Dynamic ARP Functionality for PC and PV

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	PCF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
Enhancement introduced. PCF supports N5 Interface.	2022.02.0
First introduced.	2021.04.0

Feature Description

PCF supports the dynamic ARP feature to send the same Priority-Level value in the dedicated bearers as that of the default bearer.

The dynamic ARP functionality is extended to Preemption Capability (PC) and Preemption Vulnerability (PV).

The PC parameter defines whether a bearer with a lower priority level can be dropped to free up the required resources.

The PV parameter defines whether a bearer is applicable for such dropping by a preemption capable bearer with a higher priority value.

To support this functionality for Rx interface, add two new columns, Rx_Dynamic_Vulnerability and Rx_Dynamic_Capability to the Rx_QoS_Table and for N5 interface, add two new columns, N5_Dynamic_Vulnerability and N5_Dynamic_Capability to the N5_QoS_Table.

How it Works

This section describes how this feature works.

For a WPS user, the default bearer ARP value includes a Priority-Level value with PC set to enabled and PV set to disabled.

In case, when a non-WPS user calls a WPS user in Rx interface, the dynamic ARP attribute in the Rx_QoS_Table initiates the PCF to set the Priority-Level value in the dedicated bearer rules to match that of the default bearer value. But the PVI/PCI values sent in the dedicated bearer rules use the enforced values from the Rx_QoS_Table (typically PVI enabled, PCI disabled).

In case, when a non-WPS user calls a WPS user in N5 interface, the dynamic ARP attribute in the N5_QoS_Table initiates the PCF to set the Priority-Level value in the dedicated bearer rules to match that of the default bearer value. But the PVI/PCI values sent in the dedicated bearer rules use the enforced values from the N5_QoS_Table (typically PVI enabled, PCI disabled).

For WPS user, if dynamic ARP attribute for PVI and PCI is set to "D", then the PVI and PCI values will be mirrored from the default bearer instead using the configured Rx QoS Table values in Rx interface and configured N5 QoS Table values in N5 interface.

Configuring CRD Table and RxSTGConfiguration AVP

Configuring CRD table and RxSTGConfiguration AVP involves the following steps:

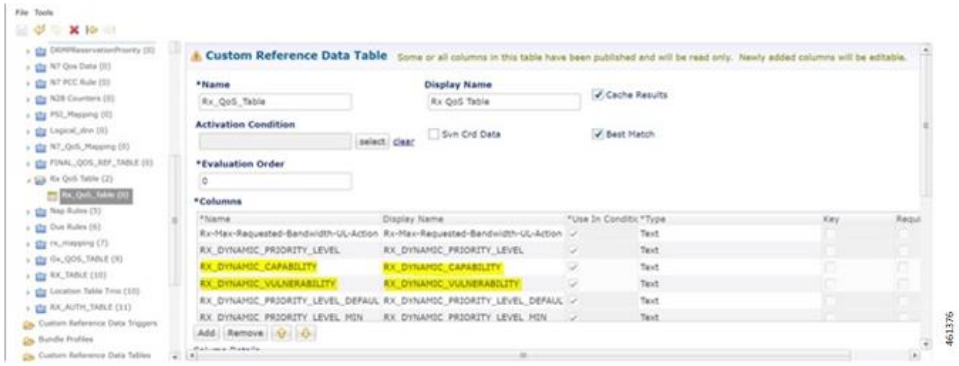
Adding Rx_Dynamic_Capability and Rx_Dynamic_Vulnerability

To add Rx_Dynamic_Capability and Rx_Dynamic_Vulnerability columns to the Rx_QoS CRD table, use the following steps:

1. Log in to Policy Builder.

2. Click the **Reference Data** tab, and from the left pane click **Custom Reference Data Tables** to view the options.
3. On the left pane, expand the **Search Table Groups** folder.
4. Expand the **Rx_QoS_Table** sub folder of **Search Table Groups** and click the.**Rx_QoS_Table**
5. Go to the ***Columns** field and click the **Add**.
6. Add the column **Name** and **Display Name** as **RX_DYNAMIC_CAPABILITY** and **RX_DYNAMIC_VULNERABILITY**.

Figure 1: Adding Rx_Dynamic_Capability and Rx_Dynamic_Vulnerability



Configuring RxSTGConfiguration AVP

This section describes the parameters that can be configured for RxSTGConfiguration.

The RxSTGConfiguration service configuration supports the following output AVPs that allow the dynamic value expression.

Before setting the service parameters, ensure that you create a use case template and add a service for this configuration. For details, see Configuring the Use Case Template and Adding a Service, on page 230.

The following table describes the RxSTGConfiguration service parameter.

Table 3: RxSTGConfiguration ParameterD

Parameters	Description
Dynamic-QoS-ARP-Pre-Emption-Capability	If the value is configured as "D" then the feature is enabled for PC. If the value is configured with any other value except "D" or is empty then the feature is disabled for PC.
Dynamic-QoS-ARP-Pre-Emption-Vulnerability	If the value is configured as "D" then the feature is enabled for PV. If the value is configured with any other value except "D" or is empty then the feature is disabled for PV.

Configuring CRD Table and N5STGConfiguration AVP

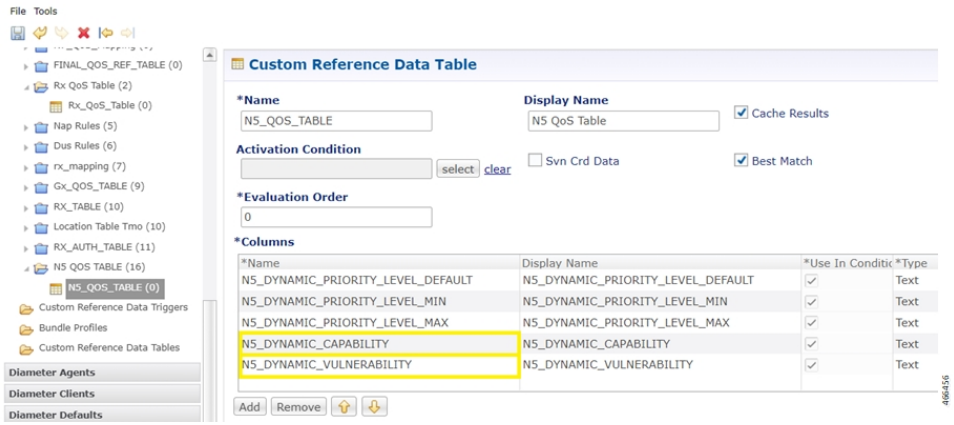
Configuring CRD table and N5STGConfiguration AVP involves the following steps:

Adding N5_Dynamic_Capability and N5_Dynamic_Vulnerability

To add N5_Dynamic_Capability and N5_Dynamic_Vulnerability columns to the N5_QoS CRD table, use the following steps:

1. Log in to Policy Builder.
2. Click the **Reference Data** tab, and from the left pane click **Custom Reference Data Tables** to view the options.
3. On the left pane, expand the **Search Table Groups** folder.
4. Expand the **N5_QoS_Table** sub folder of **Search Table Groups** and click the **N5_QoS_Table**.
5. Go to the ***Columns** field and click the **Add**.
6. Add the column **Name** and **Display Name** as **N5_DYNAMIC_CAPABILITY** and **N5_DYNAMIC_VULNERABILITY**.

Figure 2: Adding N5_Dynamic_Capability and N5_Dynamic_Vulnerability



Configuring N5STGConfiguration AVP

This section describes the parameters that can be configured for N5STGConfiguration.

The N5STGConfiguration service configuration supports the following output AVPs that allow the dynamic value expression.

Before setting the service parameters, ensure that you create a use case template and add a service for this configuration. For details, see Configuring the Use Case Template and Adding a Service, on page 230.

The following table describes the N5STGConfiguration service parameter.

Table 4: N5STGConfiguration ParameterD

Parameters	Description
Dynamic-QoS-ARP-Pre-Emption-Capability	If the value is configured as "D" then the feature is enabled for PC. If the value is configured with any other value except "D" or is empty then the feature is disabled for PC.
Dynamic-QoS-ARP-Pre-Emption-Vulnerability	If the value is configured as "D" then the feature is enabled for PV. If the value is configured with any other value except "D" or is empty then the feature is disabled for PV.

OAM Support

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

Bulk Statistics Support

The following statistics are supported for the dynamic ARP functionality for PC and PV feature.

Note The following values apply to all the statistics:

- Unit - Int64
- Type - Counter
- Nodes - Service

- qos_rule_pc_total - Indicates the number of N5/N7/Rx rule installs (per qci/Media Type) provisioned with dynamic QoS PCI.

  The following labels are defined for this metric:

  - Interface
    - N5
    - N7
    - Rx
  - type
    - default_qos_pc
    - dynamic_qos_pc
  - identifier
    - qci

- media-type

- arp_pc

- qos_rule_pv_total - Indicates the number of N5/N7/Rx rule installs (per qci/Media Type) provisioned with dynamic QoS PVI.

  The following labels are defined for this metric:

  - Interface
    - N5
    - N7
    - Rx
  - type
    - default_qos_pv
    - dynamic_qos_pv
  - identifier
    - qci
    - media-type
  - arp_pv

Modified Stats

Table 5: Modified Stats

Old Stats	New Stats	Description

qos_rule_total	qos_rule_pl_total	Indicates the number of N5/N7/Rx rule installs (per qci/Media Type) provisioned with dynamic QoS PL.
		The following labels are defined for this metric:
		• Interface
		  • N5
		  • N7
		  • Rx
		• type
		  • default_qos_pl
		  • dynamic_qos_pl
		• identifier
		  • qci
		  • media-type
		• arp_pl