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Source(s)	Joël Demarty, Ambroise Popper SEQUANS Communications mailto:joel@sequans.com mailto:ambroise@sequans.com
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Corrections and Clarifications on QoS parameter set

1 Current text ambiguities and inconsistencies

The term “QoS Parameter Set” is used several times in the specification although it is never defined.

“QoS parameters” should be restricted to some sub-TLV of the SF Management Encoding TLV.

But without a clear definition, the “QoS Parameter Set” could apply to any sub-TLVs of the SF Management Encoding TLV. Pushed to the limit, one could even wonder whether admission-control could be applied to SDU size, ARQ parameters, CS-specific Parameters, etc…

For instance, a DSx message can contains multiple SF Management Encodings (type [145/146]) in the same message. What would be the actual meaning of multiple CS encodings in multiple SF Management Encodings? What a BS shall do if some classifiers are specified in a Provisioned SF Encoding and others are specified in an Active SF encoding?

The text of the standard should be corrected to remove this ambiguity.

The best solution would be to put all the QoS parameters inside a compound TLV but it is too late to change the specification this way. A practical change is to restrict the use of non-QoS sub-TLVs to only the first SF Management Encoding. Subsequent SF Management Encodings TLVs should only contain sub-TLVs belonging to the QoS parameter set. The next section describes the proposed changes to implement this solution.

2 Proposed Text Changes

[Modify §6.3.5]

6.3.5 **Scheduling services**

Scheduling services represent the data handling mechanisms supported by the MAC scheduler for data transport on a connection. Each connection is associated with a single data service. Each data service is associated with a set of QoS parameters which quantify aspects of its behavior. The QoS parameters are listed in 11.13.4.

These parameters are managed using the DSA and DSC message dialogs. Four services (11.13.11) are supported: Unsolicited Grant Service (UGS), Real-time Polling Service (rtPS), Non-real-time Polling Service (nrtPS), and Best Effort (BE). The following text provides a brief description of each of the supported scheduling services, including the mandatory QoS parameters that shall be included in the service flow definition when the scheduling service is enabled for a service flow. A detailed description of each QoS parameter is provided in 11.13.

[Modify § 6.3.14.2, footnote n, p221]

To say that QoS Parameter Set A is a subset of QoS Parameter Set B the following shall be true for all QoS Parameters in A and B:

if (a smaller QoS parameter value indicates less resources, e.g., Maximum Traffic Rate)
A is a subset of B if the parameter in A is less than or equal to the same parameter in B
if (a larger QoS parameter value indicates less resources, e.g., Tolerated Grant Jitter)
A is a subset of B if the parameter in A is greater than or equal to the same parameter in B
if (the QoS parameter is not quantitative~~, e.g., Service Flow Scheduling Type~~)
A is a subset of B if the parameter in A is equal to the same parameter in B
[examples removed because SF Scheduling Type is not a QoS Parameter]

[Modify §11.13.4]

11.13.4 **QoS parameter set type**

This parameter shall appear within every service flow encoding. It specifies the proper application of the QoS Parameter Set: to the Provisioned set, the Admitted set, and/or the Active set. The QoS Parameter Set is a subset of the following parameter set:

- traffic priority (11.13.5)
- maximum sustained traffic rate (11.13.6)
- maximum traffic burst (11.13.7)
- minimum reserved traffic rate (11.13.8)
- minimum tolerable traffic rate (11.13.9)
- vendor specific QoS parameters (11.13.10)
- tolerated jitter (11.13.13)
- maximum latency (11.13.14)

When two QoS Parameter Sets are the same, a multibit value of this parameter may be used to apply the QoS parameters to more than one set. A single message may contain multiple QoS parameter sets in separate type 145/146 service flow encodings for the same service flow. This allows specification of the QoS Parameter Sets when their parameters are different. Non-QoS parameters shall appear only in the first Service Flow Management Encodings. Bit 0 is the LSB of the Value field.

For every service flow that is preprovisioned and for every provisioned service flow added after SS initialization, there shall be a service flow encoding that specifies a ProvisionedQoSParamSet. This service flow encoding, or other service flow encoding(s), may also specify an Admitted and/or Active set.

A BS shall handle a single update to each of the Active and Admitted QoS parameter sets. The ability to process multiple service flow encodings that specify the same QoS parameter set is not required and is left as a vendor-specific function. If a DSA/DSC contains multiple updates to a single QoS parameter set and the vendor does not support such updates, then the BS shall reply with CC 2 (reject-unrecognized-configuration-setting).