Sunrise Telecom's IntelliSAM™ for Service Activation Testing

SUNRISE TELECOM®
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DATA SHEET

RxT

XTT 5000

Comprehensive Carrier Ethernet Service Activation Test Suite

ITU-T Y.1564, formerly known as Y.156SAM, is the Ethernet Service Activation Test Methodology, created to ensure that service providers can do a proper job of verifying the correct configuration and performance of Ethernet services at the time of service activation. Sunrise Telecom helped drive the ITU-T Y.1564SAM from its first generation set of capabilities, which included CIR/EIR/Traffic Policing testing, to its second generation, which expanded the bandwidth profile coverage to CIR/CBS/EIR/EBS/CM/Traffic Policing testing capability.

Y.1564 Test Methodology is broken into two parts, The Service Configuration Test which finds and corrects configuration problems, and the Service Performance Test, which verifies that the performance meets the Service Acceptance Criteria and is stable over time. With IntelliSAM, measurement results are displayed and can be saved for both tests.

IntelliSAM Benefits

- Tests five out of six bandwidth profile parameters, as described in MEF 10.2; the tested parameters are CIR, EIR, CBS, EBS, CM
- Fast testing method, more adapted to the Service Activation Testing environment
- Tests multiple streams at the same time in Service Performance test
- Tests to Service Level Agreements rather than to network failure
- Tests network rather than a single device
- Availability per ITU-T Y.1563 is calculated and presented to technician
- Measures Frame Delay on every frame
- Tests Frame Delay Variation

Service Configuration Test

IntelliSAM's Service Configuration Test validates that services are configured as intended. Each service is tested individually, and all services are tested sequentially. The following tests are performed:

- Committed Information Rate (CIR) Configuration Test
- Excess Information Rate (EIR) Configuration Test, Color Aware or Non-Color-Aware mode
- Traffic Policing Test, Color-Aware or Non-Color-Aware mode
- Committed Burst Size (CBS) Configuration Test
- Excess Burst Size (EBS) Configuration Test, Best Effort (CIR=0), Color-Aware or Non-Color-Aware mode

CIR Configuration Test

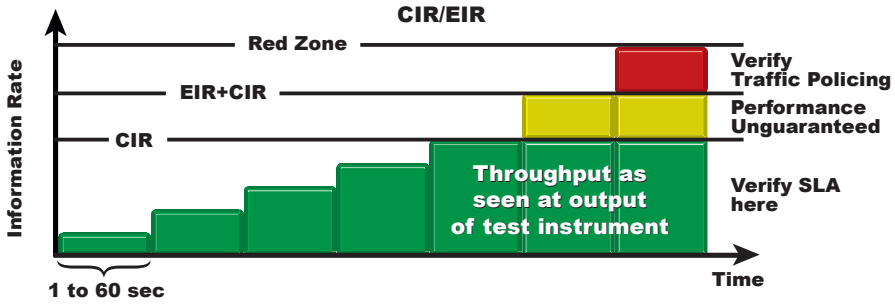
In CIR test, test traffic is generated in steps up to CIR. The Information Rate (IR), Frame Loss Rate (FLR), Round-Trip Frame Delay (RTFD), Frame Delay Variation (FDV), and Severely Errored Seconds (SES) are measured and compared to the Service Acceptance Criteria at each step. If the results are within limits set by the user, the CIR test is successful.

EIR Configuration Test

Test traffic is generated to CIR and then to EIR. IR, FLR, RTFD, FDV, and SES are measured for green and yellow traffic if the service is color-aware. This test is successful if all measured parameters for green frames are within the limits, set by the user. For non-color-aware mode, only IR is considered for the final verdict.

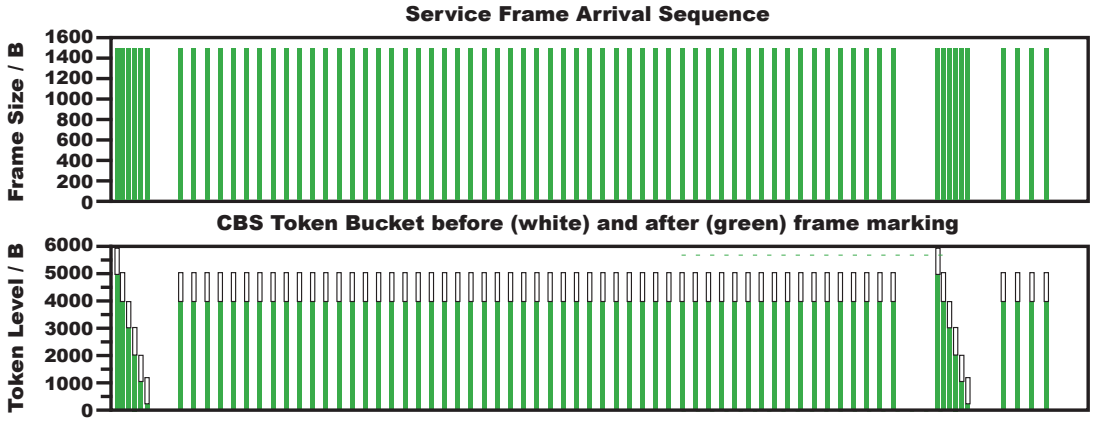
Traffic Policing Test

In the traffic policing test, test traffic is sent faster than CIR + EIR, in order to check if the traffic policing function is working correctly. IR, FLR, RTFD, FDV are measured and compared with the Service Acceptance Criteria. For a color-aware service, the test is successful if the measured parameters for green traffic are within the limits. For color-unaware service, only the IR results are considered.



CBS Configuration Test

The CBS Configuration Test uses a single procedure for color aware and non-color-aware services. IntelliSAM generates traffic at CIR rate, then generates a burst with the characteristics specified by the user. This procedure is repeated several times, as specified by the user. IR, FLR, RTFD, and FDV are measured and compared with Service Acceptance Criteria. If the results are within limits set by the user, the CBS test is successful.



EBS Configuration Test

IntelliSAM uses three EBS Configuration Tests, one for the special case where the CIR is zero (Best Effort service), one for color-aware, and one for non-color-aware. IR, FLR, RTFD, and FDV are measured during the test and compared with Service Acceptance Criteria. For a color-aware service, the test is successful if the measured parameters for green traffic are within the limits. For non-color-aware service, only the IR results are considered.

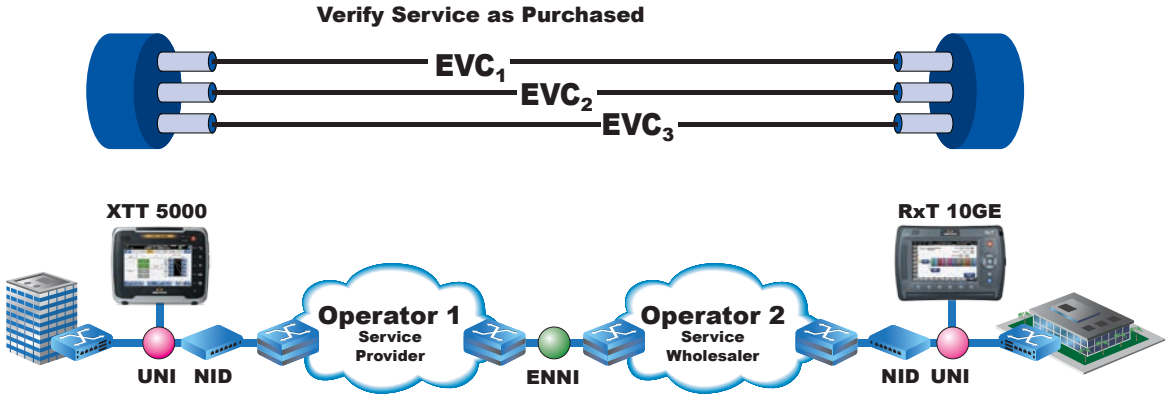
Service Performance Test

In a Service Performance Test, all configured services run simultaneously at their respective CIR. The minimum recommended time is 15 minutes. IR, FLR, RTFD, FDV, and availability are measured for each service and compared with Service Acceptance Criteria for that service. The test is successful if the measured parameters are within the limits for each service.

Service Performance Test:

For all flows simultaneously the following measurements are made for 15 minutes to 24 hours within CIR:

- RTFD, FDV, FLR, AVAILABILITY



Specifications

Based on ITU-T Y.1564, formerly known as Y.156sam

Test Parameters

- Service Configuration and Service Performance tests; each test can be turned on/off
- Tests up to 16 services
- Start Mode: Manual, Programmed
- Save Mode: Manual, Auto
- Frame length setting per service, 60 to 12,000 bytes
- Payload pattern setting per service

  PRBS 2^{31}-1, 2^{23}-1, 2^{20}-1, 2^{15}-1

  User Patterns

  - Pre-defined: 1111, 0000, 1010

  - User-defined: 32-bits, 1,024 bits, 10 stored patterns per port

  Pattern inversion

Bandwidth Profile

- Bandwidth profile support per MEF10.2
- Bandwidth profile setting per service
- Bandwidth Profile preset table; default values for CIR, EIR, CBS, EBS; Values can be edited and saved by the user

Service Acceptance Criteria

- Service Acceptance Criteria setting per service
- Service Acceptance Criteria preset table; default values for thresholds; values can be edited and saved by the user
- Thresholds for

  Frame Delay Variation (Microseconds)

  Round-Trip Frame Delay (Microseconds)

  Frame Loss (%)

  Frame Loss for Availability (%)

  Availability
- User editable label for each set of Service Acceptance Criteria

Service Configuration Test

Tests the following parameters of the MEF 10.2 Bandwidth Profile:

- Committed Information Rate (CIR)
- Committed Burst Size (CBS)
- Excess Information Rate (EIR)
- Excess Burst Size (EBS)
- Color Mode (CM)

Performs following tests:

- Committed Information Rate Configuration Test
- Excess Information Rate Configuration Test, color-aware or non-color-aware mode
- Traffic Policing Test, color-aware or non-color-aware mode
- Committed Burst Size Configuration Test
- Excess Burst Size Configuration Test, Best Effort (CIR=0), Color-Aware or Non-Color-Aware mode

Each test can be turned on/off

Committed Information Rate (CIR) Configuration Test

Ramp Traffic:

- Start Bandwidth (1% to 100% of CIR)
- Stop Bandwidth (1% to 100% of CIR)
- Step Bandwidth (1% to 100% of CIR)
- Duration 1 to 60 seconds

Test results for each step of the ramp and each service

- Test Status: Pass/Fail
- Test duration in ms
- Minimum, maximum, average received Information Rate in Mb/s
- Frame Loss Ratio in %
- Minimum, maximum, average Round-Trip Frame Delay in microseconds
- Minimum, maximum, average Frame Delay Variation in microseconds
- Severely Errored Seconds (SES)

Excess Information Rate (EIR) Configuration Test

Supports color-aware and non-color-aware modes

Test results for each Service

- Test duration in ms
- Pass/Fail for green traffic in color-aware mode
- Detailed results for
  - Green, yellow, and total traffic in color-aware mode
  - Total traffic in non-color-aware mode
- Minimum, maximum, average received Information Rate in Mb/s
- Frame Loss Ratio in %
- Minimum, maximum, average Round-Trip Frame Delay in microseconds
- Minimum, maximum, average Frame Delay Variation in microseconds
- Severely Errored Seconds (SES)

Traffic Policing test

Supports color-aware and non-color-aware modes

Test results for each Service

- Test duration
- Pass/Fail for green traffic in color-aware mode
- Detailed results for
  - Green, yellow, and total traffic in color-aware mode
  - Total traffic in non-color-aware mode
- Minimum, maximum, average received Information Rate in Mb/s
- Frame Loss Ratio in %
- Minimum, maximum, average Round-Trip Frame Delay in microseconds
- Minimum, maximum, average Frame Delay Variation in microseconds
- Severely Errored Seconds (SES)

Committed Burst Size (CBS) Configuration Test*

Advanced setting for CBS/EBS testing:

- Margin Type: % of CBS/EBS, CIR/EIR times Duration, Multiples of MTU
- Burst Duty Cycle
- Number of test cycles

Test results for each service

- Test Duration
- Status: Pass/Fail
- Minimum, maximum, average received Information Rate in Mb/s
- Frame Loss Ratio in %
- Minimum, maximum, average Round-Trip Frame Delay in microseconds
- Minimum, maximum, average Frame Delay Variation in microseconds
- Severely Errored Seconds (SES)

Excess Burst Size (EBS) Configuration Test*

Supports color-aware and non-color-aware modes

Supports CIR=0, Best Effort mode

Test results for each Service

- Test duration
- Pass/Fail for green traffic in color-aware mode
- Detailed results for
  - Green, yellow, and total traffic in color-aware mode
  - Total traffic in non-color-aware mode
- Minimum, maximum, average received Information Rate in Mb/s
- Frame Loss Ratio in %
- Minimum, maximum, average Round-Trip Frame Delay in microseconds
- Minimum, maximum, average Frame Delay Variation in microseconds
- Severely Errored Seconds (SES)

Service Performance Test

Tests up to 16 services, running simultaneously at their CIR

Test Duration: 15 minutes, 2 hours, 24 hours, Continuous, User defined

Availability measurement per ITU-T Y.1563

For each service:

- Status: Pass/Fail
- Minimum, maximum, average received Information Rate in Mb/s
- Frame Loss Ratio in %
- Minimum, maximum, average Round-Trip Frame Delay in microseconds
- Minimum, maximum, average Frame Delay Variation in microseconds
- Severely Errored Seconds
- Availability (seconds, %)
- Unavailability (seconds, %)

Other Test Parameters

Layer 2 MAC

User-defined EtherType/Length field

Optional LLC and SNAP Header

Layer 3 MAC + IP

User-defined IP Header

TOS, ID, Fragmentation, TTL, Protocol

Layer 4 MAC + IP + TCP/UDP

User-defined TCP Ports and Header

User-defined UDP Ports

VLAN

VLAN ID: 0 to 4095

Priority: 0 to 7

Stacked VLAN: Up to 3 VLAN tags

MPLS

Up to 3 MPLS tags

Unicast or Multicast

Save Results, Report Generation

Please refer to product data sheet.

Supported Products

This feature is currently supported on the RxT 10GE module and the XTT 5000.

Order Information

Please refer to the product's data sheet.

IntelliSAM™

** Available on RxT 10GE only*

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