8.8	DNS	87	Standard query 0xd835 A fluentd.ens.fbmagma.ninja

# Create Alert Rule

The screenshot shows the 'Add Alert Rule' page. In the 'Summary' section, the rule name is 'Validation\_alert', the description is 'Notification incase an eNB is connected to AGW', and the expression is '\$1\_setup(networkID='handset\_testing') > 1'. Under 'Conditions', the expression is '\$1\_setup(networkID='handset\_testing') > 1'. The duration is set to 1 minute with a severity of 'Notice'. In the 'Notifications' section, the audience is selected, and a label 'validation\_label' is added with value '1'. A 'Sync Predefined Alerts' button is at the top right.

The screenshot shows the 'View Alert Rule' page. It displays the JSON configuration of the alert rule:

```
{ "alert": "Validation_alert", "expr": "$1_setup(networkID=\"handset_testing\") > 1", "for": "1m", "labels": { "networkID": "handset_testing", "severity": "NOTICE", "validation_label": "1" }, "annotations": { "description": "Notification incase an eNB is connected to AGW" } }
```

Below the configuration, it states 'This rule matches 0 active alarm(s.)' and includes 'Cancel', 'Copy', and 'Delete' buttons.

The screenshot shows the 'Alerts' page. It lists two alerts: 'Validation\_alert' (Severity: Notice, Date: a minute ago, Wednesday, June 23rd 2021) and another 'Validation\_alert' (Severity: Notice, Date: a minute ago, Wednesday, June 23rd 2021). A detailed view of the first alert is shown on the right, listing the details, labels (gatewayID: handset-test, monitor: handset, networkID: handset\_testing, result: success, service: none, validation\_label: 1), and annotations (None).

# Create Receiver

Add Alert Rule  
Create a new rule to be alerted of important changes in the network

**Summary**

Rule Name \*  
**Validation\_alert**

Description  
Notification incase an eNB is connected to AGW

**Conditions**

Expression  
`$1_setup(networkID="handset_testing") > 1`

PromQL FAQ Switch To Template

Duration  
1 Unit Minutes Severity Notice

Amount of time that conditions are true before an alert is triggered

**Notifications**

Select who will be contacted when this rule triggers an alert

Audience  
**Validation Receiver**

**Labels**

Add labels to attach data to this alert

Label Name **validation\_label** Value 1

Add New Label

Alerts Alert Rules Receivers

**Validation Receiver**  
Configure channels to notify when an alert fires

**Details**

Name \* Validation Receiver

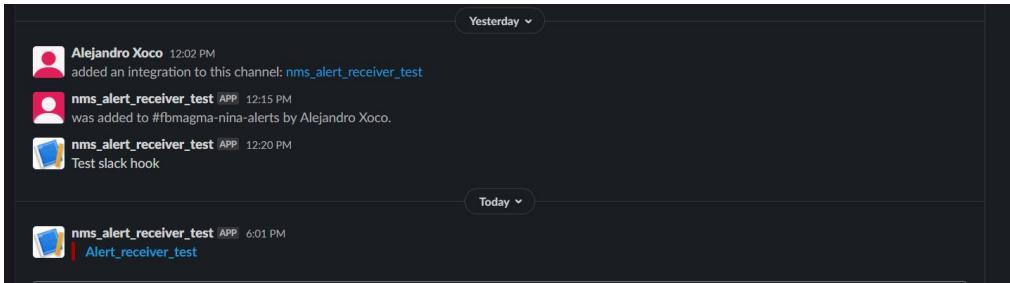
**Slack Channel**

Webhook URL \*  
<https://hooks.slack.com/services/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>

Hide advanced options

Message Title  
**Alert\_receiver\_test**

Email



Alerts	Status
Cpu Percent Alert	OK
Sctpd Crashlooping Alert	OK
S6A Auth Failure	OK
Gateway Checkin Failure	OK
UE attach Failure	OK
High Memory Usage Alert	OK
Service Crashlooping Alert	OK
Unexpected Service Restart Alert	OK
High Disk Usage Alert	OK
Service Restart Alert	OK
S1 Setup Failure	OK
Dip in Connected UEs	OK
Bootstrap Exception Alert	OK
Certificate Expiring Soon	
High duplicate attach requests	OK
Validation_alert	OK

# Gateway Checkin Failure

Name	Severity	Date
Gateway Checkin Failure	● Critical	a few seconds ago Friday, June 25th 2021

```
root@handset-test:~# checkin_cli.py
1. -- Testing TCP connection to controller.ens.fb magma.ninja:443 --
2. -- Testing Certificate --
3. -- Testing SSL --
4. -- Creating direct cloud checkin --

> Error: <MultiThreadedRendezvous of RPC that terminated with:
    status = StatusCode.PERMISSION_DENIED
    details = "Unregistered Gateway 9bic43b8-e433-47c4-b82d-d03e17ic5a3f"
    debug_error_string = "{\"created\": \"@1624652912.830634542\", \"description\": \"Error received from peer ipv4:44.239.206.22:443\", \"file\": \"src/core/lib/surface/call.cc\", \"file_line\": 1062, \"gr
tered Gateway 9bic43b8-e433-47c4-b82d-d03e17ic5a3f\", \"grpc_status\": 7}"
>

Suggestions
-----
- Ensure gateway has been registered in the cloud, with correct
  hardware ID and key
  1. Run show_gateway_info.py.
  2. Go to cloud swagger
    - E.g. https://127.0.0.1:9443/swagger/v1/ui/
    - Query the list_gateways endpoint
- Ensure cloud provider service is healthy
  - Connect to cloud cluster
  - View cloud pods (kubectl get pods --selector app.kubernetes.io/component=state)
  - Tail cloud logs (stern orc8r-state --since 2m)
  - Pods should indicate minimal restarts, tailed logs should
    be free of crashes or fatal logs
- Check gateway's logs for more information (sudo tail -f /var/log/syslog)
```

Gateway Checkin Failure

A Few Seconds Ago | Jun 25th 2021, 1:32:14 pm

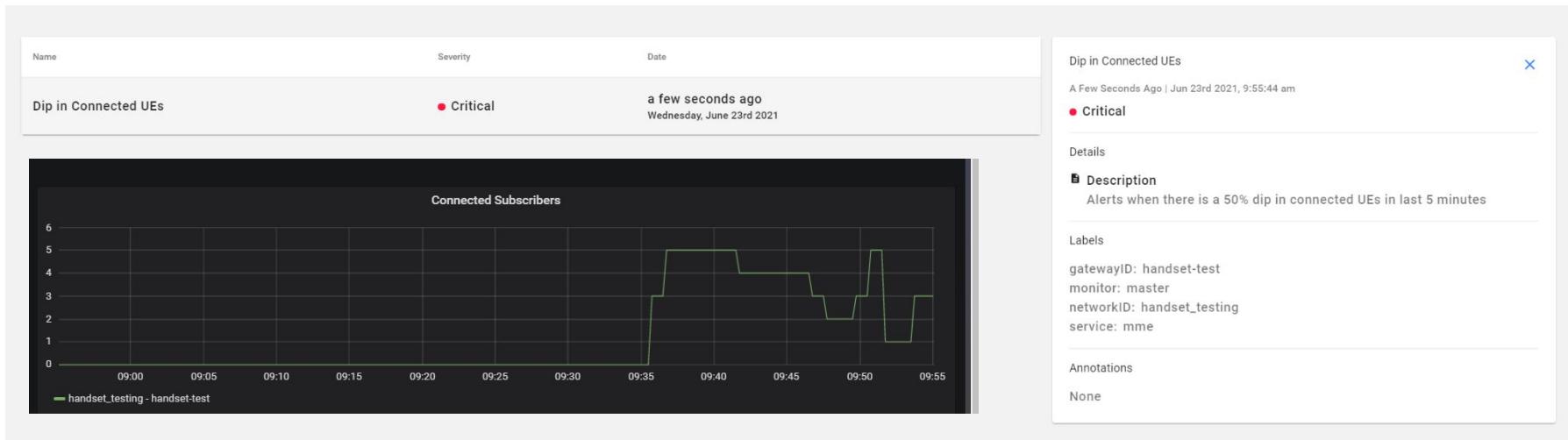
● Critical

**Description**  
Alerts when we have gateway checkin failure

**Labels**  
gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad

**Annotations**  
troubleshooting:  
Run checkin\_cli.py script on the gateway and follow resolution steps suggested

# Dip in Connected UEs



# Unexpected Service Restart

Name	Severity	Date
Service Restart Alert	● Minor	2 days ago Friday, June 25th 2021
Unexpected Service Restart Alert	● Major	a few seconds ago Sunday, June 27th 2021

```
Jun 27 17:15:17 handset-test sessiond[438842]: I0627 17:15:17.921797 438842 LocalEnforcer.cpp:579] Activating untracked rule a
Jun 28 05:29:15 handset-test systemd[1]: magma@sessiond.service: Main process exited, code=killed, status=9/KILL
Jun 28 05:29:15 handset-test systemd[1]: magma@sessiond.service: Failed with result 'signal'.
Jun 28 05:29:20 handset-test systemd[1]: magma@sessiond.service: Scheduled restart job, restart counter is at 1.
Jun 28 05:29:25 handset-test systemd[1]: Stopped Magma session manager service.
Jun 28 05:29:25 handset-test systemd[1]: Started Magma session manager service.
Jun 28 05:29:25 handset-test sessiond[1324146]: [/home/vagrant/magma/orc8r/gateway/c/common/config/ServiceConfigLoader.cpp:35]
```

Unexpected Service Restart Alert X

A Few Seconds Ago | Jun 27th 2021, 10:47:59 pm

● Major

---

Details

Description

Alerts when we have unexpected service restarts

---

Labels

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad  
service\_name: sessiond

---

Annotations

None

# Service Crashlooping

Name	Severity	Date
Service Restart Alert	● Minor	4 minutes ago Sunday, June 27th 2021
Service Restart Alert	● Minor	4 minutes ago Sunday, June 27th 2021
Service Restart Alert	● Minor	2 days ago Friday, June 25th 2021
Service Crashlooping Alert	● Critical	a minute ago Sunday, June 27th 2021

```
Jun 28 06:07:38 handset-test mobilityd[1346031]: INFO:root:Starting mobilityd...
Jun 28 06:07:38 handset-test mobilityd[1346031]: INFO:root:Listening on address 127.0.0.1:60051
Jun 28 06:07:42 handset-test systemd[1]: magma@mobilityd.service: Main process exited, code=killed, status=9/KILL
Jun 28 06:07:42 handset-test systemd[1]: magma@mobilityd.service: Failed with result 'signal'.
Jun 28 06:07:48 handset-test systemd[1]: magma@mobilityd.service: Scheduled restart job, restart counter is at 4.
Jun 28 06:07:52 handset-test systemd[1]: Stopped Magma mobilityd service.
Jun 28 06:07:52 handset-test systemd[1]: Started Magma mobilityd service.
```

## Service Crashlooping Alert

A Minute Ago | Jun 27th 2021, 10:38:59 pm

● Critical

### Details

#### Description

Alerts when we have services crashlooping

### Labels

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad  
service\_name: mobilityd

### Annotations

None

# Service Crashlooping

Name	Severity	Date
Service Restart Alert	● Minor	15 minutes ago Sunday, June 27th 2021
Service Restart Alert	● Minor	2 days ago Friday, June 25th 2021
Service Crashlooping Alert	● Critical	2 minutes ago Sunday, June 27th 2021

```
Jun 28 06:07:38 handset-test mobilityd[1346031]: INFO:root:Starting mobilityd...
Jun 28 06:07:38 handset-test mobilityd[1346031]: INFO:root:Listening on address 127.0.0.1:60051
Jun 28 06:07:42 handset-test systemd[1]: magma@mobilityd.service: Main process exited, code=killed, status=9/KILL
Jun 28 06:07:42 handset-test systemd[1]: magma@mobilityd.service: Failed with result 'signal'.
Jun 28 06:07:48 handset-test systemd[1]: magma@mobilityd.service: Scheduled restart job, restart counter is at 4.
Jun 28 06:07:52 handset-test systemd[1]: Stopped Magma mobilityd service.
Jun 28 06:07:52 handset-test systemd[1]: Started Magma mobilityd service.
```

Service Restart Alert      ● Minor      15 minutes ago  
Sunday, June 27th 2021

Service Crashlooping Alert

2 Minutes Ago | Jun 27th 2021, 11:10:59 pm

● Critical

**Details**

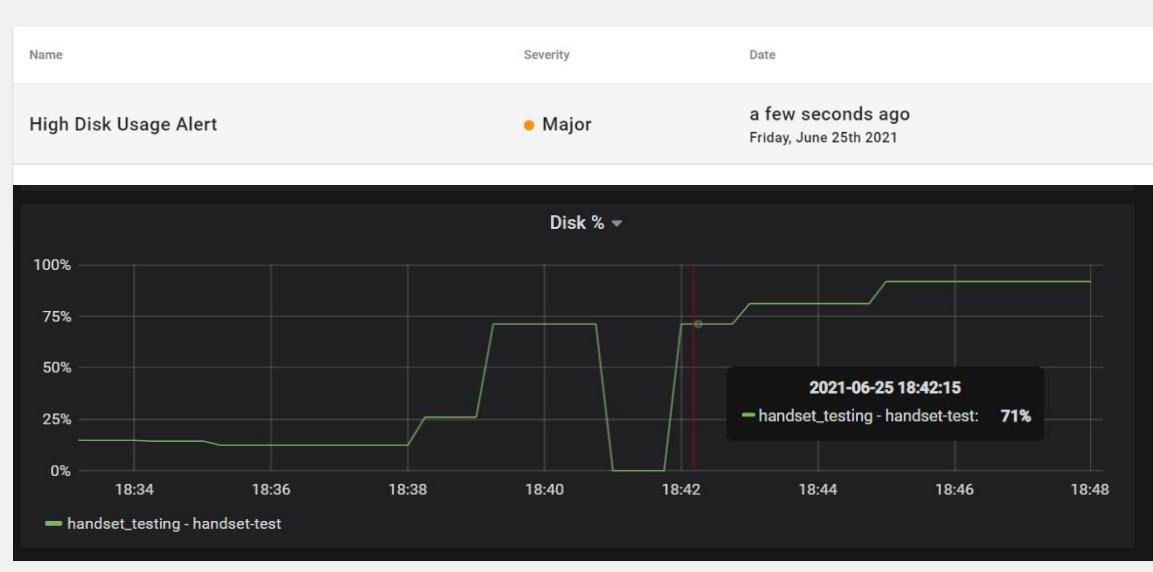
**Description**  
Alerts when we have services crashlooping

**Labels**

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad  
service\_name: mobilityd

**Annotations**

# High Disk Usage



High Disk Usage Alert X

A Few Seconds Ago | Jun 25th 2021, 6:45:59 pm

● Major

Details

Description

Alerts when disk percent is greater than 70%

Labels

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad

Annotations

None

# High Memory Usage

Name	Severity	Date
Service Restart Alert	Minor	an hour ago Friday, June 25th 2021
High Memory Usage Alert	Major	a minute ago Friday, June 25th 2021

Metrics `(1 - (mem_available{networkID="handset_testing"}) / (mem_total{networkID="handset_testing"}) ) * 100`

Metric `mem_total` looks like a counter. Try applying a `rate()` function.

+ Add query

Graph

2021-06-25 18:07:15  
(gatewayID="handset-test",networkID="handset\_testing",service="magmad") 83

(gatewayID="handset-test",networkID="handset\_testing",service="magmad")

High Memory Usage Alert X

A Minute Ago | Jun 25th 2021, 6:08:14 pm

● Major

---

Details

Description

Alerts when memory used is greater than 70%

---

Labels

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad

---

Annotations

None

# Bootstrap Exception

Name	Severity	Date
Bootstrap Exception Alert	Minor	2 minutes ago Friday, June 25th 2021
		10 minutes ago
<pre>Jun 25 23:56:50 handset-test magmad[493285]: INFO:root:Starting magmad... Jun 25 23:56:50 handset-test magmad[493285]: INFO:root:Listening on address 127.0.0.1:50052 Jun 25 23:56:50 handset-test magmad[493285]: INFO:root:Cannot load a proper cert, start bootstrapping Jun 25 23:56:50 handset-test magmad[493285]: INFO:root:Waiting before checking for updates for the first time... Jun 25 23:56:50 handset-test magmad[493285]: WARNING:root:Collect subscriberdb Error! [StatusCode.UNAVAILABLE] failed to connect to all addresses Jun 25 23:56:50 handset-test magmad[493285]: ERROR:root:GetServiceInfo Error for subscriberdb! [StatusCode.UNAVAILABLE] failed to connect to all addresses Jun 25 23:56:50 handset-test magmad[493285]: ERROR:root:GetOperationalStates Error for subscriberdb! [StatusCode.UNAVAILABLE] failed to connect to all addresses Jun 25 23:56:51 handset-test magmad[493285]: ERROR:root:RequestSign error! [StatusCode.ABORTED], Failed to verify response: Wrong response Jun 25 23:56:51 handset-test magmad[493285]: INFO:root:Retrying bootstrap in 30 seconds Jun 25 23:56:52 handset-test magmad[493285]: INFO:root:Checkin Successful! Successfully sent states to the cloud! Jun 25 23:57:22 handset-test magmad[493285]: ERROR:root:RequestSign error! [StatusCode.ABORTED], Failed to verify response: Wrong response Jun 25 23:57:22 handset-test magmad[493285]: INFO:root:Retrying bootstrap in 30 seconds Jun 25 23:57:53 handset-test magmad[493285]: INFO:root:Checkin Successful! Successfully sent states to the cloud! Jun 25 23:57:53 handset-test magmad[493285]: ERROR:root:RequestSign error! [StatusCode.ABORTED], Failed to verify response: Wrong response Jun 25 23:57:53 handset-test magmad[493285]: INFO:root:Retrying bootstrap in 30 seconds Jun 25 23:58:23 handset-test magmad[493285]: ERROR:root:RequestSign error! [StatusCode.ABORTED], Failed to verify response: Wrong response Jun 25 23:58:23 handset-test magmad[493285]: INFO:root:Retrying bootstrap in 30 seconds</pre>		

Bootstrap Exception Alert

2 Minutes Ago | Jun 25th 2021, 4:59:59 pm

Minor

Details

Description

Alerts when we have exceptions during bootstrapping

Labels

cause: RequestSignDoneResp  
gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad

Annotations

None

None

# S1 Setup Failure

Name	Severity	Date
Validation_alert	● Notice	2 minutes ago Friday, June 25th 2021
Validation_alert	● Notice	2 minutes ago Friday, June 25th 2021
S1 Setup Failure	● Major	2 minutes ago Friday, June 25th 2021

6971 845.9657505550	10.0.2.1	10.0.2.251	SCTP 50 COOKIE_ACK
6972 845.965375152	10.0.2.251	10.0.2.1	S1AP 122 S1SetupRequest
6973 845.965449125	10.0.2.1	10.0.2.251	SCTP 62 SACK
6974 845.969000721	10.0.2.1	10.0.2.251	S1AP 82 S1SetupFailure [Misc-cause=unknown-PLMN]
6975 845.969373023	10.0.2.251	10.0.2.1	SCTP 62 SACK
6976 845.974617632	10.0.2.251	10.0.2.1	SCTP 60 SHUTDOWN
6977 845.974671243	10.0.2.1	10.0.2.251	SCTP 50 SHUTDOWN_ACK
6978 845.974942110	10.0.2.251	10.0.2.1	SCTP 60 SHUTDOWN_COMPLETE

**S1 Setup Failure** X

2 Minutes Ago | Jun 25th 2021, 10:59:59 am

● Major

---

**Details**

**Description**  
Alerts when we have S1 setup failures

---

**Labels**

cause: plmnid\_or\_tac\_mismatch  
gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
result: failure  
service: mme

---

**Annotations**

remediation: Restart sctp service

# Service Restart

Name	Severity	Date
Service Restart Alert	Minor	a few seconds ago Friday, June 25th 2021

```
Jun 25 17:24:37 handset-test mme[432650]: ERROR:root:retrieving config for mme, key not found: enable_nat
Jun 25 17:24:38 handset-test systemd[1]: magma@mme.service: Failed with result 'exit-code'.
Jun 25 17:24:38 handset-test systemd[1]: Stopped Magma OAI MME service.
Jun 25 17:24:43 handset-test systemd[1]: Starting Magma OAI MME service...
Jun 25 17:24:43 handset-test mme[432650]: ERROR:root:Error retrieving config for mme, key not found: enable_nat
Jun 25 17:24:43 handset-test mme[432650]: ERROR:root:Error retrieving config for spgw, key not found: ovs_internal_sampling_fwd_tbl
Jun 25 17:24:43 handset-test mme[432670]: WARNING:root:Service (spgw) missing in mconfig
Jun 25 17:24:44 handset-test mme[432670]: STATELESS mme -> use_stateless
Jun 25 17:24:44 handset-test mme[432670]: STATELESS mobilityd -> persist_to_redis
Jun 25 17:24:44 handset-test mme[432670]: STATELESS pipelined -> clean_restart
Jun 25 17:24:44 handset-test mme[432670]: STATELESS pipelined -> redis_enabled
Jun 25 17:24:44 handset-test mme[432670]: STATELESS sessiond -> support_stateless
Jun 25 17:24:44 handset-test mme[432670]: Check returning return_codes.STATELESS
Jun 25 17:24:44 handset-test mme[432670]: AGW is stateless, no need to restart Sctpd
Jun 25 17:24:44 handset-test systemd[1]: Started Magma OAI MME service.
Jun 25 17:24:44 handset-test mme[432672]: Initializing OAI Logging
Jun 25 17:24:44 handset-test mme[432672]: Initializing OAI Logging to syslog
Jun 25 17:24:44 handset-test mme[432672]: Initializing shared logging
Jun 25 17:24:44 handset-test mme[432672]: Initializing shared logging Done
Jun 25 17:24:44 handset-test mme[432672]: Initializing TIMER module
Jun 25 17:24:44 handset-test mme[432672]: Initializing TIMER module: DONE
```

Service Restart Alert

A Few Seconds Ago | Jun 25th 2021, 10:26:44 am

Minor

Details

Description

Alerts upon service restarts

Labels

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad  
service\_name: mme  
status: Failure

Annotations

None

# Unexpected Service Restart

Name	Severity	Date
Service Restart Alert	● Minor	3 minutes ago Friday, June 25th 2021
Service Restart Alert	● Minor	3 minutes ago Friday, June 25th 2021
Unexpected Service Restart Alert	● Major	3 minutes ago Friday, June 25th 2021

```
Jun 25 17:15:16 handset-test mme[311396]: [DEBUG] Success logging event: attach_success
Jun 25 17:24:34 handset-test mme[311396]: Received SIGINT or SIGTERM
Jun 25 17:24:34 handset-test mme[311396]: [TRACE] Entering shared_log_exit
Jun 25 17:24:34 handset-test mme[311396]: [TRACE] Leaving shared_log_exit
Jun 25 17:24:34 handset-test mme[311396]: TASK_SHARED_TS_LOG terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_S6A terminated
Jun 25 17:24:34 handset-test systemd[1]: Stopping Magma OAI MME service...
Jun 25 17:24:34 handset-test mme[311396]: TASK_SERVICE303_SERVER terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_SGW_S8 terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_SERVICE303 terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_S1AP terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_MME_APP terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_SPGW_APP terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_SCTP terminated
Jun 25 17:24:34 handset-test mme[311396]: TASK_GRPC_SERVICE terminated
Jun 25 17:24:37 handset-test mme[311396]: Cleaning up SPGW configsE: 21-06-25 17:24:37 [311396]dangling 'PUSH'
Jun 25 17:24:37 handset-test mme[311396]: E: 21-06-25 17:24:37 [311396]dangling 'PULL' socket created at /home
Jun 25 17:24:37 handset-test mme[311396]: TASK_HA terminated
```

## Unexpected Service Restart Alert

A Few Seconds Ago | Jun 25th 2021, 10:26:44 am

### ● Major

#### Details

##### ■ Description

Alerts when we have unexpected service restarts

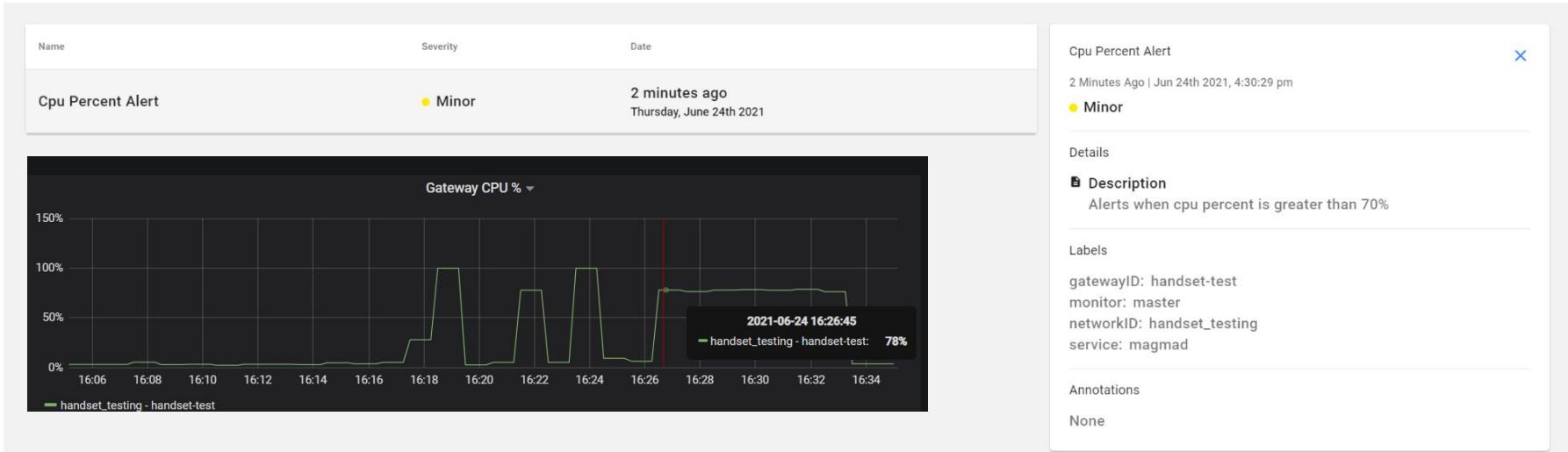
#### Labels

gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
service: magmad  
service\_name: mme

#### Annotations

None

# CPU Percent



# UE attach failure

Name	Severity	Date
UE attach Failure	Minor	2 minutes ago Friday, June 25th 2021

```
Jun 25 17:01:55 handset-test mme[311396]: [DEBUG] Success logging event: detach-success
Jun 25 17:01:55 handset-test mme[311396]: [INFO] Sending S6A-AUTHENTICATION_INFORMATION REQUEST with IMSI: 001010000091009
Jun 25 17:01:55 handset-test mme[311396]: Directoryd RPC failed with code 5, msg: Record for ID IMSI001010000091009 was not found.
Jun 25 17:02:06 handset-test mme[311396]: [INFO] Sending S6A-AUTHENTICATION_INFORMATION REQUEST with IMSI: 001010000091009
Jun 25 17:02:06 handset-test mme[311396]: Directoryd RPC failed with code 5, msg: Record for ID IMSI001010000091009 was not found.
Jun 25 17:02:16 handset-test mme[311396]: [INFO] Sending S6A-AUTHENTICATION_INFORMATION REQUEST with IMSI: 001010000091009
Jun 25 17:02:16 handset-test mme[311396]: Directoryd RPC failed with code 5, msg: Record for ID IMSI001010000091009 was not found.
Jun 25 17:02:26 handset-test mme[311396]: [INFO] Sending S6A-AUTHENTICATION_INFORMATION REQUEST with IMSI: 001010000091009
Jun 25 17:02:26 handset-test mme[311396]: Directoryd RPC failed with code 5, msg: Record for ID IMSI001010000091009 was not found.
Jun 25 17:13:05 handset-test mme[311396]: [DEBUG] Success logging event: detach-success
Jun 25 17:14:35 handset-test mme[311396]: [INFO] Sending S6A-AUTHENTICATION_INFORMATION REQUEST with IMSI: 001010000091009
Jun 25 17:14:35 handset-test mme[311396]: Directoryd RPC failed with code 5, msg: Record for ID IMSI001010000091009 was not found.
```

UE attach Failure

2 Minutes Ago | Jun 25th 2021, 10:15:44 am

Minor

**Description**  
Alerts when we have UE attach failures

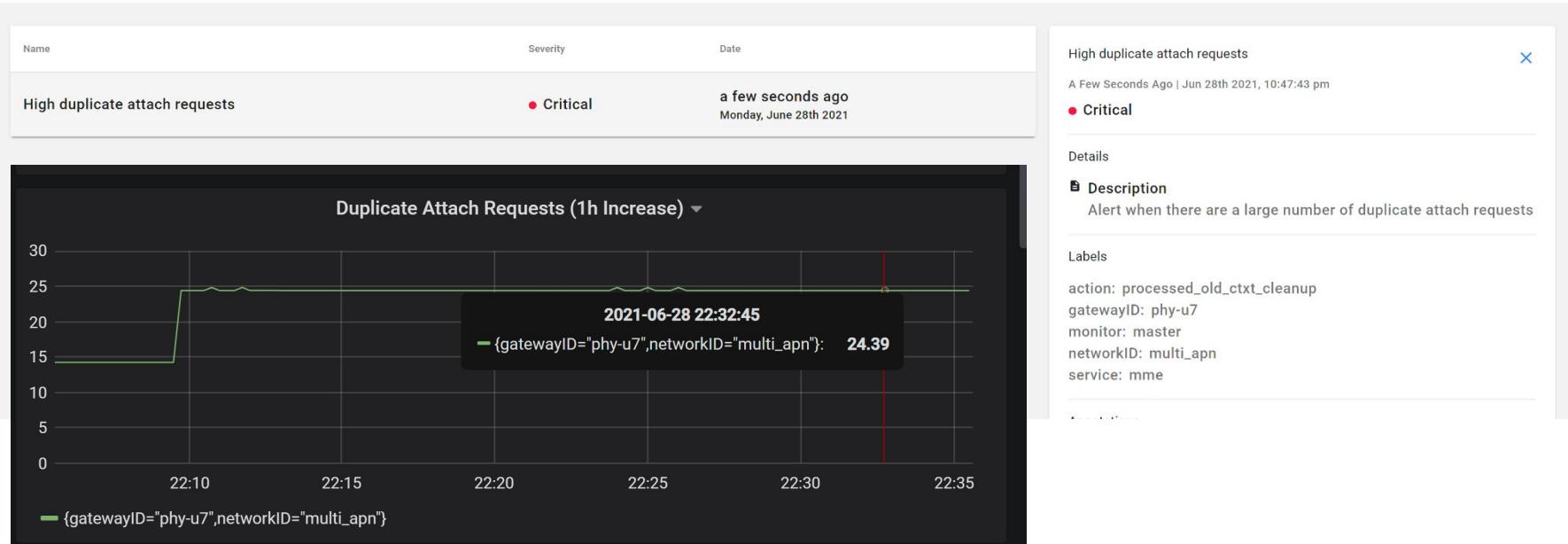
**Labels**

cause: auth\_info\_failure\_from\_hss  
gatewayID: handset-test  
monitor: master  
networkID: handset\_testing  
result: failure  
service: mme

**Annotations**

None

# High duplicate attach requests



High duplicate attach requests

● Critical

> 10 for 0s

Alert when there are a large number of duplicate attach requests

# S6A Auth Failure



**S6A Auth Failure** X

3 Minutes Ago | Jun 29th 2021, 1:42:05 pm

● Minor

**Details**

**Description**  
Alerts when we have auth failures

**Labels**

code: 5001  
gatewayID: phy-u6  
monitor: master  
networkID: ens\_2000  
service: subscriberdb

**Annotations**

None

# Sctp Crashlooping

Name	Severity	Date
Service Restart Alert	Minor	6 minutes ago Tuesday, June 29th 2021
Service Restart Alert	Minor	4 days ago Friday, June 25th 2021
Service Crashlooping Alert	Critical	a few seconds ago Tuesday, June 29th 2021
Service Restart Alert	Minor	5 minutes ago Tuesday, June 29th 2021
Service Restart Alert	Minor	6 minutes ago Tuesday, June 29th 2021

```
Jun 29 21:05:26 handset-test systemd[1]: sctp.service: Main process exited, code=killed, status=9/KILL
Jun 29 21:05:27 handset-test systemd[1]: sctp.service: Failed with result 'signal'.
Jun 29 21:05:32 handset-test systemd[1]: sctp.service: Scheduled restart job, restart counter is at 4.
Jun 29 21:05:35 handset-test systemd[1]: Stopped Magma sctp service.
Jun 29 21:05:35 handset-test systemd[1]: Starting Magma sctp service...
Jun 29 21:05:39 handset-test ovs-vsctl[200896]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --all destroy Flow_Sample_Collector_Set
Jun 29 21:05:40 handset-test ovs-vsctl[2008965]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port uplink_br0 dhcp0
Jun 29 21:05:40 handset-test ovs-vsctl[2009005]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port uplink_br0 patch-agw
Jun 29 21:05:40 handset-test ovs-vsctl[2009007]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-br uplink_br0
Jun 29 21:05:40 handset-test ovs-vsctl[2009098]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port gtp_br0 gtp0
Jun 29 21:05:41 handset-test ovs-vsctl[2009134]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port gtp_br0 mtr0
Jun 29 21:05:41 handset-test ovs-vsctl[2009173]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port gtp_br0 ipfix0
Jun 29 21:05:41 handset-test ovs-vsctl[2009227]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port gtp_br0 patch-up
Jun 29 21:05:41 handset-test ovs-vsctl[2009269]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port gtp_br0 proxy_port
Jun 29 21:05:41 handset-test ovs-vsctl[2009305]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-port gtp_br0 li_port
Jun 29 21:05:41 handset-test ovs-vsctl[2009315]: ovs|00001|vsctl|INFO|Called as ovs-vsctl --timeout=5 -- --if-exists del-br gtp_br0
Jun 29 21:05:45 handset-test sctpd[2010051]: ifup: interface uplink_br0 already configured
Jun 29 21:05:45 handset-test sctpd[2010052]: ifup: interface gtp_br0 already configured
```

Sctp Crashlooping Alert      Critical      a few seconds ago  
Tuesday, June 29th 2021

<b>Sctp Crashlooping Alert</b>
A Few Seconds Ago   Jun 29th 2021, 2:24:29 pm
<b>Critical</b>
<b>Details</b>
<b>Description</b> Alerts when we have sctp service crashlooping
<b>Labels</b>
gatewayID: handset-test monitor: master networkID: handset_testing service: magmad service_name: sctp status: Success
<b>Annotations</b>
None