

# ob-udpst output mapping to (current) JSON and TR-471 info model

OB UDP Speed Test

Exported on 02/24/2022

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# 1 Introduction

At the [May 28, 2021 project meeting](#)<sup>1</sup>, we set the stage for some [OBUDPST-17](#)<sup>2</sup> JSON output label revisions in the near term.

**2 passes** (slightly clarified from the meeting notes)

- - first pass is to produce the JSON output for the **easy-to-capture text output**, and the test context/configuration (elements for the Minimum Profile are included below).
  - Completed documenting the First Pass on  [22 Sep 2021](#) and moved the table to section 4 below.
- - Next - work JSON for the entire MINIMUM Profile - section 3 table below

**Next**, we began a series of updates to track new JSON output (section 2). Green rows indicate additions or changes.

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<sup>1</sup> <https://wiki.broadband-forum.org/x/6AGsBg>

<sup>2</sup> <https://issues.broadband-forum.org/browse/OBUDPST-17>

## 2 Updated Rosetta Stone (JSON Implemented in Release 7.4.0)

Table below starts with Test context and Input configuration info, then output (results). "X" = Part of Minimum Profile.

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"Interface": "",	<p><b>Table 1:</b> Interface <b>TR-181</b></p> <p>The value MUST be the Path Name of a table row. The IP-layer interface over which the test is to be performed. Example: Device.IP.Interface.1</p> <p>If an empty string is specified, the device MUST use the interface as directed by its routing policy (<i>Forwarding</i> table entries) to determine the appropriate interface.</p>	string(256)	
Mode: Client Downstream Test	"Input":	"Role": "Receiver",	<p><b>Table 1:</b> Role <b>TR-181</b></p> <p>Indicates whether the device will act as Sender or Receiver of test packets. Enumeration of:</p> <ul style="list-style-type: none"> <li>• <i>Receiver</i> (The device will act as the Receiver)</li> <li>• <i>Sender</i> (The device will act as the Sender)</li> </ul>	string(256)	X
NA (Command line input)	"Input":	"Host":	<b>Table 1:</b> Host	string(256)	X
NA	"Input":	"Port":	<b>Table 1:</b> Port	unsignedInt ; [1:65535]	
Jumbo Datagrams: Enabled (above 1Gbps by default)	"Input":	"JumboFramesPermitted": 1,	<p><b>Table 1:</b> JumboFramesPermitted</p> <p>TR-181 same name (incomplete description, default not revised yet) <b>SB - RED</b></p>	Boolean; [0:1]  <u>Default SHOULD BE 1</u> (True: permitted for sending rates above 1Gbps)	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
(only 1 supported)	"Input":	"NumberOfConnections": 1,	<b>Table 1:</b> NumberOfConnections	unsignedInt ; 1 ≤ # ≤ 10, or supported Maximum if less than 10	
		N/A	<b>Table 1:</b> EthernetPriority TR-181 same	unsignedInt ; [0:7] Default: 0 = Best Effort	
IPv4 ToS: 0	"Input":	"DSCP": 0,	<b>Table 1:</b> DSCP	unsignedInt ; [0:63] Default: 0 = Best Effort	X
Input options:  -4 Use only IPv4 address family (AF_INET)  -6 Use only IPv6 address family (AF_INET6)  no output with addresses	"Input":	"HostIPAddress": "1.2.3.4",  "ClientIPAddress": "10.0.0.226",  (If IPv6 is used, it will be evident in these "key": value pairs)	<b>Table 1:</b> ProtocolVersion TR-181: same  Indicates the IP protocol version to be used. The default value SHOULD be Any. Enumeration of:  <ul style="list-style-type: none"> <li>Any (Use either IPv4 or IPv6 depending on the system preference)</li> <li>IPv4 (Use IPv4 for the requests)</li> <li>IPv6 (Use IPv6 for the requests)</li> </ul>	string; Default is "Any"	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"UDPPayloadMin":35, "UDPPayloadMax":8972,	<b>Table 1:</b> UDPPayloadRange TR-181 has UDPPayloadMin and UDPPayloadMax <b>SB-RED Max=8972</b>	unsignedInt ; [35:8972] Default for range, min and max  <b>Max 8972 when Jumbo Frames permitted, 1472 without Jumbo frames.</b>	
	"Input":	"UDPPayloadDefault":1222,		unsignedInt ; default is 1222	
	"Input":	"UDPPayloadContent": "zeroes",	<b>Table 1:</b> UDPPayloadContent <b>TR-181 same</b>  Enumeration of: <ul style="list-style-type: none"> <li>• ones,</li> <li>• zeroes,</li> <li>• alternates0and1</li> <li>• random</li> </ul>	string; Default is all zeroes.	
			<b>Table 1:</b> PortRange <b>TR-181</b> has PortMin and PortMax  Not in Minimum Profile, but description in TR-181 says:  <b>[MANDATORY]</b> Starting value for range of Dynamic Ports supported for test traffic and status feedback messages.  <b>SB-RED: Delete [MANDATORY]</b> on Min and Max		

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
			<b>Table 1:</b> PortRangeOptional <b>TR-181</b> has PortOptionalMin and PortOptionalMax		
SendingRate Index: <Auto> or <rate> from  Command line input,-l <rate>	"Input":	"TestType": "Search",	<b>Table 1:</b> TestType TR-181: same  Indicates the type of IP-Layer Capacity test being run. The default value SHOULD be <i>Search</i> . Enumeration of: <ul style="list-style-type: none"> <li>• <i>Search</i> (Search algorithm will be used to determine sending rate)</li> <li>• <i>Fixed</i> (Fixed sending rate will be used)</li> </ul>	enumeration; search or fixed (default is search)	X
DelayVar Thresholds(ms): 30-90 <b>[RTT]</b>	"Input":	"IPDVEnable": 0,	<b>Table 1:</b> EnableIPDV <b>TR-181:</b> IPDVEnable  Configuration for the measurement system permitting One-way measurement of IPDV as per [Y.1540]	Boolean; [0:1] 0=False, Use RTT= round-trip delay variation in the load rate adjustment algorithm (non-default is 1=True EnableIPDV which uses one-way delay variation for the load rate adjustment algorithm)  <b>Note:</b> <b>Added more explanation in TR-471</b>	X



udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"IPRREnable": 1,	<b>Table 1:</b> EnableIPRR <b>TR-181:</b> IPRREnable Configuration for the measurement system permitting measurement of IPRR as per [Y.1540]	Boolean; [0:1] 0=False,IPRR disabled	X
	"Input":	"RIPREnable": 1,	<b>Table 1:</b> EnableRIPR <b>TR-181:</b> RIPREnable Configuration for the measurement system permitting measurement of RIPR as per [Y.1540]	Boolean; [0:1] 0=False,RIPR disabled	X
	"Input":	"PreambleDuration": 0,	Table 1: PreambleDuration TR-181 same Duration of active traffic preamble to testing.	unsignedInt ; 0 ≤ seconds ≤ 5 default 2 sec	
StartSendRate Index:	"Input":	"StartSendingRateIndex": 0,		unsignedInt ; -1 ≤ # ≤ 1090 (10 Gbps) default is -1 = 500kbps	
SendRate Index:	"Input":	"SendingRateIndex": -1,	<b>Table 1:</b> StartSendingRate <b>TR-181:</b> StartSendingRate (471) The current sending rate (equivalent to a row of the table), Initialized at minimum Sending Rate in the Table of Sending Rates (181) <b>[MANDATORY]</b> The Sending Rate for a <i>Fixed</i> <sup>3</sup> test or the initial Sending Rate value for a <i>Search</i> <sup>4</sup> test. Value specified in	unsignedInt ; 500 ≤ # ≤ 10,000,000 (10 Gbps) default is 500kbps	

<sup>3</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).TestType.Fixed](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().TestType.Fixed)

<sup>4</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).TestType.Search](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().TestType.Search)

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
			<i>kbps</i> . The default value SHOULD be 500 <i>kbps</i> . <b>SB-RED: Delete [MANDATORY]</b>		
	"Input":	"NumberTestSubIntervals": 10,	<b>Table 1:</b> <i>m</i> TR-181 NumberTestSubIntervals Number of intermediate measurement intervals, <i>dt</i> , in $\Delta t$	unsignedInt ; $1 \leq \# \leq 100$	X
	"Input":	"NumberFirstModeTestSubIntervals": 0,	<b>Table 1:</b> <i>i</i> TR-181: NumberFirstModeTestSubIntervals Number of measurement intervals, <i>dt</i> , included in the report of the initial Capacity mode (1 and higher). The remaining sub-intervals of the total <i>m</i> are reported separately. "0" is used to replace the EnableBimodal parameter, and means the Bimodal analysis is NOT enabled.	unsignedInt ; $0 \leq \# \leq m$ Note: <i>m</i> is the practical limit for a consistent test, and 100 is an absolute limit	X
Sub-Interval[1] (sec): <b>1</b>	"Input":	"TestSubInterval": 1000,	<b>Table 1:</b> <i>dt</i> (TestSubInterval) TR-181: same Duration of intermediate reporting intervals	unsignedInt ; $100 \leq ms \leq 6000$ (max $\Delta t / (m=10)$ ) in milliseconds) MUST meet Type;Range constraints on $\Delta t = m * dt$ .	X ??
Trial Interval(ms): <b>50</b>	"Input":	"StatusFeedbackInterval": 50,	<b>Table 1:</b> StatusFeedbackInterval TR-181: same	unsignedInt ; 50ms $20 \leq ms \leq 250$	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"TimeoutNoTestTraffic": 1000,	<b>Table 1:</b> TimeoutNoTestTraffic TR-181: same  Timeout value, no test packets at Receiver since previous test packet.	unsignedInt ;  500 ≤ ms ≤ 1000  Default is 1000ms: This value is consistent with a 10 sec test duration.	
	"Input":	"TimeoutNoStatusMessage": 1000,	<b>Table 1:</b> TimeoutNoStatusMessage TR-181: same  Timeout value, no Status Messages at Receiver since previous Staus Message.	unsignedInt ;  500 ≤ ms ≤ 1000  Default is 1000ms: This value is consistent with a 10 sec test duration.	
	"Input":	"Tmax": 1000,	Table 1: TimeoutNoTestTraffic TR-181: same  Maximum one-way Waiting time for packets to arrive	unsignedInt ;  500 ≤ ms ≤ 1000  Default 1000ms	
	"Input":	"TmaxRTT": 3000,	Table 1: TimeoutNoStatusMessage TR-181: same  Timeout value, no Status Messages at Sender since previous Status Message	unsignedInt ;  500 ≤ ms ≤ 1000  Default 1000ms	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"TimestampResolution": 1,	Table 1: TimestampResolution TR-181: same  (from the data model) Indicates the requested precision of timestamp values. The test implementation will determine the actual precision to use based on the implemented resolution capabilities of the protocols used and this requested value. If the implemented resolution capabilities of the <a href="#">IPLayerCapSupportedMetrics</a> <sup>5</sup> protocols being used are able to provide the requested resolution, this resolution SHOULD be provided. Value specified in <i>microseconds</i> . The default value SHOULD be 1 <i>microseconds</i> .		
SeqError Threshold: 10	"Input":	"SeqErrThresh": 10,	<b>Table3:</b> SeqErrThresh TR-181: same  Threshold for Loss or Reordering or Replication impairments measured (events where received packet sequence number did not increase by one)	unsignedInt ; 10  0 ≤ SeqErrThresh ≤ 100	X
Ignore OoO/ Dup: Disabled	"Input":	"ReordDupIgnoreEnable": 0,	<b>Table3:</b> ReordDupIgnoreEnable TR-181: same  Configuration of SeqErrors counting to ignore Reordering and Duplication impairments measured (only Loss counts toward received packet sequence number errors)	Boolean; [0:1] 0 (False: not enabled)	X

<sup>5</sup> <https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapSupportedMetrics>

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
DelayVar Thresholds(ms): <b>30-90</b>	"Input":	"LowerThresh": 30,	<b>Table 3:</b> LowThresh TR-181: LowerThresh  Low threshold on the Range of Round Trip Time variation, RTT (Range is values above minimum RTT)	unsignedInt ; $5 \leq \text{ms} \leq 250$  30ms default	X
DelayVar Thresholds(ms): <b>30-90</b>	"Input":	"UpperThresh": 90,	<b>Table 3:</b> UpperThresh TR-181: same  The number of rows to move in a single adjustment when initially increasing offered load (to ramp-up quickly)	unsignedInt ; $5 \leq \text{ms} \leq 250$  90ms default	X
High-Speed Delta: 10	"Input":	"HighSpeedDelta": 10,	<b>Table 3:</b> HighSpeedDelta TR-181: same  The number of rows to move in a single adjustment when initially increasing offered load (to ramp-up quickly)	unsignedInt ; $\geq 2$  Default = 10rows	X
Congestion Threshold: 3	"Input":	"SlowAdjThresh": 3,	<b>Table 3:</b> SlowAdjThresh TR-181: same  Threshold on SlowAdjCount used to infer congestion. Use values >1 to avoid misinterpreting transient loss.	unsignedInt ; $> 1$  Default = 3	X
NA (except with -S CLI command)	"Input":	"HSpeedThresh": 1000000000	<b>Table 3:</b> HSpeedThresh TR-181: same  Threshold for transition between low and high sending rate step sizes (such as 1 Mbps and 100 Mbps). MAY result in use of Jumbo Frames if permitted.	unsignedInt ; $\geq 1$  Default = 1 Gbps	
Algo: B	"Input":	"RateAdjAlgorithm": "B"		enumeration; B or TBD (default is B)	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
<p><b>OUTPUT Follows</b></p> <p>The rows of the 3 tables (TR-471, TR-181, and Wiki) have been re-ordered to match to match for Output</p>		<b>OUTPUT Follows</b>	<b>OUTPUT Follows</b>	<b>OUTPUT Follows</b>	
	"IPLayerMaxConnections": 1,		<p><b>ONLY TR-181:</b> IPLayerMaxConnections</p> <p>Indicates the maximum number of connections that are supported for an IP-Layer Capacity test.</p>	unsignedInt (1:)	
	"IPLayerMaxIncrementalResult": 3600,		<p><b>ONLY TR-181:</b> IPLayerMaxIncrementalResult</p> <p>The maximum number of rows in <a href="#">IPLayerCapacity().IncrementalResult</a><sup>6</sup> that the device will store.</p>	unsignedInt (1:)	

<sup>6</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).IncrementalResult.{i}](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().IncrementalResult.{i}).

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Software Ver: 7.2.1,	"IPLayerCapSupported": {	"SoftwareVersion": "7.2.1",	<p><b>Table 4:</b> IPLayerCapSupportedSoftwareVersion</p> <p><b>TR-181:</b> IPLayerCapSupportedSoftwareVersion</p> <p>Installed version of the test software.</p> <p>Indicates the installed version of the test software. The software version string will be implementation-dependent, and SHOULD identify both the implementation and the version (e.g., UDPST-7.2.1).</p>	string	X
Protocol Ver: 8,	"IPLayerCapSupported": {	"ControlProtocolVersion": 8,	<p><b>Table 4:</b> IPLayerCapSupportedControlProtocolVersion</p> <p><b>TR-181:</b> IPLayerCapSupportedControlProtocolVersion</p> <p>Installed version of the test software's control protocol.</p>	unsignedInt	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"IPLayerCapSupported": {	"Metrics": "IPLR,Sampled_RTT,IPDV,IPRR"	<p><b>TR-181 ONLY:</b> IPLayerCapSupportedMetrics</p> <p>Comma-separated list of strings. Indicates the test metrics from [Section 5.2/TR-471<sup>7</sup>] that are supported by the device.</p> <p>Note that [TR-471<sup>8</sup>] mandates support for and use of IPLR and Sampled RTT. Each list item is an enumeration of:</p> <ul style="list-style-type: none"> <li>• <i>IPLR</i> (IP packet Loss Ratio)</li> <li>• <i>Sampled_RTT</i> (Sampled Round Trip Time)</li> <li>• <i>IPDV</i> (IP packet Delay Variation, OPTIONAL)</li> <li>• <i>IPRR</i> (IP packet Reordering Ratio, OPTIONAL)</li> <li>• <b>should also have: RIPR (Replicated IP Packet Ratio, OPTIONAL)</b></li> </ul> <p><b>SB</b></p>	string	

<sup>7</sup> <https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#R.TR-471>

<sup>8</sup> <https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#R.TR-471>



udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Complete can be implied from STDOUT = completed measurements, other notifications and warnings.	"Output":	<p>"Status":</p> <p>Note: Outside of the Output category, ErrorStatus and ErrorMessage reflect the overall test implementation status. For example:</p> <p>Note: StatusMessage content depends on implementation/ Operating System.</p> <p>"ErrorStatus": 0, "ErrorMessage": ""</p> <p>(and expect that TR-181 Status = <i>Complete</i>, else TR-181 Status = <i>Error_Other</i> for non-0 ErrorStatus).</p> <p>or</p> <p>"ErrorStatus": -1, "ErrorMessage": "GETADDRINFO ERROR: Invalid argument (Name or service not known)"</p> <p>or</p> <p>"ErrorStatus": -1,</p>	<p><b>ONLY in TR-181:</b> Status</p> <p>Indicates the availability of diagnostics data. Enumeration of:</p> <ul style="list-style-type: none"> <li>• <i>Complete</i></li> <li>• <i>Error_CannotResolveHostName</i></li> <li>• <i>Error_NoRouteToHost</i></li> <li>• <i>Error_InitConnectionFailed</i></li> <li>• <i>Error_NoResponse</i></li> <li>• <i>Error_PasswordRequestFailed</i></li> <li>• <i>Error_LoginFailed</i></li> <li>• <i>Error_RejectedByRemote</i></li> <li>• <i>Error_IncorrectSize</i></li> <li>• <i>Error_Timeout</i></li> <li>• <i>Error_Internal</i></li> <li>• <i>Error_Other</i></li> </ul> <p>If the value of this parameter is anything other than <i>Complete</i>, the values of the other results parameters for this test are indeterminate.</p>	enumeration	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
		"ErrorMessage": "Timeout awaiting server response, exiting!"  or "ErrorStatus": 1, "ErrorMessage": "LOCAL WARNING: Incoming traffic has completely stopped"			
TBD	"Output":	"BOMTime": "2021-10-24T22:38:02.202132Z",	<b>Table 4:</b> BeginningOfMeasurement <b>TR-181:</b> BOMTime  <i>t</i> , the start of a measurement interval, in UTC, which MUST be specified to TimestampResolution precision (Table 2)  For example: 2008-04-09T15:01:05.123456Z	datetime, UTC	Part of Minimum Profile, = X
TBD	"Output":	"EOMTime": "2021-10-24T22:38:12.710272Z", (see the very end of JSON output)	<b>Table 4:</b> EndOfMeasurement <b>TR-181:</b> EOMTime  <i>t + Δt</i> , the end of a measurement interval, in UTC, which MUST be specified to TimestampResolution precision (Table 2).  For example: 2008-04-09T15:01:05.123456Z	datetime, UTC	??
	"Output":	"TmaxUsed": 1000,	<b>Table 4:</b> TmaxUsed <b>TR-181:</b> TmaxUsed  Configured value of Tmax used in the test (milliseconds)	unsignedInt	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	TBD		<b>Table 4:</b> TmaxRTTUsed <b>TR-TR-181:</b> same name Configured value of TmaxRTT used in the test (milliseconds)	unsignedInt	
	"Output":	"TestInterval": 10,	<b>Table 4:</b> TestInterval <b>TR-181:</b> TestInterval Measured Duration of the test (either downlink or uplink). This value is expected to equal <a href="#">TestSubInterval</a> (see page 3) * <a href="#">NumberTestSubIntervals</a> (see page 3). This value is expressed in seconds.	unsignedInt	
Maximum Mbps(L3/IP)	"AtMax": {	"MaxIPLayerCapacity": 967.20,	<b>Table 4:</b> MaximumIP-LayerCapacity <b>TR-181:</b> MaxIPLayerCapacity	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	X
TBD	"AtMax": {	"TimeOfMax": "2021-10-24T22:38:12.264182Z",	<b>Table 4:</b> TimeOfMaximumIP-LayerCapacity <b>TR-181:</b> TimeOfMax	datetime, UTC	X
Mbps(L2/Eth):	"AtMax": {	"MaxETHCapacityNoFCS": 978.08,	<b>Table 4:</b> MaximumETHCapacityNoFCS <b>TR-181: same</b>	decimal, 2 digit fraction	X
Mbps(L1/Eth):	"AtMax": {	"MaxETHCapacityWithFCS": 996.73,	<b>Table 4:</b> MaximumETHCapacityWithFCS <b>TR-181: same</b>	decimal, 2 digit fraction	X
Mbps(L1/Eth+VLAN):	"AtMax": {	"MaxETHCapacityWithFCSVLAN": 999.84,	<b>Table 4:</b> MaximumETHCapacityWithFCSVLAN <b>TR-181: same</b>	decimal, 2 digit fraction	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD Once the Max is found: LossRatio: 0.00E+00  (current output resolution is less than TR-471)	"AtMax": {	"LossRatioAtMax": 0.003065378,	<b>Table 4:</b> LossRatioAtMaxCapacity <b>TR-181:</b> LossRatioAtMax  IP-Layer Capacity metric for a single interval $dt_n$ to $dt_{n+1}$ , see Equation 1, where the Capacity is the number of bits received in the subinterval divided by the duration, $dt$ .	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	X
TBD Once the Max is found: RTTVar(ms): 0-x  (current output resolution is less than TR-471)	"AtMax": {	"RTTRangeAtMax": 0.004,	<b>Table 4:</b> RTTRangeAtMaxCapacity <b>TR-181:</b> RTTRangeAtMax  The Range of RTT during the $dt_n$ corresponding to the Max IP-Layer Capacity above, determined at the conclusion of the test. The Range of RTT shall be calculated using the conditional distribution of all packets with a finite value of round-trip delay (undefined delays are excluded), a single value. The time value of the result is expressed in units of <i>seconds</i> , as a positive value.	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD Once the Max is found: OWDVar(ms) : 0/0/1 (min/ave/max?) (current output resolution is less than TR-471)	"AtMax": {	"PDVRangeAtMax": 0.003,	<b>Table 4:</b> PDVRangeAtMaxCapacity <b>TR-181:</b> PDVRangeAtMax  The Range of PDV during the $dt_n$ corresponding to the Max IP-Layer Capacity above, determined at the conclusion of the test. The Range of PDV shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements). This value is expressed in <i>seconds</i> . This value is expressed as a decimal to 9 decimal digits.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	X
TBD Once the Max is found: OWDVar(ms) : 0/0/1 (min?/ave/max) (current output resolution is less than TR-471)	"AtMax": {	"MinOnewayDelayAtMax": 0.01	<b>Table 4:</b> MinOnewayDelayAtMaxCapacity <b>TR-181:</b> MinOnewayDelayAtMax  The Minimum One-way Delay during the $dt_n$ corresponding to the Max IP-Layer Capacity above, The Minimum One-way Delay is determined at the conclusion of the test. The Minimum One-way Delay shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements). This value is expressed in <i>seconds</i> .	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD Once the Max is found: Loss/ <b>OoO</b> /Dup: 0/0/0 Note: this is a count, a ratio can be calculated.	"AtMax": {	"ReorderedRatioAtMax": 0.0,	<b>Table 4:</b> ReorderedRatioAtMaxCapacity <b>TR-181:</b> ReorderedRatioAtMax Ratio of Reordered total packets sent during dtn corresponding to the Max IPLayer Capacity above, determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
TBD Once the Max is found: Loss/ <b>OoO</b> / <b>Dup</b> : 0/0/0 Note: this is a count, a ratio can be calculated.	"AtMax": {	"ReplicatedRatioAtMax": 0.0,	<b>Table 4:</b> ReplicatedRatioAtMaxCapacity <b>TR-181:</b> ReplicatedRatioAtMax Ratio of Replicated packeys to total packets sent during dtn corresponding to the Max IPLayer Capacity above, determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
	"AtMax": {	"InterfaceEthMbps": 0.0,	<b>Table 5:</b> InterfaceEthMbpsAtMax <b>TR-181:</b> same The number of bits observed on the Interface during an IP-Layer Capacity test for time interval of duration TestSubInterval ending at TimeOfSubInterval corresponding to the MaxIPLayerCapacity, divided by the duration of TestSubInterval. Result is expressed in Mbps with 2 digits beyond the decimal. 10 <sup>6</sup> bits/second = 1 Mbps. This is primarily a diagnostic measurement. Measurement direction follows the Role (Sender or Receiver). This measurement is optional.	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"AtMax": {	"Mode": 1, The bimodal mode number and about 9 other metrics are only available in JSON Output:  "LossCount": 372,  "ReorderedCount": 0,  "ReplicatedCount": 0, "PDVMin": 0.007, "PDVAvg": 0.008, "PDVMax": 0.01, "RTTMin": 0.007, "RTTMax": 0.012,			
			<b>Table 4: TR-181:</b>	dateTime	
<b>Downstream Summary</b> (over the entire test Interval)	"Summary": {		<There is not an exact match for the Summary among udpst STDOUT, These are measurements that apply to the entire test duration, TestInterval. >		
Mbps(L3/IP):	"Summary": {	"IPLayerCapacity Summary": 729.85,	<b>Table 4:</b> IP-LayerCapacitySummary <b>TR-181: same</b>  Results of measurements using the IP-Layer Capacity metric over the complete TestInterval, $dt * m$ , see Equation 1	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Delivered(%):	"Summary": {	"LossRatioSummary": 0.002482453,	<b>Table 4: LossRatioSummary</b> <b>TR-181: same</b> Ratio of lost to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	X
RTTVar(ms):	"Summary": {	"RTTRangeSummary": 0.012,	<b>Table 4: RTTRangeSummary</b> <b>TR-181: same</b> The Range of RTT during the complete TestInterval, $dt * m$ , determined at the conclusion of the test. ...	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
OWDVar(ms):	"Summary": {	"PDVRangeSummary": 0.014,	<b>Table 4: PDVRangeSummary</b> <b>TR-181: same</b> The Range of PDV during the complete TestInterval, $dt * m$ , determined at the conclusion of the test. ...	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	



udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Downstream Minimum One-Way Delay(ms): 18 [w/clock difference],	"Summary": {	"MinOnewayDelaySummary": 0.005,	<b>Table 4:</b> MinOnewayDelaySummary <b>TR-181: same</b>  The Minimum One-way Delay during the complete TestInterval, $dt * m$ , The Minimum One-way Delay is determined at the conclusion of the test. ...	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
Downstream Minimum Round-Trip Time(ms):	"Summary": {	"MinRTTSummary": 0.007	<b>Table 4:</b> MinRTTSummary <b>TR-181: same</b>  The Minimum RTT during the complete TestInterval, $dt * m$ , The Minimum RTT is determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	X
TBD	"Summary": {	"ReorderedRatioSummary": 0.0,	<b>Table 4:</b> ReorderedRatioSummary <b>TR-181: same</b>  Ratio of Reordered to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD	"Summary": {	"ReplicatedRatioSummary": 0.0,	<b>Table 4:</b> ReplicatedRatioSummary <b>TR-181: same</b>  Ratio of Replicated to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
	"Summary": {	"InterfaceEthMbps": 0.0,	<b>Table 5:</b> InterfaceEthMbpsSummary <b>TR-181: same</b>  The number of bits observed on the Interface during an IP-Layer Capacity test for the entire time interval of duration TestInterval, divided by the duration of TestInterval. Result is expressed in Mbps with 2 digits beyond the decimal. $10^6$ bits/second = 1 Mbps. This is primarily a diagnostic measurement. Measurement direction follows the Role (Sender or Receiver). This measurement is optional.	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	
Loss/OoO/Dup:	"Summary": {	"seqErrLoss":	Loss Count - do we need this too? NOT CURRENTLY ADDED		
Loss/OoO/Dup:	"Summary": {	"seqErrOoo":	<b>Table 4:</b> ReorderedRatioSummary <b>TR-181: same</b>  Ratio of Reordered to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Loss/OoO/Dup:	"Summary": {	"seqErrDup":	<p><b>Table 4:</b>                      ReplicatedRatioSummary  <b>TR-181: same</b></p> <p>Ratio of Replicated to total packets sent during the complete TestInterval, <math>dt * m</math>, determined at the conclusion of the test.</p>	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
OWDVar(ms): RTTVar(ms): (others)	"Summary": {	About 8 metrics not in the data model or specification:  "LossCount": 1679,  "ReorderedCount": 0,  "ReplicatedCount": 0, "PDVMin": 0.0, "PDVAvg": 0.004, "PDVMax": 0.011, "RTTMin": 0.0, "RTTMax": 0.012,	do we need this too? NOT CURRENTLY ADDED		

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output":	"ModalResult": [],	<p>Table 4: ModalResult{<i>i</i>} TR-181: ModalResult.<i>i</i>                      Modal test results. Only returned when bimodal test mode is enabled                      (  <i>NumberFirstModeTestSubIntervals</i><sup>9</sup> &gt;=1). <b>If returned, it MUST contain one or more entries, with instance number 1 corresponding to the second mode and instance number 2 corresponding to the third mode, etc.</b></p> <p><b>Results for the Maximum in each mode/instance</b> are calculated based on <i>IncrementalResult.<i>i</i></i>.<sup>10</sup> data within the boundary of its corresponding mode.</p> <p>&lt;Deleted: This table MUST contain at least 0 and at most 2 entries.&gt;</p> <p>This table's Instance Numbers MUST be 1, 2, 3... (assigned sequentially without gaps).</p> <p><b>SB</b></p>	There is a Straw ballot comment here: only one mode in ModalResult when two modes are to be reported.	
<p><b>IncrementalResult.<i>i</i></b></p> <p>(Incremental Results for all sub-intervals below)</p>	<b>IncrementalResult.<i>i</i></b>	<b>IncrementalResult.<i>i</i></b>	<b>IncrementalResult.<i>i</i></b>	<b>IncrementalResult.<i>i</i></b>	

<sup>9</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).NumberFirstModeTestSubIntervals](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().NumberFirstModeTestSubIntervals)

<sup>10</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).IncrementalResult.\*i\*.](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().IncrementalResult.<i>i</i>.)

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output": {  "IncrementalResult": {}	"IPLayerCapacity": 93.36,	Table 4: IP-LayerCapacitySubInterval TR-181: IPLayerCapacity  Results of measurements using the IP-Layer Capacity metric for a single interval $dt_n$ to $dt_{n+1}$ , see Equation 1, where the Capacity is the number of bits received in the subinterval divided by the duration, dt.	decimal64 number with fraction digits = 3, as specified in [Section 9.3 of RFC7950].	
	"Output": {  "IncrementalResult": {}	"TimeOfSubInterval": "2021-10-24T22:38:03.253183Z",	Table 4: TimeOfIP-LayerCapacitySubInterval TR-181:TimeOfSubInterval  End Time of the $dt_n$ to $dt_{n+1}$ subinterval when each of the m IP-Layer Capacity was measured, in UTC, which MUST be specified to TimestampResolution precision(Table 2)	dateTime	
	"Output": {  "IncrementalResult": {}	"LossRatio": 0.0,	Table 4: LossRatioSubInterval TR-181: LossRatio  Ratio of lost to total packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output": {  "IncrementalResult": {	"RTTRange": 0.002,	Table 4: RTTRangeSubInterval TR-181: RTTRange  The Range of RTT during $dt_n$ corresponding to packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above). The Range of RTT shall be calculated using the conditional distribution of all packets with a finite value of round-trip delay (undefined delays are excluded), a single value	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
	"Output": {  "IncrementalResult": {	"PDVRange": 0.0,	Table 4: PDVRangeSubInterval TR-181: PDVRange  The Range of PDV during $dt_n$ corresponding to packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above. The Range of PDV shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output": {  "IncrementalResult": {}	"MinOnewayDelay": 0.005,	Table 4: MinOnewayDelaySubInterval TR-181: MinOnewayDelay  The Minimum One-way Delay during $dt_n$ corresponding to packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above. The Minimum One-way Delay is determined at the conclusion of the test. The Minimum One-way Delay shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
	"Output": {  "IncrementalResult": {}	"ReorderedRatio": 0.0,	Table 4: ReorderedRatioSubInterval TR-181: ReorderedRatio  Ratio of Reordered to total packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
	"Output": {  "IncrementalResult": {}	"ReplicatedRatio": 0.0,	Table 4: ReplicatedRatioSubInterval TR-181: ReplicatedRatio  Ratio of Replicated to total packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Summary": {	"InterfaceEthMbps": 0.0,	<p><b>Table 5:</b> InterfaceEthMbps  <b>TR-181:</b> same</p> <p>The number of bits observed on the Interface during an IP-Layer Capacity test for time interval of duration TestSubInterval ending at TimeOfSubInterval, divided by the duration of TestSubInterval. Result is expressed in Mbps with 2 digits beyond the decimal. 10<sup>6</sup> bits/second = 1 Mbps. This is primarily a diagnostic measurement. Measurement direction follows the Role (Sender or Receiver). This measurement is optional.</p>	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	
	"Output": {  "IncrementalResult": [{	<p>"Interval": 1,</p> <p>"Seconds": 1,</p> <p>"DeliveredPercentage": 100.00,</p> <p>"PDVMin": 0.0,</p> <p>"PDVAvg": 0.0,</p> <p>"PDVMax": 0.0,</p> <p>"RTTMin": 0.0,</p> <p>"RTTMax": 0.002,</p> <p>"InterfaceEthMbps": 0.00,</p>	There are lots of additional JSON outputs!		



### 3 Second Pass - Rosetta Stone (Implemented in Release 7.3.0)

Table below starts with Test context and configuration info, then output (results). "X" = Part of Minimum Profile. The Release 7.2.1 Default values for SeqErrThresh (10) and SlowAdjThresh (3) are used below.

In the Second Pass, areas for udpst development are identified - primarily in the area of sub-interval output (results) - where Minimum Profile rows have no entry

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"Interface": "",	<p><b>Table 1:</b> Interface <b>TR-181</b></p> <p>The value MUST be the Path Name of a table row. The IP-layer interface over which the test is to be performed. Example: Device.IP.Interface.1</p> <p>If an empty string is specified, the device MUST use the interface as directed by its routing policy (<i>Forwarding</i> table entries) to determine the appropriate interface.</p>	string(256)	
Mode: Client Downstream Test	"Input":	"Role": "Receiver",	<p><b>Table 1:</b> Role <b>TR-181</b></p> <p>Indicates whether the device will act as Sender or Receiver of test packets. Enumeration of:</p> <ul style="list-style-type: none"> <li>• <i>Receiver</i> (The device will act as the Receiver)</li> <li>• <i>Sender</i> (The device will act as the Sender)</li> </ul>	string(256)	X
NA (Command line input)	"Input":	"Host":	<b>Table 1:</b> Host	string(256)	X
NA	"Input":	"Port":	<b>Table 1:</b> Port	unsignedInt ; [1:65535]	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Jumbo Datagrams: Enabled (above 1Gbps by default)	"Input":	"JumboFramesPermitted": 1,	<b>Table 1:</b> JumboFramesPermitted  TR-181 same name (incomplete description, default not revised yet) <b>SB - RED</b>	Boolean; [0:1]  <u>Default SHOULD BE 1</u> (True: permitted for sending rates above 1Gbps)	X
(only 1 supported)	"Input":	"NumberOfConnections": 1,	<b>Table 1:</b> NumberOfConnections	unsignedInt ; 1 ≤ # ≤ 10, or supported Maximum if less than 10	
		N/A	<b>Table 1:</b> EthernetPriority TR-181 same	unsignedInt ; [0:7] Default: 0 = Best Effort	
IPv4 ToS: 0	"Input":	"DSCP": 0,	<b>Table 1:</b> DSCP	unsignedInt ; [0:63] Default: 0 = Best Effort	X
Input options:  -4 Use only IPv4 address family (AF_INET)  -6 Use only IPv6 address family (AF_INET6)  no output with addresses	"Input":	"HostIPAddress": "1.2.3.4",  "ClientIPAddress": "10.0.0.226",  (If IPv6 is used, it will be evident in these "key": value pairs)	<b>Table 1:</b> ProtocolVersion TR-181: same  Indicates the IP protocol version to be used. The default value SHOULD be Any. Enumeration of:  <ul style="list-style-type: none"> <li>Any (Use either IPv4 or IPv6 depending on the system preference)</li> <li>IPv4 (Use IPv4 for the requests)</li> <li>IPv6 (Use IPv6 for the requests)</li> </ul>	string; Default is "Any"	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	<p><b>Min and Max NOW ADDED!</b></p> <p>"UDPPayloadMin":35,</p> <p>"UDPPayloadMax":8972,</p>	<p><b>Table 1:</b> UDPPayloadRange</p> <p>TR-181 has UDPPayloadMin and UDPPayloadMax</p> <p><b>SB-RED Max=8972</b></p>	<p>unsignedInt ;</p> <p>[35:8972]</p> <p>Default for range, min and max</p> <p><b>Max 8972 when Jumbo Frames permitted, 1472 without Jumbo frames.</b></p>	
	"Input":	"UDPPayloadContent": "zeroes",	<p><b>Table 1:</b> UDPPayloadContent</p> <p><b>TR-181 same</b></p> <p>Enumeration of:</p> <ul style="list-style-type: none"> <li>• ones,</li> <li>• zeroes,</li> <li>• alternates0and1</li> <li>• random</li> </ul>	string; Default is all zeroes.	
			<p><b>Table 1:</b> PortRange <b>TR-181</b> has PortMin and PortMax</p> <p>Not in Minimum Profile, but description in TR-181 says:</p> <p><b>[MANDATORY]</b> Starting value for range of Dynamic Ports supported for test traffic and status feedback messages.</p> <p><b>SB-RED: Delete [MANDATORY]</b> on Min and Max</p>		
			<p><b>Table 1:</b> PortRangeOptional</p> <p><b>TR-181</b> has PortOptionalMin and PortOptionalMax</p>		

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
SendingRate Index: <Auto> or <rate> from Command line input, -l <rate>	"Input":	"TestType": "Search",	<b>Table 1:</b> TestType TR-181: same Indicates the type of IP-Layer Capacity test being run. The default value SHOULD be <i>Search</i> . Enumeration of: <ul style="list-style-type: none"> <li><i>Search</i> (Search algorithm will be used to determine sending rate)</li> <li><i>Fixed</i> (Fixed sending rate will be used)</li> </ul>	enumeration; search or fixed (default is search)	X
DelayVar Thresholds(ms): 30-90 <b>[RTT]</b>	"Input":	"IPDVEnable": 0,	<b>Table 1:</b> EnableIPDV TR-181: IPDVEnable Configuration for the measurement system permitting One-way measurement of IPDV as per [Y.1540]	Boolean; [0:1] 0=False, Use RTT= round-trip delay variation in the load rate adjustment algorithm (non-default is 1=True EnableIPDV which uses one-way delay variation for the load rate adjustment algorithm) <b>Note: Added more explanation in TR-471</b>	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"IPRREnable": 1,	<b>Table 1:</b> EnableIPRR <b>TR-181:</b> IPRREnable Configuration for the measurement system permitting measurement of IPRR as per [Y.1540]	Boolean; [0:1] 0=False,IPRR disabled	X
	"Input":	"RIPREnable": 1,	<b>Table 1:</b> EnableRIPR <b>TR-181:</b> RIPREnable Configuration for the measurement system permitting measurement of RIPR as per [Y.1540]	Boolean; [0:1] 0=False,RIPR disabled	X
			<b>Table 1:</b> PreambleDuration TR-181 same Duration of active traffic preamble to testing.	unsignedInt ; 0 ≤ seconds ≤ 5 default 2 sec	
	"Input":	"SendingRateIndex": -1,	<b>Table 1:</b> StartSendingRate <b>TR-181:</b> StartSendingRate (471) The current sending rate (equivalent to a row of the table), Initialized at minimum Sending Rate in the Table of Sending Rates  (181) <b>[MANDATORY]</b> The Sending Rate for a <i>Fixed</i> <sup>11</sup> test or the initial Sending Rate value for a <i>Search</i> <sup>12</sup> test. Value specified in <i>kbps</i> . The default value SHOULD be 500 <i>kbps</i> .  <b>SB-RED: Delete [MANDATORY]</b>	unsignedInt ; 500 ≤ # ≤ 10,000,000 (10 Gbps) default is 500kbps	

<sup>1</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).TestType.Fixed](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().TestType.Fixed)

<sup>2</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).TestType.Search](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().TestType.Search)

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"NumberTestSubIntervals": 10,	<b>Table 1:</b> <i>m</i> TR-181 NumberTestSubIntervals Number of intermediate measurement intervals, <i>dt</i> , in $\Delta t$	unsignedInt ; $1 \leq \# \leq 100$	X
	"Input":	"NumberFirstModeTestSubIntervals": 0,	<b>Table 1:</b> <i>i</i> TR-181: NumberFirstModeTestSubIntervals Number of measurement intervals, <i>dt</i> , included in the report of the initial Capacity mode (1 and higher). The remaining sub-intervals of the total <i>m</i> are reported separately. "0" is used to replace the EnableBimodal parameter, and means the Bimodal analysis is NOT enabled.	unsignedInt ; $0 \leq \# \leq m$ Note: <i>m</i> is the practical limit for a consistent test, and 100 is an absolute limit	X
Sub-Interval[1] (sec): <b>1</b>	"Input":	"TestSubInterval": 1000,	<b>Table 1:</b> <i>dt</i> (TestSubInterval) TR-181: same Duration of intermediate reporting intervals	unsignedInt ; $100 \leq ms \leq 6000$ (max $\Delta t / (m=10)$ ) in milliseconds) MUST meet Type;Range constraints on $\Delta t = m * dt.$	X ??
Trial Interval(ms): <b>50</b>	"Input":	"StatusFeedbackInterval": 50,	<b>Table 1:</b> StatusFeedbackInterval TR-181: same	unsignedInt ; 50ms $20 \leq ms \leq 250$	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"TimeoutNoTestTraffic": 1000,	<b>Table 1:</b> TimeoutNoTestTraffic TR-181: same  Timeout value, no test packets at Receiver since previous test packet.	unsignedInt ;  500 ≤ ms ≤ 1000  Default is 1000ms: This value is consistent with a 10 sec test duration.	
	"Input":	"TimeoutNoStatusMessage": 1000,	<b>Table 1:</b> TimeoutNoStatusMessage TR-181: same  Timeout value, no Status Messages at Receiver since previous Staus Message.	unsignedInt ;  500 ≤ ms ≤ 1000  Default is 1000ms: This value is consistent with a 10 sec test duration.	
	"Input":	"Tmax": 1000,	Table 1: TimeoutNoTestTraffic TR-181: same  Maximum one-way Waiting time for packets to arrive	unsignedInt ;  500 ≤ ms ≤ 1000  Default 1000ms	
	"Input":	"TmaxRTT": 3000,	Table 1: TimeoutNoStatusMessage TR-181: same  Timeout value, no Status Messages at Sender since previous Status Message	unsignedInt ;  500 ≤ ms ≤ 1000  Default 1000ms	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Input":	"TimestampResolution": 1,	<p>Table 1: TimestampResolution TR-181: same</p> <p>(from the data model) Indicates the requested precision of timestamp values. The test implementation will determine the actual precision to use based on the implemented resolution capabilities of the protocols used and this requested value. If the implemented resolution capabilities of the <i>IPLayerCapSupportedMetrics</i><sup>13</sup> protocols being used are able to provide the requested resolution, this resolution SHOULD be provided. Value specified in <i>microseconds</i>. The default value SHOULD be 1 <i>microseconds</i>.</p>		
SeqError Threshold: 10	"Input":	"SeqErrThresh": 10,	<p><b>Table3:</b> SeqErrThresh TR-181: same</p> <p>Threshold for Loss or Reordering or Replication impairments measured (events where received packet sequence number did not increase by one)</p>	<p>unsignedInt ; 10</p> <p>0 ≤ SeqErrThresh ≤ 100</p>	X
Ignore OoO/ Dup: Disabled	"Input":	"ReordDupIgnoreEnable": 0,	<p><b>Table3:</b> ReordDupIgnoreEnable TR-181: same</p> <p>Configuration of SeqErrors counting to ignore Reordering and Duplication impairments measured (only Loss counts toward received packet sequence number errors)</p>	<p>Boolean; [0:1] 0 (False: not enabled)</p>	X

<sup>3</sup> <https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapSupportedMetrics>



udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
DelayVar Thresholds(ms): <b>30-90</b>	"Input":	"LowerThresh": 30,	<b>Table 3:</b> LowThresh TR-181: LowerThresh  Low threshold on the Range of Round Trip Time variation, RTT (Range is values above minimum RTT)	unsignedInt ; $5 \leq ms \leq 250$  30ms default	X
DelayVar Thresholds(ms): <b>30-90</b>	"Input":	"UpperThresh": 90,	<b>Table3:</b> UpperThresh TR-181: same  The number of rows to move in a single adjustment when initially increasing offered load (to ramp-up quickly)	unsignedInt ; $5 \leq ms \leq 250$  90ms default	X
High-Speed Delta: 10	"Input":	"HighSpeedDelta": 10,	<b>Table 3:</b> HighSpeedDelta TR-181: same  The number of rows to move in a single adjustment when initially increasing offered load (to ramp-up quickly)	unsignedInt ; $\geq 2$  Default = 10rows	X
Congestion Threshold: 3	"Input":	"SlowAdjThresh": 3,	<b>Table 3:</b> SlowAdjThresh TR-181: same  Threshold on SlowAdjCount used to infer congestion. Use values >1 to avoid misinterpreting transient loss.	unsignedInt ; $> 1$  Default = 3	X
NA (except with -S CLI command)	"Input":	"HSpeedThresh": 1000000000	<b>Table 3:</b> HSpeedThresh TR-181: same  Threshold for transition between low and high sending rate step sizes (such as 1 Mbps and 100 Mbps). MAY result in use of Jumbo Frames if permitted.	unsignedInt ; $\geq 1$  Default = 1 Gbps	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
<p><b>OUTPUT Follows</b></p> <p>The rows of the 3 tables (TR-471, TR-181, and Wiki) have been re-ordered to match to match for Output</p>		<b>OUTPUT Follows</b>	<b>OUTPUT Follows</b>	<b>OUTPUT Follows</b>	
	"IPLayerMaxConnections": 1,		<p><b>ONLY TR-181:</b> IPLayerMaxConnections</p> <p>Indicates the maximum number of connections that are supported for an IP-Layer Capacity test.</p>	unsignedInt (1:)	
	"IPLayerMaxIncrementalResult": 3600,		<p><b>ONLY TR-181:</b> IPLayerMaxIncrementalResult</p> <p>The maximum number of rows in <i>IPLayerCapacity().IncrementalResult</i><sup>14</sup> that the device will store.</p>	unsignedInt (1:)	

<sup>14</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).IncrementalResult.{i}](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().IncrementalResult.{i}).

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Software Ver: 7.2.1,	"IPLayerCapSupported": {	"SoftwareVersion": "7.2.1",	<p><b>Table 4:</b> IPLayerCapSupportedSoftwareVersion</p> <p><b>TR-181:</b> IPLayerCapSupportedSoftwareVersion</p> <p>Installed version of the test software.</p> <p>Indicates the installed version of the test software. The software version string will be implementation-dependent, and SHOULD identify both the implementation and the version (e.g., UDPST-7.2.1).</p>	string	X
Protocol Ver: 8,	"IPLayerCapSupported": {	"ControlProtocolVersion": 8,	<p><b>Table 4:</b> IPLayerCapSupportedControlProtocolVersion</p> <p><b>TR-181:</b> IPLayerCapSupportedControlProtocolVersion</p> <p>Installed version of the test software's control protocol.</p>	unsignedInt	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"IPLayerCapSupported": {	"Metrics": "IPLR,Sampled_RTT,IPDV,IPRR"	<p><b>TR-181 ONLY:</b> IPLayerCapSupportedMetrics</p> <p>Comma-separated list of strings. Indicates the test metrics from [Section 5.2/TR-471<sup>15</sup>] that are supported by the device.</p> <p>Note that [TR-471<sup>16</sup>] mandates support for and use of IPLR and Sampled RTT. Each list item is an enumeration of:</p> <ul style="list-style-type: none"> <li>• <i>IPLR</i> (IP packet Loss Ratio)</li> <li>• <i>Sampled_RTT</i> (Sampled Round Trip Time)</li> <li>• <i>IPDV</i> (IP packet Delay Variation, OPTIONAL)</li> <li>• <i>IPRR</i> (IP packet Reordering Ratio, OPTIONAL)</li> <li>• <b>should also have: <u>RIPR (Replicated IP Packet Ratio, OPTIONAL)</u></b></li> </ul> <p><b>SB</b></p>	string	

<sup>15</sup> <https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#R.TR-471>

<sup>16</sup> <https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#R.TR-471>

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Complete can be implied from STDOUT = completed measurements, other notifications and warnings.	"Output":	<p>"Status":</p> <p>Note: Outside of the Output category, ErrorStatus and ErrorMessage reflect the overall test implementation status. For example:</p> <p>Note: StatusMessage content depends on implementation/ Operating System.</p> <p>"ErrorStatus": 0, "ErrorMessage": ""</p> <p>(and expect that TR-181 Status = Complete, else TR-181 Status = Error_Other for non-0 ErrorStatus).</p> <p>or</p> <p>"ErrorStatus": -1, "ErrorMessage": "GETADDRINFO ERROR: Invalid argument (Name or service not known)"</p> <p>or</p> <p>"ErrorStatus": -1,</p>	<p><b>ONLY in TR-181:</b> Status</p> <p>Indicates the availability of diagnostics data. Enumeration of:</p> <ul style="list-style-type: none"> <li>• Complete</li> <li>• Error_CannotResolveHostName</li> <li>• Error_NoRouteToHost</li> <li>• Error_InitConnectionFailed</li> <li>• Error_NoResponse</li> <li>• Error_PasswordRequestFailed</li> <li>• Error_LoginFailed</li> <li>• Error_RejectedByRemote</li> <li>• Error_IncorrectSize</li> <li>• Error_Timeout</li> <li>• Error_Internal</li> <li>• Error_Other</li> </ul> <p>If the value of this parameter is anything other than Complete, the values of the other results parameters for this test are indeterminate.</p>	enumeration	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
		"ErrorMessage": "Timeout awaiting server response, exiting!"  or "ErrorStatus": 1, "ErrorMessage": "LOCAL WARNING: Incoming traffic has completely stopped"			
TBD	"Output":	"BOMTime": "2021-10-24T22:38:02.202132Z",	<b>Table 4:</b> BeginningOfMeasurement <b>TR-181:</b> BOMTime  <i>t</i> , the start of a measurement interval, in UTC, which MUST be specified to TimestampResolution precision (Table 2)  For example: 2008-04-09T15:01:05.123456Z	datetime, UTC	Part of Minimum Profile, = X
TBD	"Output":	"EOMTime": "2021-10-24T22:38:12.710272Z", (see the very end of JSON output)	<b>Table 4:</b> EndOfMeasurement <b>TR-181:</b> EOMTime  <i>t + Δt</i> , the end of a measurement interval, in UTC, which MUST be specified to TimestampResolution precision (Table 2).  For example: 2008-04-09T15:01:05.123456Z	datetime, UTC	??
	"Output":	"TmaxUsed": 1000,	<b>Table 4:</b> TmaxUsed <b>TR-181:</b> TmaxUsed  Configured value of Tmax used in the test (milliseconds)	unsignedInt	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	TBD		<b>Table 4:</b> TmaxRTTUsed <b>TR-TR-181:</b> same name Configured value of TmaxRTT used in the test (milliseconds)	unsignedInt	
	"Output":	"TestInterval": 10,	<b>Table 4:</b> TestInterval <b>TR-181:</b> TestInterval Measured Duration of the test (either downlink or uplink). This value is expected to equal <i>TestSubInterval</i> (see page 3) * <i>NumberTestSubIntervals</i> (see page 3). This value is expressed in seconds.	unsignedInt	
Maximum Mbps(L3/IP)	"AtMax": {	"MaxIPLayerCapacity": 967.20,	<b>Table 4:</b> MaximumIP-LayerCapacity <b>TR-181:</b> MaxIPLayerCapacity	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	X
TBD	"AtMax": {	"TimeOfMax": "2021-10-24T22:38:12.264182Z",	<b>Table 4:</b> TimeOfMaximumIP-LayerCapacity <b>TR-181:</b> TimeOfMax	datetime, UTC	X
Mbps(L2/Eth):	"AtMax": {	"MaxETHCapacityNoFCS": 978.08,	<b>Table 4:</b> MaximumETHCapacityNoFCS <b>TR-181: same</b>	decimal, 2 digit fraction	X
Mbps(L1/Eth):	"AtMax": {	"MaxETHCapacityWithFCS": 996.73,	<b>Table 4:</b> MaximumETHCapacityWithFCS <b>TR-181: same</b>	decimal, 2 digit fraction	X
Mbps(L1/Eth+VLAN):	"AtMax": {	"MaxETHCapacityWithFCSVLAN": 999.84,	<b>Table 4:</b> MaximumETH CapacityWithFCSVLAN <b>TR-181: same</b>	decimal, 2 digit fraction	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD Once the Max is found: LossRatio: 0.00E+00  (current output resolution is less than TR-471)	"AtMax": {	"LossRatioAtMax": 0.003065378,	<b>Table 4:</b> LossRatioAtMaxCapacity <b>TR-181:</b> LossRatioAtMax  IP-Layer Capacity metric for a single interval $dt_n$ to $dt_{n+1}$ , see Equation 1, where the Capacity is the number of bits received in the subinterval divided by the duration, $dt$ .	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	X
TBD Once the Max is found: RTTVar(ms): 0-x  (current output resolution is less than TR-471)	"AtMax": {	"RTTRangeAtMax": 0.004,	<b>Table 4:</b> RTTRangeAtMaxCapacity <b>TR-181:</b> RTTRangeAtMax  The Range of RTT during the $dt_n$ corresponding to the Max IP-Layer Capacity above, determined at the conclusion of the test. The Range of RTT shall be calculated using the conditional distribution of all packets with a finite value of round-trip delay (undefined delays are excluded), a single value. The time value of the result is expressed in units of <i>seconds</i> , as a positive value.	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	X



udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD Once the Max is found: OWDVar(ms) : 0/0/1 (min/ave/max?) (current output resolution is less than TR-471)	"AtMax": {	"PDVRangeAtMax": 0.003,	<b>Table 4:</b> PDVRangeAtMaxCapacity <b>TR-181:</b> PDVRangeAtMax  The Range of PDV during the $dt_n$ corresponding to the Max IP-Layer Capacity above, determined at the conclusion of the test. The Range of PDV shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements). This value is expressed in <i>seconds</i> . This value is expressed as a decimal to 9 decimal digits.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	X
TBD Once the Max is found: OWDVar(ms) : 0/0/1 (min?/ave/max) (current output resolution is less than TR-471)	"AtMax": {	"MinOnewayDelayAtMax": 0.01	<b>Table 4:</b> MinOnewayDelayAtMaxCapacity <b>TR-181:</b> MinOnewayDelayAtMax  The Minimum One-way Delay during the $dt_n$ corresponding to the Max IP-Layer Capacity above, The Minimum One-way Delay is determined at the conclusion of the test. The Minimum One-way Delay shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements). This value is expressed in <i>seconds</i> .	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD Once the Max is found: Loss/ <b>OoO</b> /Dup: 0/0/0 Note: this is a count, a ratio can be calculated.	"AtMax": {	"ReorderedRatioAtMax": 0.0,	<b>Table 4:</b> ReorderedRatioAtMaxCapacity <b>TR-181:</b> ReorderedRatioAtMax Ratio of Reordered total packets sent during dtn corresponding to the Max IPLayer Capacity above, determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
TBD Once the Max is found: Loss/ <b>OoO</b> / <b>Dup</b> : 0/0/0 Note: this is a count, a ratio can be calculated.	"AtMax": {	"ReplicatedRatioAtMax": 0.0,	<b>Table 4:</b> ReplicatedRatioAtMaxCapacity <b>TR-181:</b> ReplicatedRatioAtMax Ratio of Replicated packeys to total packets sent during dtn corresponding to the Max IPLayer Capacity above, determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
	"AtMax": {	"InterfaceEthMbps": 0.0,	<b>Table 5:</b> InterfaceEthMbpsAtMax <b>TR-181:</b> same The number of bits observed on the Interface during an IP-Layer Capacity test for time interval of duration TestSubInterval ending at TimeOfSubInterval corresponding to the MaxIPLayerCapacity, divided by the duration of TestSubInterval. Result is expressed in Mbps with 2 digits beyond the decimal. 10 <sup>6</sup> bits/second = 1 Mbps. This is primarily a diagnostic measurement. Measurement direction follows the Role (Sender or Receiver). This measurement is optional.	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"AtMax": {	"Mode": 1, The bimodal mode number and about 9 other metrics are only available in JSON Output:  "LossCount": 372,  "ReorderedCount": 0,  "ReplicatedCount": 0, "PDVMin": 0.007, "PDVAvg": 0.008, "PDVMax": 0.01, "RTTMin": 0.007, "RTTMax": 0.012,			
			<b>Table 4: TR-181:</b>	dateTime	
<b>Downstream Summary</b> (over the entire test Interval)	"Summary": {		<There is not an exact match for the Summary among udpst STDOUT, These are measurements that apply to the entire test duration, TestInterval. >		
Mbps(L3/IP):	"Summary": {	"IPLayerCapacity Summary": 729.85,	<b>Table 4: IP-LayerCapacitySummary</b> <b>TR-181: same</b>  Results of measurements using the IP-Layer Capacity metric over the complete TestInterval, $dt * m$ , see Equation 1	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	X

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Delivered(%):	"Summary": {	"LossRatioSummary": 0.002482453,	<b>Table 4: LossRatioSummary</b> <b>TR-181: same</b> Ratio of lost to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	X
RTTVar(ms):	"Summary": {	"RTTRangeSummary": 0.012,	<b>Table 4: RTTRangeSummary</b> <b>TR-181: same</b> The Range of RTT during the complete TestInterval, $dt * m$ , determined at the conclusion of the test. ...	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
OWDVar(ms):	"Summary": {	"PDVRangeSummary": 0.014,	<b>Table 4: PDVRangeSummary</b> <b>TR-181: same</b> The Range of PDV during the complete TestInterval, $dt * m$ , determined at the conclusion of the test. ...	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Downstream Minimum One-Way Delay(ms): 18 [w/clock difference],	"Summary": {	"MinOnewayDelaySummary": 0.005,	<b>Table 4:</b> MinOnewayDelaySummary <b>TR-181: same</b>  The Minimum One-way Delay during the complete TestInterval, $dt * m$ , The Minimum One-way Delay is determined at the conclusion of the test. ...	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
Downstream Minimum Round-Trip Time(ms):	"Summary": {	"MinRTTSummary": 0.007	<b>Table 4:</b> MinRTTSummary <b>TR-181: same</b>  The Minimum RTT during the complete TestInterval, $dt * m$ , The Minimum RTT is determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	X
TBD	"Summary": {	"ReorderedRatioSummary": 0.0,	<b>Table 4:</b> ReorderedRatioSummary <b>TR-181: same</b>  Ratio of Reordered to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
TBD	"Summary": {	"ReplicatedRatioSummary": 0.0,	<b>Table 4:</b> ReplicatedRatioSummary <b>TR-181: same</b>  Ratio of Replicated to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
	"Summary": {	"InterfaceEthMbps": 0.0,	<b>Table 5:</b> InterfaceEthMbpsSummary <b>TR-181: same</b>  The number of bits observed on the Interface during an IP-Layer Capacity test for the entire time interval of duration TestInterval, divided by the duration of TestInterval. Result is expressed in Mbps with 2 digits beyond the decimal. $10^6$ bits/second = 1 Mbps. This is primarily a diagnostic measurement. Measurement direction follows the Role (Sender or Receiver). This measurement is optional.	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	
Loss/OoO/Dup:	"Summary": {	"seqErrLoss":	Loss Count - do we need this too? NOT CURRENTLY ADDED		
Loss/OoO/Dup:	"Summary": {	"seqErrOoo":	<b>Table 4:</b> ReorderedRatioSummary <b>TR-181: same</b>  Ratio of Reordered to total packets sent during the complete TestInterval, $dt * m$ , determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
Loss/OoO/Dup:	"Summary": {	"seqErrDup":	<p><b>Table 4:</b>                      ReplicatedRatioSummary  <b>TR-181: same</b></p> <p>Ratio of Replicated to total packets sent during the complete TestInterval, <math>dt * m</math>, determined at the conclusion of the test.</p>	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
OWDVar(ms) : RTTVar(ms): (others)	"Summary": {	<p>About 8 metrics not in the data model or specification:</p> <p>"LossCount": 1679,</p> <p>"ReorderedCount": 0,</p> <p>"ReplicatedCount": 0,</p> <p>"PDVMin": 0.0,</p> <p>"PDVAvg": 0.004,</p> <p>"PDVMax": 0.011,</p> <p>"RTTMin": 0.0,</p> <p>"RTTMax": 0.012,</p>	do we need this too? NOT CURRENTLY ADDED		

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output":	"ModalResult": [],	<p>Table 4: ModalResult{<i>i</i>} TR-181: ModalResult.{<i>i</i>}                      Modal test results. Only returned when bimodal test mode is enabled                      (  <i>NumberFirstModeTestSubIntervals</i><sup>17</sup> &gt;=1). <b>If returned, it MUST contain one or more entries, with instance number 1 corresponding to the second mode and instance number 2 corresponding to the third mode, etc.</b></p> <p><b>Results for the Maximum in each mode/instance</b> are calculated based on <i>IncrementalResult.{<i>i</i>}</i>.<sup>18</sup> data within the boundary of its corresponding mode.</p> <p>&lt;Deleted: This table MUST contain at least 0 and at most 2 entries.&gt;</p> <p>This table's Instance Numbers MUST be 1, 2, 3... (assigned sequentially without gaps).</p> <p><b>SB</b></p>	There is a Straw ballot comment here: only one mode in ModalResult when two modes are to be reported.	
<b>IncrementalResult.{<i>i</i>}</b>  (Incremental Results for all sub-intervals below)	<b>IncrementalResult.{<i>i</i>}</b>	<b>IncrementalResult.{<i>i</i>}</b>	<b>IncrementalResult.{<i>i</i>}</b>	<b>IncrementalResult.{<i>i</i>}</b>	

<sup>17</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).NumberFirstModeTestSubIntervals](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().NumberFirstModeTestSubIntervals)

<sup>18</sup> [https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity\(\).IncrementalResult.{i}](https://build.broadband-forum.org/artifact/BUSDM-DEV2DMDEV/JOB1/build-196/HTML/device2/docs/tr-181-2-usp.html#D.Device:2.Device.IP.Diagnostics.IPLayerCapacity().IncrementalResult.{i}).



udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output": {  "IncrementalResult": {}	"IPLayerCapacity": 93.36,	Table 4: IP-LayerCapacitySubInterval TR-181: IPLayerCapacity  Results of measurements using the IP-Layer Capacity metric for a single interval $dt_n$ to $dt_{n+1}$ , see Equation 1, where the Capacity is the number of bits received in the subinterval divided by the duration, dt.	decimal64 number with fraction digits = 3, as specified in [Section 9.3 of RFC7950].	
	"Output": {  "IncrementalResult": {}	"TimeOfSubInterval": "2021-10-24T22:38:03.253183Z",	Table 4: TimeOfIP-LayerCapacitySubInterval TR-181:TimeOfSubInterval  End Time of the $dt_n$ to $dt_{n+1}$ subinterval when each of the m IP-Layer Capacity was measured, in UTC, which MUST be specified to TimestampResolution precision(Table 2)	dateTime	
	"Output": {  "IncrementalResult": {}	"LossRatio": 0.0,	Table 4: LossRatioSubInterval TR-181: LossRatio  Ratio of lost to total packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output": {  "IncrementalResult": {	"RTTRange": 0.002,	Table 4: RTTRangeSubInterval TR-181: RTTRange  The Range of RTT during $dt_n$ corresponding to packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above). The Range of RTT shall be calculated using the conditional distribution of all packets with a finite value of round-trip delay (undefined delays are excluded), a single value	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
	"Output": {  "IncrementalResult": {	"PDVRange": 0.0,	Table 4: PDVRangeSubInterval TR-181: PDVRange  The Range of PDV during $dt_n$ corresponding to packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above. The Range of PDV shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Output": {  "IncrementalResult": {}	"MinOnewayDelay": 0.005,	Table 4: MinOnewayDelaySubInterval TR-181: MinOnewayDelay  The Minimum One-way Delay during $dt_n$ corresponding to packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above. The Minimum One-way Delay is determined at the conclusion of the test. The Minimum One-way Delay shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
	"Output": {  "IncrementalResult": {}	"ReorderedRatio": 0.0,	Table 4: ReorderedRatioSubInterval TR-181: ReorderedRatio  Ratio of Reordered to total packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
	"Output": {  "IncrementalResult": {}	"ReplicatedRatio": 0.0,	Table 4: ReplicatedRatioSubInterval TR-181: ReplicatedRatio  Ratio of Replicated to total packets sent during $dt_n$ to $dt_{n+1}$ corresponding to each IP-LayerCapacitySubInterval above).	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	

udpst text output	JSON Category	Current JSON name	TR-471 name (and TR-181 name for unique output parameters)	TR-471 Format and Units	Min Profile
	"Summary": {	"InterfaceEthMbps": 0.0,	<p><b>Table 5:</b> InterfaceEthMbps  <b>TR-181:</b> same</p> <p>The number of bits observed on the Interface during an IP-Layer Capacity test for time interval of duration TestSubInterval ending at TimeOfSubInterval, divided by the duration of TestSubInterval. Result is expressed in Mbps with 2 digits beyond the decimal. 10<sup>6</sup> bits/second = 1 Mbps. This is primarily a diagnostic measurement. Measurement direction follows the Role (Sender or Receiver). This measurement is optional.</p>	decimal64 number with fraction digits = 2, as specified in [Section 9.3 of RFC7950].	
	"Output": {  "IncrementalResult": [{	<p>"Interval": 1,</p> <p>"Seconds": 1,</p> <p>"DeliveredPercentage": 100.00,</p> <p>"PDVMin": 0.0,</p> <p>"PDVAvg": 0.0,</p> <p>"PDVMax": 0.0,</p> <p>"RTTMin": 0.0,</p> <p>"RTTMax": 0.002,</p> <p>"InterfaceEthMbps": 0.00,</p>	There are lots of additional JSON outputs!		

## 4 First Pass (Implemented in Release 7.2.0, (with variable names updated to exact implementation, including a typo))

Table below starts with Test context and configuration. "X" = Part of Minimum Profile. The Release 7.2.1 Default values for SeqErrThresh (10) and SlowAdjThresh (3) are used below.

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
Mode: Client Downstream Test	"config":  "type":	"Downstream", (reported on the client)	<b>Table 1:</b> Role	enumeration [Receiver, Sender]	X
NA (Command line input)			<b>Table 1:</b> Host	string(256)	X
NA			<b>Table 1:</b> Port	unsignedInt; [1:65535]	
(only 1 supported)			<b>Table 1:</b> NumberOfConnections	unsignedInt; $1 \leq \# \leq 10$ , or supported Maximum if less than 10	
Jumbo Datagrams: Enabled (above 1Gbps by default)			<b>Table 1:</b> JumboFramesPermitted	Boolean;[0:1]  Default: 0 (False: not permitted)  <b>Note: Default changing to True</b>	X
IPv4 ToS: 0	"config":  "type":	"iptos_byte": 0	<b>Table 1:</b> DSCP	unsignedInt; [0:63] Default: 0 = Best Effort	X
SendingRate Index: <Auto> or <rate> from Command line input, -l <rate>	"config":  "type":	"sending_rate":	<b>Table 1:</b> TestType	enumeration; search or fixed (default is search, but the current JSON includes the summary fields for the entire TestInterval, making it more likely to be used ??)	X

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
DelayVar Thresholds(ms): 30-90 [RTT]	"config": "type":	"delay_usage": "RTT" or	<b>Table 1:</b> EnableIPDV	Boolean;[0:1] 0=False, Use RTT= round-trip delay variation in the load rate adjustment algorithm  (non-default is 1=True EnableIPDV which uses one-way delay variation for the load rate adjustment algorithm)  <b>Note: Added more explanation in TR-471</b>	X
Test Interval(sec): <b>10</b>	"config": "type":	"duration":	<b>Table 1:</b> $\Delta t$ (TestInterval)	unsignedInt; $5 \leq \text{seconds} \leq 60$	X
Sub-Interval[10] (sec):			<b>Table 1:</b> $m$ (NumberTestSubIntervals)	unsignedInt; $1 \leq \# \leq 100$	
Sub-Interval[1] (sec): <b>1</b>			<b>Table 1:</b> $dt$ (TestSubInterval)	unsignedInt; $100 \leq \text{ms} \leq 6000$ (max $\Delta t / (m=10)$ ) in milliseconds) MUST meet Type;Range constraints on $\Delta t = m * dt.$	X
Trial Interval(ms): <b>50</b>	"config": "type":	"interval":	<b>Table 1:</b> StatusFeedbackInterval	unsignedInt; 50ms $20 \leq \text{ms} \leq 250$	X
SeqError Threshold: 10	"config": "type":	"seqerr_th":10	<b>Table3:</b> SeqErrThresh	unsignedInt; 10 $0 \leq \text{SeqErrThresh} \leq 100$	X

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
Ignore OoO/ Dup: Disabled	"config":  "type":	"ignore_oo odup": false	<b>Table3:</b> EnableReordDupIgnore  Configuration of SeqErrors counting to ignore Reordering and Duplication impairments measured (only Loss counts toward received packet sequence number errors)	Boolean;[0:1] 0 (False: not enabled)	X
DelayVar Thresholds(ms): <b>30-90</b>	"config":  "type":	"delvat_lo wer":	<b>Table 3:</b> LowThresh	unsignedInt; 5 ≤ ms ≤ 250	X
DelayVar Thresholds(ms): <b>30-90</b>	"config":  "type":	"delvar_up per":	<b>Table3:</b> UpperThresh	unsignedInt; 5 ≤ ms ≤ 250	X
High-Speed Delta: 10	"config":  "type":	"hs_delta": 10	<b>Table 3:</b> HighSpeedDelta  The number of rows to move in a single adjustment when initially increasing offered load (to ramp-up quickly)	unsignedInt; ≥2	X
Congestion Threshold: 3	"config":  "type":	"congest_t h": 3	<b>Table 3:</b> SlowAdjThresh  Threshold on SlowAdjCount used to infer congestion. Use values >1 to avoid misinterpreting transient loss.	unsignedInt; >1	X
<b>OUTPUT Follows</b>					
			<b>Table 4:</b> BeginningOfMeasuremen t	datetime, UTC	Part of Minimum Profile, = X

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
Maximum Mbps(L3/IP)	"results" : "maximum":	"L3Mbps":	<b>Table 4:</b> MaximumIP-LayerCapacity	decimal64number with fraction digits = 3, as specified in [Section 9.3 of RFC7950].	X
			<b>Table 4:</b> TimeOfMaximumIP-LayerCapacity	datetime, UTC	
Mbps(L2/Eth):	"results" : "maximum":	"L2Mbps"	<b>Table 4:</b> MaximumETH Capacity(noFCS)		X
Mbps(L1/Eth):	"results" : "maximum":	"L1Mbps"	<b>Table 4:</b> MaximumETH Capacity(withFCS)		X
Mbps(L1/Eth+VLAN):	"results" : "maximum":	"L0Mbps"	<b>Table 4:</b> MaximumETH Capacity(withFCS+VLAN)		X
			<b>Table 4:</b> IP-LayerCapacity <b>SubInterval</b>  IP-Layer Capacity metric for a single interval dtn to dtn+1 , see Equation 1, where the Capacity is the number of bits received in the subinterval divided by the duration, dt.	Mbps, decimal64number with fraction digits = 3, as specified in [Section 9.3 of RFC7950].	
			<b>Table 4:</b> TimeOfIP-LayerCapacity <b>SubInterval</b>	datetime, UTC	



udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
			<p><b>Table 4:</b> LossRatioAtMaxCapacity</p> <p>Ratio of lost of total packets sent during dtn corresponding to the Max IP-Layer Capacity above), determined at the conclusion of the test.</p>	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
			<p><b>Table 4:</b> LossRatioSubInterval</p> <p>Ratio of lost to total packets sent during dtn to dtn+1 corresponding to each IPLayerCapacitySubInterval above).</p>	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
			<p><b>Table 4:</b> RTTRangeAtMaxCapacity</p>	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
			<p><b>Table 4:</b> RTTRangeSubInterval</p>	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
			<p><b>Table 4:</b>                      PDVRangeAtMaxCapacity                      The Range of PDV during the dtn corresponding to the Max IP-Layer Capacity above, determined at the conclusion of the test.                      The Range of PDV shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements).</p>	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
			<p><b>Table 4:</b>                      PDVRangeSubInterval</p>	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
			<p><b>Table 4:</b>                      MinOnewayDelayAtMaxCapacity                      The Minimum One-way Delay during the dtn corresponding to the Max IP-Layer Capacity above, The Minimum One-way Delay is determined at the conclusion of the test.                      The Minimum One-way Delay shall be calculated using the conditional distribution of all packets with a finite value of one-way delay (undefined delays are excluded, as described for other delay measurements).</p>	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
			<b>Table 4:</b> MinOnewayDelay <b>SubInterval</b>	seconds, decimal64 with fraction digits = 9 (see section 9.3 of [RFC7950]) with resolution of 0.000000001 seconds (1.0 ns).	
			<b>Table 4:</b> ReorderedRatioAtMaxCapacity Ratio of Reordered total packets sent during dtn corresponding to the Max IPLayer Capacity above), determined at the conclusion of the test.	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
			<b>Table 4:</b> ReorderedRatio <b>SubInterval</b>	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
			<b>Table 4:</b> ReplicatedRatioAtMaxCapacity	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
			<b>Table 4:</b> ReplicatedRatio <b>Subinterval</b>	decimal64 with fraction digits = 9 (see section 9.3 of [RFC6020]) with resolution of 0.0000000001	
Downstream Summary Delivered(%):	"results" :  "summary":	"avgDeliveredPct":	<There is not an exact match for the this and the JSON labels in TR-471. These are measurements that apply to the entire test duration, TestInterval. >		

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
Loss/OoO/Dup:	"results" :  "summary":	"seqErrLoss" :"			
Loss/OoO/Dup:	"results" :  "summary":	"seqErrOoo" :"			
Loss/OoO/Dup:	"results" :  "summary":	"seqErrDup" :"			
OWDVar(ms):	"results" :  "summary":	"owdVarMin" :"			
OWDVar(ms):	"results" :  "summary":	"owdVarAvg" :"			
OWDVar(ms):	"results" :  "summary":	"owdVarMax" :"			
RTTVar(ms):	"results" :  "summary":	"rttVarMin":			

udpst text output	JSON Category	Current JSON name	TR-471 name	TR-471 Format and Units	Min Profile
RTTVar(ms):	"results" :  "summary":	"rttVarMax" :			
Mbps(L3/IP):	"results" :  "summary":	"avgL3Mbps":			
Downstream Minimum One-Way Delay(ms): 18 [w/clock difference],	"results" :  "minimum":	"owd":			
Downstream Minimum Round-Trip Time(ms):	"results" :  "minimum":	"rtt":			