3GPP TSG SA WG5 Meeting 136-e S5-212322

**Online, , 1st Mar 2021 - 9th Mar 2021**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson Hungary Ltd. | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Correcting YANG errors | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update YANG code to follow stage 2 definitions and correct earlier YANG compilation errors. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | YANG code does not compile and/or does not follow the stage 2 definitions | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | E.5.1.a, E.5.2, H.5.29, H.5.32 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | The CR is based on 211352, 212215 and 212288  Forge: <https://forge.3gpp.org/rep/sa5/MnS/tree/balazs-megacr-16-test> | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

***First change***

E.5.1a module \_3gpp-nr-nrm-bwp.yang

<CODE BEGINS>

module \_3gpp-nr-nrm-bwp {

yang-version 1.1;

namespace "urn:3gpp:sa5:\_3gpp-nr-nrm-bwp";

prefix "bwp3gpp";

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-common-managed-function { prefix mf3gpp; }

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-nr-nrm-gnbdufunction { prefix gnbdu3gpp; }

organization "3GPP SA5";

contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

description "Defines the YANG mapping of the BWP Information Object Class

(IOC) that is part of the NR Network Resource Model (NRM).";

reference "3GPP TS 28.541 5G Network Resource Model (NRM)";

revision 2021-01-25 { reference CR-0453; }

revision 2020-11-02 { reference CR-0409 ; }

revision 2019-10-28 { reference S5-193518 ; }

revision 2019-06-17 { reference "Initial revision"; }

typedef CyclicPrefix {

type enumeration {

enum NORMAL;

enum EXTENDED;

}

}

typedef BwpContext {

type enumeration {

enum DL;

enum UL;

enum SUL;

}

}

typedef IsInitialBwp {

type enumeration {

enum INITIAL;

enum OTHER;

}

}

grouping BWPGrp {

description "Represents the BWP IOC.";

reference "3GPP TS 28.541";

uses mf3gpp:ManagedFunctionGrp;

leaf bwpContext {

description "Identifies whether the object is used for downlink, uplink

or supplementary uplink.";

mandatory true;

type BwpContext;

}

leaf isInitialBwp {

description "Identifies whether the object is used for initial or other

BWP.";

mandatory true;

type IsInitialBwp;

}

leaf subCarrierSpacing {

description "Subcarrier spacing configuration for a BWP.";

reference "3GPP TS 38.104";

mandatory true;

type uint32 { range "15 | 30 | 60 | 120"; }

units kHz;

}

leaf cyclicPrefix {

description "Cyclic prefix, which may be normal or extended.";

reference "3GPP TS 38.211";

mandatory true;

type CyclicPrefix;

}

leaf startRB {

description "Offset in common resource blocks to common resource block 0

for the applicable subcarrier spacing for a BWP.";

reference "N\_BWP\_start in 3GPP TS 38.211";

mandatory true;

type uint32;

}

leaf numberOfRBs {

description "Number of physical resource blocks for a BWP.";

reference "N\_BWP\_size in 3GPP TS 38.211";

mandatory true;

type uint32;

}

}

augment "/me3gpp:ManagedElement/gnbdu3gpp:GNBDUFunction" {

list BWP {

description "Represents a bandwidth part (BWP).";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses BWPGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

<CODE ENDS>

***Next change***

## E.5.2 module\_3gpp-nr-nrm-ep.yang

<CODE BEGINS>

module \_3gpp-nr-nrm-ep {

yang-version 1.1;

namespace "urn:3gpp:sa5:\_3gpp-nr-nrm-ep";

prefix "ep3gpp";

import \_3gpp-common-ep-rp { prefix eprp3gpp; }

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-nr-nrm-gnbcucpfunction { prefix gnbcucp3gpp; }

import \_3gpp-nr-nrm-gnbcuupfunction { prefix gnbcuup3gpp; }

import \_3gpp-nr-nrm-gnbdufunction { prefix gnbdu3gpp; }

organization "3GPP SA5";

contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

description "Defines the YANG mapping of the NR related endpoint

Information Object Classes (IOCs) that are part of the NR Network

Resource Model (NRM).";

reference "3GPP TS 28.541 5G Network Resource Model (NRM)";

revision 2021-03-02 { reference CR-0434; }

revision 2021-01-16 { reference CR-0447; }

revision 2020-11-02 { reference CR-0409 ; }

revision 2020-03-02 { reference S5-201191; }

revision 2019-06-17 { reference "Initial revision"; }

feature EPClassesUnderGNBCUCPFunction {

description "Endpoint classes shall be contained under GNBCUCPFunction";

}

feature EPClassesUnderGNBCUUPFunction {

description "Endpoint classes shall be contained under GNBCUUPFunction";

}

feature EPClassesUnderGNBDUFunction {

description "Endpoint classes shall be contained under GNBDUFunction";

}

grouping EP\_E1Grp {

description "Represents the EP\_E1 IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.401";

uses eprp3gpp:EP\_Common;

}

grouping EP\_F1CGrp {

description "Represents the EP\_F1C IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

uses eprp3gpp:EP\_Common;

}

grouping EP\_F1UGrp {

description "Represents the EP\_F1U IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

uses eprp3gpp:EP\_Common;

}

grouping EP\_XnCGrp {

description "Represents the EP\_XnC IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.420";

uses eprp3gpp:EP\_Common;

}

grouping EP\_XnUGrp {

description "Represents the EP\_XnU IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.420";

uses eprp3gpp:EP\_Common;

}

grouping EP\_NgCGrp {

description "Represents the EP\_NgC IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

uses eprp3gpp:EP\_Common;

}

grouping EP\_NgUGrp {

description "Represents the EP\_NgU IOC.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

uses eprp3gpp:EP\_Common;

}

grouping EP\_X2CGrp {

description "Represents the EP\_X2C IOC.";

reference "3GPP TS 28.541, 3GPP TS 36.423";

uses eprp3gpp:EP\_Common;

}

grouping EP\_X2UGrp {

description "Represents the EP\_X2U IOC.";

reference "3GPP TS 28.541, 3GPP TS 36.425";

uses eprp3gpp:EP\_Common;

}

grouping EP\_S1UGrp {

description "Represents the EP\_S1U IOC.";

reference "3GPP TS 28.541, 3GPP TS 36.410";

uses eprp3gpp:EP\_Common;

}

augment "/me3gpp:ManagedElement/gnbcucp3gpp:GNBCUCPFunction" {

if-feature EPClassesUnderGNBCUCPFunction;

list EP\_E1 {

description "Represents the local end point of the logical link,

supporting E1 interface between gNB-CU-CP and gNB-CU-UP.";

reference "3GPP TS 28.541, 3GPP TS 38.401";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_E1Grp;

}

}

list EP\_F1C {

description "Represents the local end point of the control plane

interface (F1-C) between the DU and CU or CU-CP.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_F1CGrp;

}

}

list EP\_NgC {

description "Represents the local end point of the control plane

interface (NG-C) between the gNB and NG-Core entity.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_NgCGrp;

}

}

list EP\_XnC {

description "Represents the local gNB node end point of the logical

link, supporting Xn application protocols, to a neighbour NG-RAN node

(including gNB and ng-eNB). The Xn Application PDUs are carried over

SCTP/IP/Data link layer/Physical layer stack.";

reference "3GPP TS 28.541, 3GPP TS 38.420 subclause 7";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_XnCGrp;

}

}

list EP\_X2C {

description "Represents the local end point of the logical link,

supporting X2-C application protocols used in EN-DC, to a neighbour

eNB or en-gNB node.";

reference "3GPP TS 28.541, 3GPP TS 36.423";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_X2CGrp;

}

}

}

augment "/me3gpp:ManagedElement/gnbcuup3gpp:GNBCUUPFunction" {

if-feature EPClassesUnderGNBCUUPFunction;

list EP\_E1 {

description "Represents the local end point of the logical link,

supporting E1 interface between gNB-CU-CP and gNB-CU-UP.";

reference "3GPP TS 28.541, 3GPP TS 38.401";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_E1Grp;

}

}

list EP\_F1U {

description "Represents the local end point of the user plane

interface (F1-U) between the DU and CU or CU-UP.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_F1UGrp;

}

}

list EP\_NgU {

description "Represents the local end point of the NG user plane

(NG-U) interface between the gNB and UPF.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_NgUGrp;

}

}

list EP\_XnU {

description "Represents the one end-point of a logical link supporting

the Xn user plane (Xn-U) interface. The Xn-U interface provides

non-guaranteed delivery of user plane PDUs between two NG-RAN nodes.";

reference "3GPP TS 28.541, 3GPP TS 38.420";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_XnUGrp;

}

}

list EP\_X2U {

description "Represents the local end-point of a logical link supporting

the X2 user plane (X2-U) interface used in EN-DC.";

reference "3GPP TS 28.541, 3GPP TS 36.425";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_X2UGrp;

}

}

list EP\_S1U {

description "Represents the local end point of the logical link,

supporting S1-U interface towards a S-GW node.";

reference "3GPP TS 28.541, 3GPP TS 36.410";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_S1UGrp;

}

}

}

augment "/me3gpp:ManagedElement/gnbdu3gpp:GNBDUFunction" {

if-feature EPClassesUnderGNBDUFunction;

list EP\_F1C {

description "Represents the local end point of the control plane

interface (F1-C) between the DU and CU or CU-CP.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_F1CGrp;

}

}

list EP\_F1U {

description "Represents the local end point of the user plane

interface (F1-U) between the DU and CU or CU-UP.";

reference "3GPP TS 28.541, 3GPP TS 38.470";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EP\_F1UGrp;

}

}

}

}

<CODE ENDS>

***Next change***

## H.5.29 module \_3gpp-5gc-nrm-GtpUPathQoSMonitoringControl.yang

<CODE BEGINS>

module \_3gpp-5gc-nrm-GtpUPathQoSMonitoringControl {

yang-version 1.1;

namespace urn:3gpp:sa5:\_3gpp-5gc-nrm-GtpUPathQoSMonitoringControl;

prefix gupqmc3gpp;

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-5g-common-yang-types { prefix types5g3gpp; }

import \_3gpp-5gc-nrm-smffunction { prefix smf3gpp; }

import \_3gpp-common-top { prefix top3gpp; }

organization "3gpp SA5";

contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

description "This IOC represents the capabilities and properties for control

of GTP-U path QoS monitoring defined in 3GPP TS 23.501.";

reference "3GPP TS 28.541";

revision 2021-01-25 { reference CR-0453; }

revision 2020-11-05 { reference CR-0411 ; }

revision 2020-09-30 { reference "CR-0377"; }

revision 2020-08-03 { reference "CR-0321"; }

revision 2020-04-10 { reference "S5-202103"; }

grouping GtpUPathDelayThresholdsType {

description "Thresholds for reporting the packet delay for GTP-U path QoS

monitoring ";

reference "3GPP TS 29.244";

leaf n3AveragePacketDelayThreshold {

mandatory true;

type uint32;

}

leaf n3MinPacketDelayThreshold {

mandatory true;

type uint32;

}

leaf n3MaxPacketDelayThreshold {

mandatory true;

type uint32;

}

leaf n9AveragePacketDelayThreshold {

mandatory true;

type uint32;

}

leaf n9MinPacketDelayThreshold {

mandatory true;

type uint32;

}

leaf n9MaxPacketDelayThreshold {

mandatory true;

type uint32;

}

}

grouping GtpUPathQoSMonitoringControlGrp {

description "Represents the GtpUPathQoSMonitoringControl IOC.";

leaf gtpUPathQoSMonitoringState {

description "The state of GTP-U path QoS monitoring.";

mandatory true;

type enumeration {

enum ENABLED;

enum DISABLED;

}

}

list gtpUPathMonitoredSNSSAIs {

key "sd sst";

description "The S-NSSAIs for which the the GTP-U path QoS monitoring is

to be performed.";

reference "3GPP TS 23.003";

uses types5g3gpp:SNssai;

}

leaf-list monitoredDSCPs {

description "The DSCPs for which the GTP-U path QoS monitoring is to be

performed.";

reference "3GPP TS 29.244";

type uint32;

}

leaf isEventTriggeredGtpUPathMonitoringSupported {

description "It indicates whether the event triggered GTP-U path QoS

monitoring reporting based on thresholds is supported.";

mandatory true;

reference "3GPP TS 29.244";

type boolean;

}

leaf isPeriodicGtpUMonitoringSupported {

description "It indicates whether the periodic GTP-U path QoS monitoring

reporting is supported.";

mandatory true;

reference "3GPP TS 29.244";

type boolean;

}

leaf isImmediateGtpUMonitoringSupported {

description "It indicates whether the immediate GTP-U path QoS monitoring

reporting is supported.";

mandatory true;

reference "3GPP TS 29.244";

type boolean;

}

list gtpUPathDelayThresholds {

key n3AveragePacketDelayThreshold;

// if max-elements is increased later, the key may need to be modified

min-elements 1;

max-elements 1;

description "It specifies the thresholds for reporting the packet delay

for the GTO-U path QoS monitoring.";

uses GtpUPathDelayThresholdsType;

}

leaf gtpUPathMinimumWaitTime {

description "It specifies the minimum waiting time (in seconds) between

two consecutive reports for event triggered GTP-U path QoS monitoring

reporting.";

type uint32;

}

leaf gtpUPathMeasurementPeriod {

description "It specifies the period (in seconds) for reporting the packet

delay for GTP-U path QoS monitoring.";

type uint32;

}

}

augment "/me3gpp:ManagedElement/smf3gpp:SMFFunction" {

list GtpUPathQoSMonitoringControl {

description "Specifies the capabilities and properties for control of

GTP-U path QoS monitoring. For more information about the GTP-U path

QoS monitoring.";

reference "3GPP TS 23.501";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses GtpUPathQoSMonitoringControlGrp;

}

}

}

}

<CODE ENDS>

***Next change***

## H.5.32 module \_3gpp-5gc-nrm-PredefinedPccRuleSet.yang

<CODE BEGINS>

module \_3gpp-5gc-nrm-predefinedpccruleset {

yang-version 1.1;

namespace urn:3gpp:sa5:\_3gpp-5gc-nrm-predefinedpccruleset;

prefix PrePcRul3gpp;

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-5gc-nrm-smffunction { prefix smf3gpp; }

import \_3gpp-5gc-nrm-pcffunction { prefix pcf3gpp; }

import ietf-yang-types { prefix yang; }

organization "3gpp SA5";

contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

description "This IOC represents the predefined PCC rules, which are

configured to SMF and referenced by PCF.";

reference "3GPP TS 28.541";

revision 2021-01-25 { reference "CR-0453"; }

revision 2020-09-30 { reference "CR-0377"; }

revision 2020-08-21 { reference "CR-0330"; }

grouping TscaiInputContainer {

description "It specifies the transports TSCAI input parameters for TSC

traffic at the ingress interface of the DS-TT/UE for a PCC rule.";

reference "3GPP TS 29.512";

leaf periodicity {

type uint32;

description "It identifies the time period between the start of two bursts

in reference to the TSN GM.";

reference "3GPPTS 29.571.";

}

leaf burstArrivalTime {

type yang:date-and-time;

description "It Indicates the arrival time (in date-time format) of the

data burst in reference to the TSN GM.";

reference "3GPPTS 29.571.";

}

}

grouping ConditionData {

description "It specifies the specifies the condition data for a PCC rule.";

leaf condId {

type string;

mandatory true;

description "It uniquely identifies the condition data.";

}

leaf activationTime {

type yang:date-and-time;

description " It indicates the time (in date-time format) when the

decision data shall be activated.";

reference "3GPPTS 29.512 and TS 29.571.";

}

leaf deactivationTime {

type yang:date-and-time;

description "It indicates the time (in date-time format) when the decision

data shall be deactivatedTS 29.512 and TS 29.571.";

}

leaf accessType {

type enumeration {

enum 3GPP\_ACCESS;

enum NON\_3GPP\_ACCESS;

}

description "It provides the condition of access type of the UE when the

session AMBR shall be enforced.";

reference "3GPPTS 29.512.";

}

leaf ratType {

type enumeration {

enum NR;

enum EUTRA;

enum WLAN;

enum VIRTUAL;

enum NBIOT;

enum WIRELINE;

enum WIRELINE\_CABLE;

enum WIRELINE\_BBF;

enum LTE-M;

enum NR\_U;

enum EUTRA\_U;

enum TRUSTED\_N3GA;

enum TRUSTED\_WLAN;

enum UTRA;

enum GERA;

}

description "It provides the condition of RAT type of the UE when the

session AMBR shall be enforced.";

reference "3GPPTS 29.512 and TS 29.571.";

}

}

grouping SteeringMode {

description "It specifies the traffic distribution rule, see TS 29.512.";

leaf steerModeValue {

type enumeration {

enum ACTIVE\_STANDBY;

enum LOAD\_BALANCING;

enum SMALLEST\_DELAY;

enum PRIORITY\_BASED;

}

mandatory true;

description "It indicates the value of the steering mode, see TS 29.512.";

}

leaf active {

type enumeration {

enum 3GPP\_ACCESS;

enum NON\_3GPP\_ACCESS;

}

description "It indicates the active access, see TS 29.571.";

}

leaf standby {

type enumeration {

enum 3GPP\_ACCESS;

enum NON\_3GPP\_ACCESS;

}

description "It indicates the Standby access, see TS 29.571.";

}

leaf threeGLoad {

type uint8 {

range 0..100;

}

description "It indicates the traffic load to steer to the 3GPP Access

expressed in one percent.";

}

leaf prioAcc {

type enumeration {

enum 3GPP\_ACCESS;

enum NON\_3GPP\_ACCESS;

}

description "It indicates the high priority access.";

reference "3GPPTS 29.571.";

}

}

grouping UpPathChgEvent {

description "It specifies the information about the AF subscriptions of the

UP path change.";

reference "TS 29.512";

leaf notificationUri {

type string;

mandatory true;

description "It provides notification address (Uri) of AF receiving the

event notification.";

}

leaf notifCorreId {

type string;

mandatory true;

description "It is used to set the value of Notification Correlation ID in

the notification sent by the SMF, see TS 29.512.";

}

leaf dnaiChgType {

type enumeration {

enum EARLY;

enum EARLY\_LATE;

enum LATE;

}

mandatory true;

description "It indicates the type of DNAI change, see TS 29.512.";

}

leaf afAckInd {

type boolean;

default false;

description "It identifies whether the AF acknowledgement of UP path

event notification is expected.";

}

}

grouping RouteInformation {

description "It specifies the traffic routing information.";

leaf ipv4Addr {

type string;

description "It defines the Ipv4 address of the tunnel end point in the

data network, formatted in the dotted decimal notation.";

}

leaf ipv6Addr {

type string;

description "It defines the Ipv6 address of the tunnel end point in

the data network.";

}

leaf portNumber {

type uint32;

mandatory true;

description " It defines the UDP port number of the tunnel end point in

the data network, see TS 29.571.";

}

}

grouping RouteToLocation {

description "It specifies a list of location which the traffic shall be

routed to for the AF request.";

leaf dnai {

type string;

mandatory true;

description "It represents the DNAI (Data network access identifier.";

reference "3GPPTS 23.501.";

}

container routeInfo{

description "It provides the traffic routing information.";

uses RouteInformation;

}

leaf routeProfId {

type string;

description "It identifies the routing profile.";

}

}

grouping RedirectInformaton {

description "It specifies the redirect information for traffic control in

the PCC rule.";

leaf redirectEnabled {

type boolean;

mandatory true;

description "It indicates whether the redirect instruction is enabled.";

}

leaf redirectAddressType {

type enumeration {

enum IPV4\_ADDR;

enum IPV6\_ADDR;

enum URL;

enum SIP\_URI;

}

mandatory true;

description "It indicates the type of redirect address.";

reference "3GPPTS 29.512.";

}

leaf redirectServerAddress {

type string;

mandatory true;

description "It indicates the address of the redirect server.";

}

}

grouping TrafficControlDataInformation {

description "It specifies the traffic control data for a service

flow of a PCC rule.";

leaf tcId {

type string;

mandatory true;

description "It univocally identifies the traffic control policy data

within a PDU session.";

}

leaf flowStatus {

type enumeration {

enum ENABLED-UPLINK;

enum ENABLED-DOWNLINK;

enum ENABLED;

enum DISABLED;

enum REMOVED;

}

mandatory true;

description "It represents whether the service data flow(s) are enabled

or disabled.";

}

container redirectInfo {

description "It contains the redirect information indicating

whether the detected application traffic should be redirected to another

controlled address.";

uses RedirectInformaton;

}

container addRedirectInfo {

description "It contains the additional redirect information indicating

whether the detected application traffic should be redirected to another

controlled address.";

list redirectInfo {

description "The list of redirect information indicating whether the

detected application traffic should be redirected to another

controlled address.";

key "redirectServerAddress";

uses RedirectInformaton;

}

}

leaf muteNotif {

type boolean;

default false;

description "It indicates whether applicat'on's start or stop notification

is to be muted.";

}

leaf trafficSteeringPolIdDl {

type string;

description "It references to a pre-configured traffic steering policy for

downlink traffic at the SMF, see TS 29.512.";

}

leaf trafficSteeringPolIdUl {

type string;

description "It references to a pre-configured traffic steering policy for

uplink traffic at the SMF, see TS 29.512.";

}

container routeToLocs {

description "It provides a list of location which the traffic shall be

routed to for the AF request.";

list routeToLoc {

description "The list of location which the traffic shall be routed to

for the AF request.";

key "dnai";

uses RouteToLocation;

}

}

uses UpPathChgEvent;

leaf steerFun {

type enumeration {

enum MPTCP;

enum ATSSS\_LL;

}

description "It indicates the applicable traffic steering functionality.";

reference "3GPPTS 29.512.";

}

container steerModeDl {

description "It provides the traffic distribution rule across 3GPP and

Non-3GPP accesses to apply for downlink traffic.";

uses SteeringMode;

}

container steerModeUl {

description "It provides the traffic distribution rule across 3GPP and

Non-3GPP accesses to apply for uplink traffic.";

uses SteeringMode;

}

leaf mulAccCtrl {

type enumeration {

enum ALLOWED;

enum NOT\_ALLOWED;

}

description "It indicates whether the service data flow, corresponding to

the service data flow template, is allowed or not allowed.";

}

}

grouping ARP {

description "It specifies the allocation and retention priority of a QoS

control policy.";

leaf priorityLevel {

type uint8 {

range 1..15;

}

mandatory true;

description "It defines the relative importance of a resource request.";

}

leaf preemptCap {

type enumeration {

enum NOT\_PREEMPT;

enum MAY\_PREEMPT;

}

mandatory true;

description "It defines whether a service data flow may get resources that

were already assigned to another service data flow with a lower priority

level.";

}

leaf preemptVuln {

type enumeration {

enum NOT\_PREEMPTABLE;

enum PREEMPTABLE;

}

mandatory true;

description "It defines whether a service data flow may lose the resources

assigned to it in order to admit a service data flow with higher

priority level.";

}

}

grouping QosDataInformation {

description "It specifies the QoS control policy data for a service flow

of a PCC rule.";

leaf qosId {

type string;

mandatory true;

description "It identifies the QoS control policy data for a PCC rule.";

}

leaf fiveQIValue {

type uint8 {

range 0..255;

}

description "It indicates the 5QI value.";

}

leaf maxbrUl {

type string;

description "It represents the maximum uplink bandwidth.";

}

leaf maxbrDl {

type string;

description "It represents the maximum downlink bandwidth.";

}

leaf gbrUl {

type string;

description "It represents the guaranteed uplink bandwidth.";

}

leaf gbrDl {

type string;

description "It represents the guaranteed downlink bandwidth.";

}

uses ARP;

leaf qosNotificationControl {

type boolean;

default false;

description "It indicates whether notifications are requested from 3GPP

NG-RAN when the GFBR can no longer (or again) be guaranteed for a

QoS Flow during the lifetime of the QoS Flow.";

}

leaf reflectiveQos {

type boolean;

default false;

description "Indicates whether the QoS information is reflective for the

corresponding non-GBR service data flow";

}

leaf sharingKeyDl {

type string;

description "It indicates, by containing the same value, what PCC rules

may share resource in downlink direction.";

}

leaf sharingKeyUl {

type string;

description "It indicates, by containing the same value, what PCC rules

may share resource in uplink direction.";

}

leaf maxPacketLossRateDl {

type uint16 {

range 0..1000;

}

description "It indicates the downlink maximum rate for lost packets that

can be tolerated for the service data flow.";

}

leaf maxPacketLossRateUl {

type uint16 {

range 0..1000;

}

description "It indicates the uplink maximum rate for lost packets that

can be tolerated for the service data flow.";

}

leaf extMaxDataBurstVol {

type uint32 {

range 4096..2000000;

}

description "It denotes the largest amount of data that is required to

be transferred within a period of 5G-AN PDB, see TS 29.512.";

}

}

grouping EthFlowDescription {

description "It describes an Ethernet flow.";

leaf destMacAddr {

type string;

mandatory true;

description "It specifies the destination MAC address formatted in the

hexadecimal. .";

reference "clause 1.1 and clause 2.1 of IETF RFC 7042.";

}

leaf ethType {

type string;

mandatory true;

description "A two-octet string that represents the Ethertype.";

reference " IEEE 802.3 and IETF RFC 7042in hexadecimal representation.";

}

leaf fDesc {

type string;

description "It contains the flow description for the Uplink or Downlink

IP flow. It shall be present when the ethtype is IP.";

}

leaf fDir {

type enumeration {

enum DOWNLINK;

enum UPLINK;

}

mandatory true;

description "It indicates the packet filter direction.";

}

leaf sourceMacAddr {

type string;

mandatory true;

description "It specifies the source MAC address formatted in the

hexadecimal notation.";

reference "clause 1.1 and clause 2.1 of IETF RFC 7042";

}

leaf-list vlanTags {

type string;

description "It specifies the Customer-VLAN and/or Service-VLAN tags

containing the VID, PCP/DEI fields as defined in IEEE 802.1Qand

IETF RFC 7042. The first/lower instance in the array stands for the

Customer-VLAN tag and the second/higher instance in the array stands

for the Service-VLAN tag.";

}

leaf srcMacAddrEnd {

type string;

description "It specifies the source MAC address end. If this attribute

is present, the sourceMacAddr attribute specifies the source MAC address

start. E.g. srcMacAddrEnd with value 00-10-A4-23-3E-FE and sourceMacAddr

with value 00-10-A4-23-3E-02 means all MAC addresses

from 00-10-A4-23-3E-02 up to and including 00-10-A4-23-3E-FE.";

}

leaf destMacAddrEnd {

type string;

description "It specifies the destination MAC address end. If this

attribute is present, the destMacAddr attribute specifies the

destination MAC address start.";

}

}

grouping FlowInformation {

description "It specifies the flow information of a PCC rule.";

leaf flowDescription {

type string;

mandatory true;

description "It defines a packet filter for an IP flow.";

}

uses EthFlowDescription;

leaf packFiltId {

type string;

mandatory true;

description "It is the identifier of the packet filter.";

}

leaf packetFilterUsage {

type boolean;

default false;

description "It indicates if the packet shall be sent to the UE.";

}

leaf tosTrafficClass {

type string;

mandatory true;

description "It contains the Ipv4 Type-of-Service and mask field or the

Ipv6 Traffic-Class field and mask field.";

}

leaf spi {

type string;

mandatory true;

description "It is the security parameter index of the IPSec packet.";

reference "IETF RFC 4301";

}

leaf flowLabel {

type string;

description "It specifies the Ipv6 flow label header field.";

}

leaf flowDirection {

type enumeration {

enum DOWNLINK;

enum UPLINK;

enum BIDIRECTIONAL;

enum UNSPECIFIED;

}

mandatory true;

description "It indicates the direction/directions that a filter is

applicable.";

}

}

grouping PccRule {

description "It specifies the PCC rule, see TS 29.512.";

leaf pccRuleId {

type string;

mandatory true;

description "It identifies the PCC rule.";

}

container flowInfoList {

description "It is a list of IP flow packet filter information.";

list flowInfo {

description "The list of IP flow packet filter information.";

key "packFiltId";

uses FlowInformation;

}

}

leaf applicationId {

type string;

default false;

description "A reference to the application detection filter configured

at the UPF.";

}

leaf appDescriptor {

type string;

description "It is the ATSSS rule application descriptor.";

}

leaf contentVersion {

type uint8;

description "Indicates the content version of the PCC rule.";

}

leaf precedence {

type uint8 {

range 0..255;

}

description "It indicates the order in which this PCC rule is applied

relative to other PCC rules within the same PDU session.";

}

leaf afSigProtocol {

type enumeration {

enum NO\_INFORMATION;

enum SIP;

}

description "Indicates the protocol used for signalling between the UE

and the AF, the default value is NO\_INFORMATION.";

}

leaf isAppRelocatable {

type boolean;

default false;

description "It indicates the application relocation possibility, the

default value is NO\_INFORMATION.";

}

leaf isUeAddrPreserved {

type boolean;

default false;

description "It Indicates whether UE IP address should be preserved.";

}

container qosData {

description "It contains the QoS control policy data for a PCC rule.";

list qosDataInfo {

description "The list of QoS control policy data.";

key "qosId";

uses QosDataInformation;

}

}

container altQosParams {

description "It contains the QoS control policy data for the

Alternative QoS parameter sets of the service data flow.";

list qosDataInfo {

description "The list of QoS control policy data.";

key "qosId";

uses QosDataInformation;

}

}

container trafficControlData {

description "It contains the traffic control policy data for a PCC rule.";

list trafficControlDataInfo {

description "The list of traffic control policy data.";

key "tcId";

uses TrafficControlDataInformation;

}

}

uses ConditionData;

container tscaiInputUl {

description "It contains transports TSCAI input parameters for

TSC traffic at the ingress interface of the DS-TT/UE

(uplink flow direction).";

uses TscaiInputContainer;

}

container tscaiInputDl {

description "It contains transports TSCAI input parameters for TSC traffic

at the ingress of the NW-TT (downlink flow direction).";

uses TscaiInputContainer;

}

}

grouping PredefinedPccRuleSetGrp {

description "Represents the PredefinedPccRuleSet IOC.";

list PredefinedPccRules {

description "The list of predefined PCC rules.";

key "pccRuleId";

uses PccRule;

}

}

grouping PredefinedPccRuleSetSubtree {

description "It specifies the PredefinedPccRuleSet IOC with inherited

attributes.";

list PredefinedPccRuleSet {

description "Specifies the predefined PCC rules.";

key "id";

uses top3gpp:Top\_Grp;

container attributes {

description "It contains the attributes defined specifically in the

PredefinedPccRuleSet IOC.";

uses PredefinedPccRuleSetGrp;

}

}

}

augment "/me3gpp:ManagedElement/smf3gpp:SMFFunction" {

description "It specifies the containment relation of PredefinedPccRuleSet

MOI with SMFFunction MOI.";

uses PredefinedPccRuleSetSubtree;

}

augment "/me3gpp:ManagedElement/pcf3gpp:PCFFunction" {

description "It specifies the containment relation of PredefinedPccRuleSet

MOI with PCFFunction MOI.";

uses PredefinedPccRuleSetSubtree;

}

}

<CODE ENDS>

***End of changes***