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

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

|  |
| --- |
| *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** |

|  |
| --- |
|  |
| ***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 canbe 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 212288Forge: <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***