eMPS/WPS Support

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	cnSGW-C
Applicable Platform(s)	SMI
Feature Default Setting	Disabled – Configuration required to enable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2021.02.0

Feature Description

This feature supports the following:

- Enhanced Multimedia Priority Service (eMPS) or Wireless Priority Service (WPS)

• eMPS GTPv2 Load/Overload Self Protection Exclusion

eMPS/WPS Support

Feature Description

This feature supports identifying the eMPS subscriber. The feature sets the message priority bit for:

- PFCP interface towards the UP.
- GTPC interface towards the MME and PGW.

This feature includes DSCP marking for request messages in control messages as per the configured value in the profile for eMPS subscriber.

Feature Configuration

Configuring this feature involves the following steps:

- Configure WPS-Profile. For more information, refer to Configuring WPS Profile, on page 2.
- Configure SGW-Profile, and enable WPS-Profile and SGW-Profile association. For more information, refer to Configuring WPS-Profile and SGW-Profile Association, on page 3.
- Configure DNN-Profile, and enable WPS-Profile and DNN-Profile association. For more information, refer to Configuring WPS-Profile and DNN-Profile Association, on page 3.

Configuring WPS Profile

To configure this feature, use the following configuration:

```
config
  profile wps wps_name
    arp arp_value
    dscp dscp_value
    message-priority [ pfcp | gtpc ]
    end
```

NOTES:

- **wps** *wps_name*—Specify the WPS service name. Must be a string.

- **arp** *arp_value*—Specify the range of ARP levels (separated by , or -). Must be an integer or a string.

- **dscp** *dscp_value*—Specify the DSCP marking value in the decimal range 0-63 or hex range 0x0-0x3F. Must be a string.

- **message-priority**—Specify the message priority for GTP-C and UP. Must be one of the following:

    - gtpc

    - pfcp

Configuration Example

The following is an example configuration.

```
config
   profile wps wp1
     arp 2
     message-priority gtpc
     message-priority pfcp
     end
```

Configuration Verification

To verify the configuration:

```
show running-config profile wps
profile wps wp1
arp 2
message-priority [ pfcp gtpc ]
```

Configuring WPS-Profile and SGW-Profile Association

To configure WPS-Profile and SGW-Profile association, use the following configuration:

config
 profile sgw *sgw_name*
  wps-profile *wps_name*
  end

NOTES:

- **wps-profile** *wps_name*—Specify the Wireless Priority Service (WPS) name. Must be a string.

Configuration Example

The following is an example configuration.

```
config
   profile sgw sgw1
     wps-profile wp1
     end
```

Configuration Verification

To verify the configuration:

```
show running-config profile sgw
profile sgw sgw1
wps-profile wp1
```

Configuring WPS-Profile and DNN-Profile Association

This section describes how to configure WPS-Profile and DNN-Profile association.

✎

Note   If WPS profile is associated with SGW profile and DNN profile, DNN profile takes the priority.

To configure WPS-Profile and DNN-Profile association, use the following configuration:

```
config
 profile dnn dnn_name
   wps-profile wps_name
   end
```

Configuration Example

The following is an example configuration.

```
config
  profile dnn dnn1
  wps-profile wps1
  end
```

Configuration Verification

To verify the configuration:

```
show running-config profile dnn
profile dnn dnn1
wps-profile wps1
```

OAM Support

This section describes operations, administration, and maintenance information for this feature

Bulk Statistics Support

The following are the examples for eMPS messages:

```
sgw_pdn_emps_counters{app_name="smf",cluster="cn",data_center="cn",instance_id="0",
service_name="sgw-service",status="active"} 1
```

```
sgw_pdn_emps_stats{app_name="smf",cluster="cn",data_center="cn",instance_id="0",
service_name="sgw-service",status="release"} 7
```

```
sgw_pdn_emps_stats{app_name="smf",cluster="cn",data_center="cn",instance_id="0",
service_name="sgw-service",status="setup"} 8
```

```
gtpc_app_priority_events{app_name="smf",cluster="smf",data_center="smf",event_type=
"NumRxModifyBearerResFrmSerSuccess",instance_id="0",
interface_type="S11",priority_msg="true",service_name="gtpc-ep"} 3
```

```
gtpc_app_priority_events{app_name="smf",cluster="smf",data_center="smf",event_type=
"RxCreateSessionRes",instance_id="0",interface_type="S5E",
priority_msg="true",service_name="gtpc-ep"} 2
```

```
proto_pfcp_msg_total{app_name="smf",cluster="smf",data_center="smf",instance_id="0",
interface_type="SXA",message_direction="outbound",
message_name="N4_MSG_SESSION_ESTABLISHMENT_REQUEST",msgpriority="True",service_name=
"protocol",status="accepted",transport_type="origin"} 2
```

```
proto_pfcp_msg_total{app_name="smf",cluster="smf",data_center="smf",instance_id="0",
interface_type="SXA",message_direction="outbound",
message_name="N4_MSG_SESSION_MODIFICATION_REQUEST",msgpriority="True",service_name="protocol",
status="accepted",transport_type="origin"} 6
```

eMPS GTPv2 Load/Overload Self Protection Exclusion Support

Feature Description

cnSGW-C supports interaction of eMPS with GTPv2 load or overload feature. It supports excluding eARPs /APNs/Emergency call during self-protection mode in GTPv2 load or overload feature.

cnSGW-C can exclude the dnn-list and the arp-list from the rejection for incoming request messages in self-protection mode. cnSGW-C excludes this rejection in the following manner:

- Excludes the dnn-list from rejection for any call level procedure when subscriber APN name (NI+OI) matches with *overload-exclude-profile*
- Excludes bearer modification or creation from rejection for any new or existing ARP (Priority-Level) value
- Excludes the delete bearer or the session operations, such as Delete Bearer Request, Delete Session Request, Delete Bearer command from rejection irrespective of the overload-exclude-profile configuration

Note   cnSGW-C does not support message throttling.

Feature Configuration

Configuring this feature involves the following steps:

- Configure Overload Exclude Profile. For more information, refer to Configuring Overload Exclude Profile, on page 5.
- Configure Overload-Profile, and enable Overload Exclude Profile and SGW-Profile Association. For more information, refer to Configuring the Overload-Profile and the SGW-Profile Association, on page 6.

Configuring Overload Exclude Profile

To configure the Overload Exclude profile, use the following configuration:

```
config
  profile overload-exclude overload_exclude_profile_name
    dnn-list list_of_dnn
    arp-list list_of_arp
    end
```

NOTES:

- **overload-exclude** *overload_exclude_profile_name*— Specify the exclude overload profile name.

- **dnn-list** *list_of_dnn*—Specify the list of DNNs that needs to be excluded from throttling decision. Maximum three entries are allowed.

- **arp-list** *list_of_arp*—Specify the ARP list that needs to be excluded from throttling decisions. Must be an integer in the range of 1-15. Maximum eight entries are allowed.

Configuration Example

The following is an example configuration.

```
config
   profile overload-exclude oe1
     dnn-list [ starent.com ]
     arp-list [ 1 2 ]
     end
```

Configuration Verification

To verify the configuration:

```
show running-config profile overload-exclude
profile overload-exclude oe1
dnn-list [ starent.com ]
arp-list [ 1 2 ]
end
```

Configuring the Overload-Profile and the SGW-Profile Association

The association of the Overload-Profile and the SGW-Profile, can be configured.

To configure this feature use the following configuration:

```
config
   profile overload overload_profile_name
       overload-exclude-profile self-protection self_protection_profile_name
   node-level
       tolerance
           minimum min_percentage
           maximum max_percentage
       reduction-metric
           minimum min_percentage
           maximum max_percentage
           advertise
           interval interval_value
           change-factor
           exit
       interface gtpc
           overloaded-action [ advertise ]
           exit
       exit
   exit
   profile load load_name
   load-calc-frequency load_calc_frequency_value
   load-fetch-frequency load_fetch_frequency_value
   advertise
   interval interval_value
```

```
            change-factor change_factor_value
            exit
            interface gtpc
            action advertise
            exit
exit
profile sgw sgw_name
load-profile profile_name
overload-profile overload_profile_name
end
```

NOTES:

- **overload** *overload_name*—Specify the overload protection profile name. Must be a string.

- **overload-exclude-profile**—Excludes profiles for overload scenarios.

- **self-protection** *overload_value*—Specify the profile to be excluded for self-protection. Must be a string.

- **tolerance minimum** *min_percentage*—Specify the minimum tolerance level below which the system is in a normal state. Must be an integer in the range of 1-100. The default value is 80.

- **tolerance maximum** *max_percentage*—Specify the maximum tolerance level above which the system is in a self-protection state. Must be an integer in the range of 1-100. The default value is 95.

- **reduction-metric minimum** *min_percentage*—Specify the percentage of reduction along with minimum tolerance-level for configuration. Must be an integer in the range of 1-100. The default value is 10.

- **reduction-metric maximum** *max_percentage*—Specify the percentage of reduction along with maximum tolerance-level for configuration. Must be an integer in the range of 1-100. The default value is 100.

- **interval** *interval_value*—Specify the advertising interval in seconds. Must be an integer in the range of 0-3600. The default value is 300 seconds.

- **validity** *validity_value*—Specify the validity period of the advertised OCI value in seconds. Must be an integer in the range of 1-3600. The default value is 600 seconds.

- **change-factor** *change_factor_value*—Specify the minimum change between current OCI and last indicated OCI, after which the advertising should happen. Must be an integer in the range of 1-20. The default value is five.

- **profile load** *load_name*—Specify the name of the load profile. Must be a string.

- **load-calc-frequency** *load_calc_frequency_value*—Specify the system load calculation interval in seconds. Must be an integer in the range of 5-3600. The default value is 10 seconds.

- **load-fetch-frequency** *load_fetch_frequency_value*—Specify the time interval in seconds at which the service pods fetch load from the cache pod. Must be an integer in the range of 5-3600. The default value is 10 seconds.

- **load-profile** *profile_name*—Specify the name of the load profile.

- **overload-profile** *overload_profile_name*—Specify the name of the overload profile.

Configuration Example

The following is an example configuration.

```
config
profile overload op
overload-exclude-profile self-protection <overload-exclude-profile-name>
node-level
tolerance minimum 5
tolerance maximum 50
reduction-metric minimum 50
reduction-metric maximum 100
advertise
interval 0
change-factor 1
exit
interface gtpc
overloaded-action [ advertise ]
exit
exit
exit
profile load lp
load-calc-frequency 120
load-fetch-frequency 15
advertise
interval 0
change-factor 1
exit
interface gtpc
action advertise
exit
exit
profile sgw <sgw_name>
load-profile <profile_name>
overload-profile <overload_profile_name>
end
```

Configuration Verification

To verify the configuration:

```
show running-config profile
profile sgw sgw1
load lp1
overload op1
end
```