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TESTING

Euro-PacketCable Multimedia Stability

--- Project Reference ---

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1 Introduction

The goal of this document is to define a lab set up that will be used to test the stability of the different components that will be tested during Euro-PacketCable Multimedia qualification testing.

The components that are within the scope of the qualification process are CMTS and PS.

As stability problems are mainly caused by complex interactions within the components, it is important that a mix of different QoS flows is used. This especially means different traffic profiles (Flowspecs, Service Class Names, Euro-DOCSIS specific parameters) and parameter sets.

2 Test scenario

2.1 CMTS

By using a mix of QoS-flows over an 8 hours period and verifying that all requirements are correctly fulfilled the stability of the CMTS will be verified. It is required that a CMTS supports at least 2 Policy Server connections at the same time. During the tests, security will be enabled.

As upstream bandwidth 3,2 MHz and a mixed modulation profile is used (QPSK for ranging and request, 16QAM for data), this provides a raw bandwidth of 10,24 MBit/s.

During the stability test, traffic will be sent on all non-primary (dynamically set up through COPS signalling) Service Flows. All traffic sent on a certain modem's upstream service flow will subsequently be sent to one of the other modems on a downstream service flow.

Extra data traffic will be added over the primary Best-Effort flows. Two scenarios will be used:

- a data load which does not overload the system: packet-loss over the non-primary flows should be small
- a data load which overloads the system: goal is to verify if the QoS-enabled data traffic has full priority over the data-traffic which is sent over the primary Best-Effort flow

In total 40 Euro-DOCSIS 1.1/2.0 certified modems will be connected to the CMTS under test. 10 Modems will only have primary Best Effort Flows. 30 Modems will have Service flows set up by COPS signalling.

These 30 modems are split up in 5 groups of 6 modems.

The following paragraphs show how the different service flows are set up amongst the different modem groups. Please note that the indicated parameter values are examples. The values actually used during testing may differ slightly. In all cases it will be made sure that with the used values all service flows fit within the total bandwidth.

2.1.1 Group 1

Each modem of group 1 will have the following service flows:

2 UGS upstream Service Flows:

Flow Nr	Nom Grant Int	Unsol Grant Size	Tol Grant Jitt
1	10 ms	156 bytes	800 usec
2	20 ms	200 bytes	800 usec

1 UGS-AD upstream Service Flow:

Flow Nr	Nom Grant Interval	Unsol Grant Size	Tol Grant Jitter	Nom Poll jitter	Tol Poll Jitter
3	10 ms	156 bytes	800 usec	50ms	5ms

2 DS Service Flows:

- the returnpath of flow nr 4
- the returnpath of flow nr 10

2.1.2 Group 2

Each modem of **group 2** will have the following service flows:

1 BE upstream Service Flow

Flow Nr	Max Sust Rate	Max Tr Burst	Min Res Rate	Min RR Pkt Size
4	14000	1522	12000	120

2 RTPS upstream Service Flows

Flow Nr	Nom Poll Int	Tol Poll Jitter	Max Sust Rate	Max Tr Burst	Min Res Rate	Min RR Pkt Size
5	50ms	5ms	30000	1522	25000	90
6	100ms	10ms	15000	1522	0	0

3 DS Service Flows:

- the returnpath of flow nr 1
- the returnpath of flow nr 7
- the returnpath of flow nr 13

2.1.3 Group 3

Each modem of **group 3** will have the following service flows:

2 NRTPS upstream Service Flows

Flow Nr	Nom Poll Int	Max Sust Rate	Max Tr Burst	Min Res Rate	Min RR Pkt Size
7	50ms	100000	1800	0	0
8	100ms	80000	1700	20000	250

3 DS Service Flows:

- the returnpath of flow nr 2
- the returnpath of flow nr 12
- the returnpath of flow nr 5

2.1.4 Group 4

Each modem of **group 4** will have the following service flows:

1 UGS upstream Service Flow

Flow Nr	Nom Grant Int	Unsol Grant Size	Tol Grant Jitt
9	30 ms	150 bytes	800 usec

1 RTPS upstream Service Flow

Flow Nr	Nom Poll Int	Tol Poll Jitter	Max Sust Rate	Max Tr Burst	Min Res Rate	Min RR Pkt Size
10	100ms	5ms	50000	1522	5000	100

1 NRTPS upstream Service Flow

Flow Nr	Nom Poll Int	Max Sust Rate	Max Tr Burst	Min Res Rate	Min RR Pkt Size
11	50ms	90000	1522	1000	100

2 DS Service Flows:

- the returnpath of flow nr 3
- the returnpath of flow nr 8

2.1.5 Group 5

Each modem of **group 5** will have the following service flows:

2 BE upstream Service Flows:

Flow Nr	Max Sust Rate	Max Tr Burst	Min Res Rate	Min RR Pkt Size
12	14000	2000	12000	120
13	40000	1522	20000	250

3 DS Service Flows:

- the returnpath of flow nr 6
- the returnpath of flow nr 9
- the returnpath of flow nr 11

2.2 Policy Server

By using a mix of QoS-flows over an 8 hours period and verifying that all requirements are correctly fulfilled the stability of the PS will be verified. It is required that a PS supports at least 2 CMTSs and 2 AMs at the same time.

2 Application Manager simulators and 2 CMTS simulators will send all kinds of different gate control messages to the PS. In the PS, different policy rules will be configured. These will trigger a QoS-request to be allowed or rejected. It will be verified that the PS takes correct actions upon all messages (accepting or denying QoS-requests, sending event messages), and if it remains stable. The tests are done with security enabled (IPsec/IKE-).