Configuring Enhanced Subscriber Management with CLI

This section provides information to configure subscriber management features using the command line interface. It is assumed that the reader is familiar with VPLS and IES services.

Topics in this section include:

Configuring RADIUS Authentication of DHCP Sessions

When RADIUS authentication for subscriber sessions is enabled, DHCP messages from subscribers are temporarily held by the BSA, while the user's credentials are checked on a RADIUS server.

Configuring RADIUS authentication for subscriber sessions is done in two steps:

- First define an authentication-policy in the **config>subscriber-mgmt>authentication-policy** context.
- Then apply the policy to one or more SAPs in the **config>service>vpls>sap>authentication-policy** ***auth-plcy-name*** context (for a VPLS service).

  Or apply the policy to one or more interfaces **config>service>ies>if>authentication-policy** ***auth-plcy-name*** context (for an IES service):

The following example displays a partial BSA configuration with RADIUS authentication:

```
A:ALA-1>config>service# info
----------------------------------------------
subscriber-management
     authentication-policy BSA_RADIUS create
          description "RADIUS policy for DHCP users Authentication"
          password "mysecretpassword"
          radius-authentication-server
               server 1 address 10.100.1.1 secret "radiuskey"
               retry 3
               timeout 10
          exit
          re-authentication
          user-name-format circuit-id
     exit
exit
...
vpls 800 customer 6001
     description "VPLS with RADIUS authentication"
     sap 2/1/4:100 split-horizon-group DSL-group create
          authentication-policy BSA_RADIUS
     exit
     sap 3/1/4:200 split-horizon-group DSL-group create
          authentication-policy BSA_RADIUS
     exit
     no shutdown
exit
...
----------------------------------------------
A:ALA-1>config>service#
```

Configuring Enhanced Subscriber Management

Basic Configurations

Configuring and applying the Enhanced Subscriber Management profiles and policies are optional. There are no default Profiles or policies.

The basic Enhanced Subscriber Management profiles and policies must conform to the following:

- Unique profile or policy names (IDs)
- Profiles and/or policies must be associated with a VPLS or IES service to facilitate Enhanced Subscriber Management.
- QoS and IP filter entries configured in Enhanced Subscriber Management profiles and policies override the defaults and/or modified parameters or the default policies.
- The Enhanced Subscriber Management profiles and policies must be configured within the context of VPLS or IES.

Subscriber Interface Configuration

The following output displays a basic subscriber interface configuration.

```
*A:ALA-48>config>service>ies>sub-if# info
----------------------------------------------
                description "Routed CO - Antwerp 2018"
                address 192.168.2.254/24
                address 192.168.3.254/24
                address 192.168.4.254/24
                address 192.168.5.254/24
                address 192.168.6.254/24
                group-interface "DSLAM_01" create
                    description "Routed CO - vlan / subscriber"
                    sap 1/1/2:1001 create
                        static-host ip 192.168.2.2 create
                        exit
                    sap 1/1/2:1002 create
                        static-host ip 192.168.2.2 create
                        exit
                    sap 1/1/2:1004 create
                        static-host ip 192.168.2.4 create
                        exit
                    sap 1/1/2:1100 create
                        static-host ip 192.168.2.100 create
                        exit
                    exit
                exit
----------------------------------------------
*A:ALA-48>config>service>ies>sub-if#
```

Configuring Enhanced Subscriber Management Entities

Configuring a Subscriber Identification Policy

The following displays an example of a subscriber identification policy configuration:

```
A:ALA-48>config>subscr-mgmt# info
----------------------------------------------
...
        sub-ident-policy "Globocom" create
            description "Subscriber Identification Policy Id Globocom"
            sub-profile-map
                entry key "1/1/2" sub-profile "ADSL Business"
            exit
            sla-profile-map
                entry key "1/1/2" sla-profile "BE-Video"
            exit
            primary
                script-url "primaryscript.py"
                no shutdown
            exit
            secondary
                script-url "secundaryscript.py"
            exit
            tertiary
                script-url "tertiaryscript.py"
                no shutdown
            exit
        exit
...
----------------------------------------------
A:ALA-48>config>subscr-mgmt#
```

Configuring a Subscriber Profile

Enhanced Subscriber Management subscriber profile configurations specify existing QoS scheduler profiles. In the following example, “BE-Video-max100M” is specified in the sub-profile “ADSL Business” for the ingress-scheduler-policy. “Upload” is specified in the sub-profile egress-scheduler-policy.

```
#--------------------------------------------------
echo "QoS Policy Configuration"
#--------------------------------------------------
    qos
        scheduler-policy "BE-Video-max100M" create
            description "Scheduler Policy Id BE-Video-max100M"
            tier 1
                scheduler "tier1" create
                    description "Scheduler Policy Id BE-Video-max100M Tier 1 tier1"
                exit
            exit
        exit
        scheduler-policy "Upload" create
            description "Scheduler Policy Id Upload"
            tier 3
                scheduler "tier3" create
                    description "Scheduler Policy Id Upload Tier 3 tier3"
                exit
            exit
        exit
        sap-ingress 2 create
            description "Description for Sap-Ingress Policy id # 2"
            queue 1 create
              parent "tier1"
            exit
            queue 11 multipoint create
              parent "tier1"
            exit
        exit
        sap-egress 3 create
            description "Description for Sap-Egress Policy id # 3"
            queue 1 create
              parent "tier3"
            exit
        exit
    exit
#----------------------
```

The following displays an example of a subscriber identification policy configuration:

```
A:ALA-48>config>subscr-mgmt# info
----------------------------------------------
...
        sub-profile "ADSL Business" create
            description "Subscriber Profile Id ADSL Business"
            ingress-scheduler-policy "BE-Video-max100M"
                scheduler "tier1" rate 99
            exit
            egress-scheduler-policy "Upload"
                scheduler "tier3" rate 1 cir 1
            exit
            sla-profile-map
                entry key "1/1/3" sla-profile "BE-Video"
            exit
        exit
----------------------------------------------
A:ALA-48>config>subscr-mgmt#
```

Configuring an SLA Profile

The following displays an example of a SLA Profile configuration:

```
A:ALA-48>config>subscr-mgmt# info
----------------------------------------------
    subscriber-mgmt
        sla-profile "BE-Video" create
            description "SLA Profile Id BE-Video"
            ingress
                qos 2
                    queue 1
                    exit
                exit
            exit
            egress
                qos 3
                    queue 1
                    exit
                exit
            exit
        exit
----------------------------------------------
A:ALA-48>config>subscr-mgmt#
```

Configuring Explicit Mapping Entries

The following displays an example of a explicit subscriber mapping:

```
A:ALA-7>config>subscr-mgmt# info
------------------------------------------------
A:ALA-48>config>subscr-mgmt# info
------------------------------------------------
...
        explicit-subscriber-map
            entry key "1/1/1:1111" sub-profile "ADSL GO" alias "Sub-Ident-1/1/1:
1111" sla-profile "BE-Video"
        exit
...
------------------------------------------------
A:A:ALA-48>config>subscr-mgmt#
```

Routed CO with Basic Subscriber Management Features

The following displays the output of an IES service configured with and without enhanced subscriber management.

```
A:term17>config>service>ies# inf
------------------------------------------------
            subscriber-interface "s2" create
                address 11.20.1.1/16
                dhcp
                    gi-address 11.20.1.1
                exit
                group-interface "g3" create
                    description "With Enhanced Subscriber Mgmt"
                    arp-populate
                    dhcp
                        server 12.1.1.1
                        trusted
                        lease-populate 8000
                        no shutdown
                    exit
                    sap lag-1:11 create
                        sub-sla-mgmt
                            def-sub-profile "subProf"
                            def-sla-profile "slaProf"
                            sub-ident-policy "foo"
                            multi-sub-sap
                            no shutdown
                        exit
                     host ip 11.20.1.10 mac 00:00:aa:aa:aa:dd subscriber "One" sub-profile
"subProf" sla-profile "slaProf"
                    exit
                exit
            exit
            subscriber-interface "s3" create
                address 11.39.1.1/16
                dhcp
                    gi-address 11.39.1.1
                exit
                group-interface "g5" create
                    description "Without Enhanced Subscriber Mgmt"
                    arp-populate
                    dhcp
                        server 12.1.1.1
                        trusted
                        lease-populate 8000
                        no shutdown
                    exit
                    sap 4/1/1:24.4094 create
                    exit
                exit
            exit
            no shutdown
------------------------------------------------
A:term17>config>service>ies#
```

Applying the Profiles and Policies

NOTE: Subscriber interfaces operate only with basic (or enhanced) subscriber management. At the very least, a host, either statically configured or dynamically learned by DHCP must be present in order for the interface to be useful.

Apply the Enhanced Subscriber Management profiles and policies to the following entities:

- SLA Profile on page 1057
- Subscriber Identification Policy on page 1061
- Subscriber Profile on page 1061

SLA Profile

CLI Syntax:

```
configure>service>ies service-id
    interface ip-int-name
       sap sap-id
          host {[ip ip-address] [mac ieee-address} [subscriber
            sub-ident-string] [sub-profile sub-profile-name]
            [sla-profile sla-profile-name]
          sub-sla-mgmt
             def-sla-profile default-sla-profile-name
             single-sub-parameters
                non-sub-traffic sub-profile sub-profile-name
                   sla-profile sla-profile-name [subscriber sub-
                   ident-string]
    subscriber-interface ip-int-name
          group-interface ip-int-name
             sap sap-id
                host ip ip-address [mac ieee-address] [subscriber
                   sub-ident-string] [sub-profile sub-profile-
                   name] [sla-profile sla-profile-name]
                sub-sla-mgmt
                   def-sla-profile default-sla-profile-name
                   single-sub-parameters
                      non-sub-traffic sub-profile sub-profile-
                      name sla-profile sla-profile-name [sub-
                      scriber sub-ident-string]
```

CLI Syntax:
```
configure>service>vpls service-id
 sap sap-id
    host {[ip ip-address] [mac ieee-address]} [subscriber sub-
       ident-string] [sub-profile sub-profile-name] [sla-pro-
       file sla-profile-name]
    sub-sla-mgmt
       def-sla-profile default-sla-profile-name
       single-sub-parameters
          non-sub-traffic sub-profile sub-profile-name sla-
          profile sla-profile-name [subscriber sub-ident-
          string]
```

CLI Syntax:
```
configure>service>vprn service-id
 interface ip-int-name
    sap sap-id
       host {[ip ip-address] [mac ieee-address]} [subscriber
         sub-ident-string] [sub-profile sub-profile-name]
         [sla-profile sla-profile-name]
```

CLI Syntax:
```
configure>subscriber-mgmt
 explicit-subscriber-map
    entry key sub-ident-string [sub-profile sub-profile-name]
       [alias sub-alias-string] [sla-profile sla-profile-
       name]
 sub-ident-policy sub-ident-policy-name
    sla-profile-map
       entry key sla-profile-string sla-profile sla-profile-
         name
 sub-profile sla-profile-map
    sla-profile-map
       entry key sla-profile-string sla-profile sla-profile
```

Configuring Dual Homing

The following displays an example of a dual homing configuration. The configuration shows dual homing with a peer node with a system address of 1.1.1.23. The DHCP server returns a default route with a 11.21.1.3 next hop.

```
A:ALA-48#
#------------------------------------------------
echo "Redundancy Configuration"
#------------------------------------------------
    redundancy
        multi-chassis
            peer 1.1.1.23 create
                sync
                    srrp
                    sub-mgmt
                    port lag-100 sync-tag "Tag1" create
                    exit
                    no shutdown
                exit
                no shutdown
            exit
        exit
    exit
#------------------------------------------------
echo "Service Configuration"
#------------------------------------------------
    service
        customer 1 create
            description "Default customer"
        exit
        sdp 23 create
            far-end 1.1.1.23
            no shutdown
        exit
        ies 40 customer 1 create
            redundant-interface "r40-1" create
                address 2.1.1.1/31
                spoke-sdp 23:1 create
                exit
            exit
            subscriber-interface "s40-1" create
                address 11.21.1.1/16 gw-ip-address 11.21.1.3
                dhcp
                    gi-address 11.21.1.1
                exit
                group-interface "g40-1" create
                    dhcp
                        server 12.1.1.1
                        lease-populate 8000
                        no shutdown
                    exit
                    redundant-interface r40-1
                    remote-proxy-arp
                    sap lag-100:1 create
                        sub-sla-mgmt
                            def-sub-profile "subProf"
                            def-sla-profile "slaProf"
                            sub-ident-policy "subIdentPolicy"
                            multi-sub-sap
```

```
                                    no shutdown
                                exit
                            exit
                            sap lag-100:4094 create
                            exit
                            srrp 1 create
                                message-path lag-100:4094
                                no shutdown
                            exit
                        exit
                    exit
                    no shutdown
                exit
            exit
...
-----------------------------------------------
A:ALA-48#
```

Subscriber Identification Policy

CLI Syntax:
```
configure>service>ies service-id
 interface ip-int-name
    sap sap-id
       host {[ip ip-address] [mac ieee-address} [subscriber
         sub-ident-string] [sub-profile sub-profile-name]
         [sla-profile sla-profile-name]
       sub-sla-mgmt
          single-sub-parameters
             non-sub-traffic sub-profile sub-profile-name
                sla-profile sla-profile-name [subscriber sub-
                ident-string]
          sub-ident-policy sub-ident-policy-name
```

Subscriber Profile

CLI Syntax:
```
configure>service>ies service-id
 interface ip-int-name
    sap sap-id
       host {[ip ip-address] [mac ieee-address} [subscriber
         sub-ident-string] [sub-profile sub-profile-name]
         [sla-profile sla-profile-name]
       sub-sla-mgmt
          def-sub-profile default-subscriber-profile-name
          single-sub-parameters
             non-sub-traffic sub-profile sub-profile-name
                sla-profile sla-profile-name [subscriber sub-
                ident-string]
```

CLI Syntax:
```
configure>service>vpls service-id
 sap sap-id
    host {[ip ip-address] [mac ieee-address]} [subscriber sub-
       ident-string] [sub-profile sub-profile-name] [sla-pro-
       file sla-profile-name]
    sub-sla-mgmt
       def-sub-profile default-sub-profile-name
       single-sub-parameters
          non-sub-traffic sub-profile sub-profile-name sla-
          profile sla-profile-name [subscriber sub-ident-
          string]
```

CLI Syntax:
```
configure>subscriber-mgmt
 sub-profile subscriber-profile-name
 explicit-subscriber-map
    entry key sub-ident-string [sub-profile sub-profile-name]
       [alias sub-alias-string] [sla-profile sla-profile-
       name]
 sub-ident-policy sub-ident-policy-name
    sub-profile-map
       entry key sub-profile-string sub-profile sub-profile-
         name
```