Juniper® Validated Design

JVD Test Report Brief: Low Latency QoS Design for 5G Solution

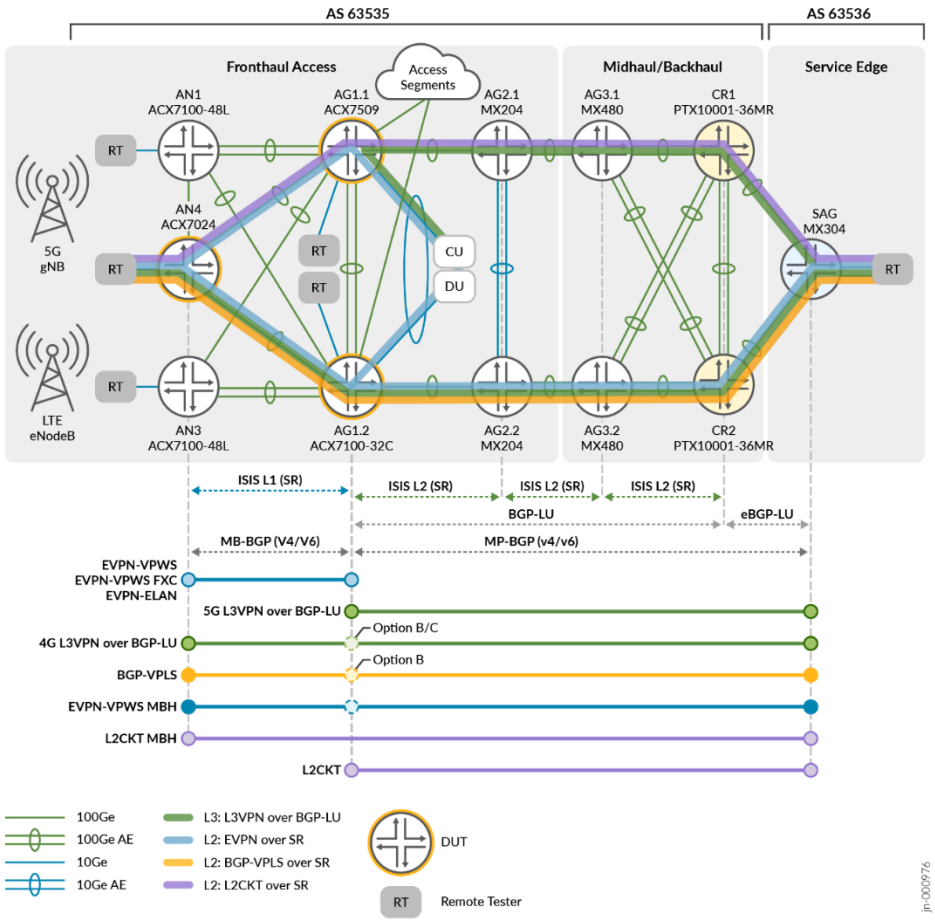
test-report-brief-5g-fh-cos-llq-02-04

Introduction

This Juniper Validated Design (JVD) document is focused on CoS operations and performance requirements to ensure integrity of critical 5G Fronthaul traffic. This traffic flows between radio unit (RU) to distributed unit (DU) emulated devices, as facilitated by the CSR (ACX7024), ACX7100-32C (HSR), and ACX7509 (HSR). Additional validation includes MX304 as the SAG for end-to-end MBH traffic flows. This profile includes new capabilities of the ACX7000 to support ultra-low latency workloads with LLQ (low latency queuing) and supporting additional O-RAN traffic profiles with multi-level priority QoS.

Test Topology

Figure 1: 5G Fronthaul CoS LLQ Topology



Platforms Tested

Table 1: Roles and Platforms Tested

Platforms Used		
Role	**Platform**	**OS**
AN1	ACX7100-48L	Junos OS Evolved Release 23.4R2
AN4	ACX7024	Junos OS Evolved Release 23.4R2
AN3	ACX7100-48L	Junos OS Evolved Release 23.4R2
AG1.1	ACX7509	Junos OS Evolved Release 23.4R2
AG1.2	ACX7100-32C	Junos OS Evolved Release 23.4R2
AG2.1	MX204	Junos OS Release 23.4R2
AG2.2	MX204	Junos OS Release 23.4R2
AG3.1	MX480	Junos OS Release 23.4R2
AG3.2	MX480	Junos OS Release 23.4R2

Version Qualification History

This JVD has been qualified using Junos OS Release 23.4R2 and Junos OS Evolved Release 23.4R2-EVO.

Validation Results

5G xHaul infrastructure defines strict latency budgets particularly in the Fronthaul segment where supporting ultra-low latency flows are required. The following figure provides a snapshot of Fronthaul, Midhaul, and MB performance comparison across different service types on ACX7024, ACX7100, and ACX7509. Total latency factors number of hops, for example EVPN-VPWS with 3 hops measured 15.1µs, amounting to ~5µs per hop in the fronthaul segment.

Figure 2: Class of Service Functional Diagram

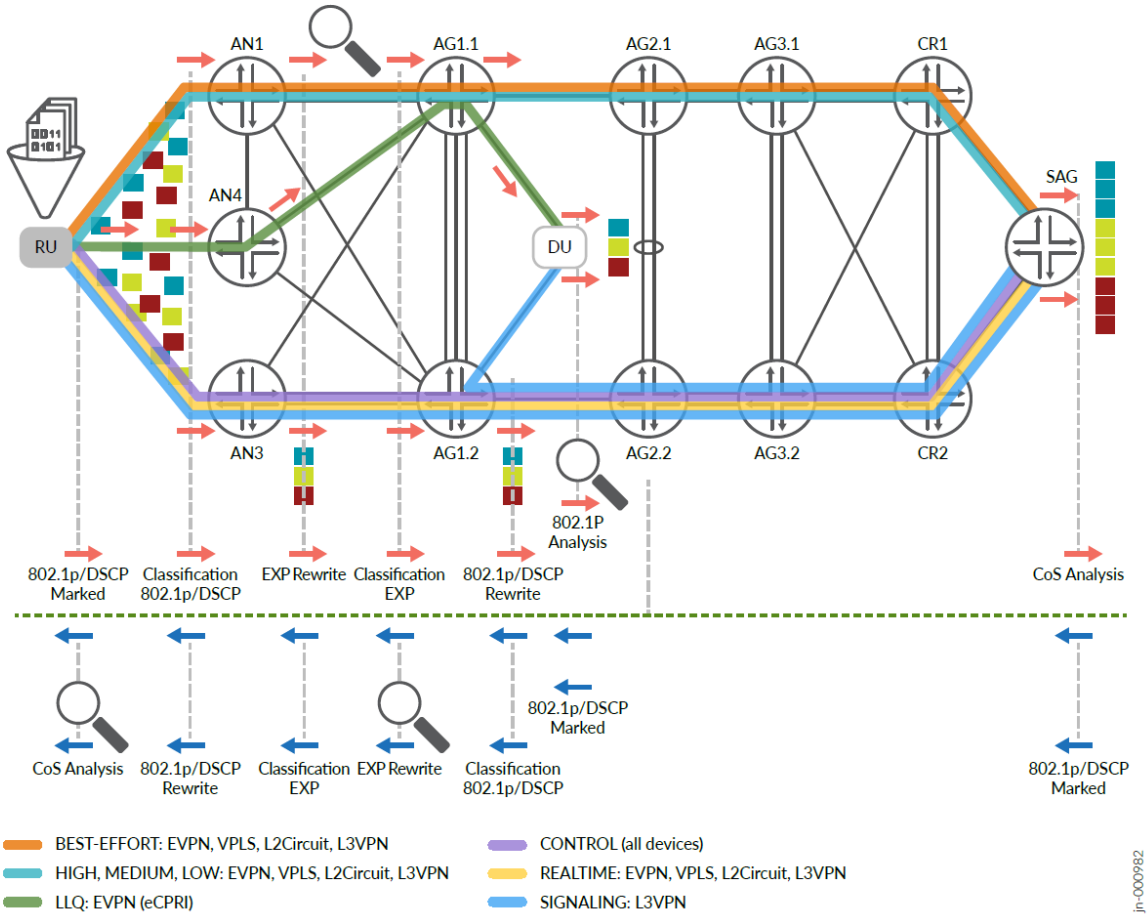
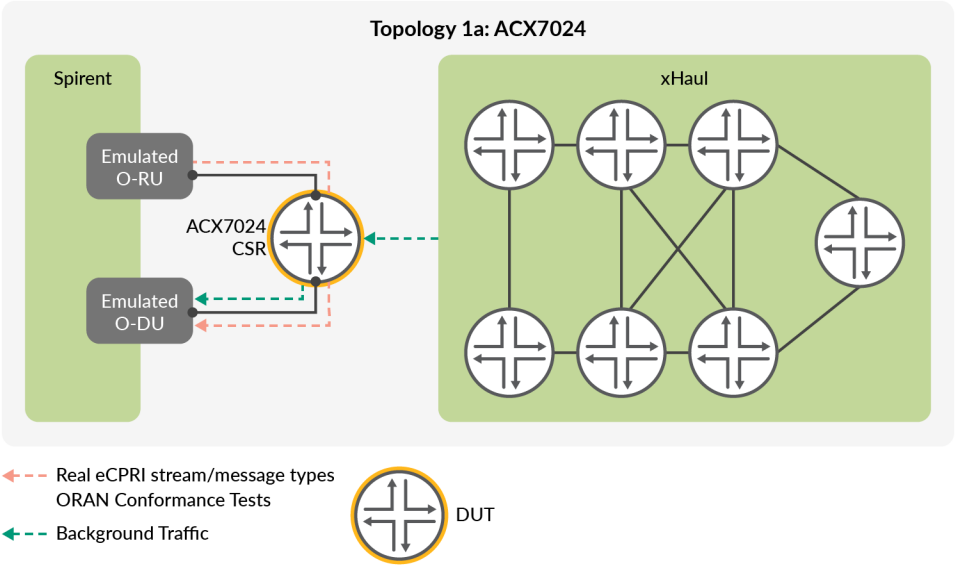


Figure 3: Topology 1a ACX7024 standalone DUT



Topology 1 validates the individual DUT performance acting in CSR or HSR role. The featured DUTs include ACX7024 as CSR, ACX7100-32C and ACX7509 as HSR. Spirent emulates O-RU and O-DU however it does not include self-latency. Test types include IP traffic as bursts and steady streams using packet sizes of 64b, 512b, and 1500b. Topology 1 provides the best representation of individual ACX7024, ACX7100, and ACX7509 performance.

Table 2: Topology 1a Latency Result with Traffic only on Low-Latency Queue

The following table describes the ACX7024 performance when traffic is sent only into the LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	5.83	6.18	9.54	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	512	5.78	6.13	9.55	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	1500	5.09	5.31	6.61	non-congested	NA	NA	1

Table 3: Topology 1a Latency Result for Non-Congested Continuous Traffic

The following table describes the performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	5.09	5.43	12.95	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	64	5.09	6.94	52.72	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	64	5.01	6.36	20.40	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	64	5.08	6.24	24.66	non-congested	NA	NA	1

FC-HIGH	low	10G	continuous	64	5.09	6.68	39.37	non-congested	NA	NA	1
FC-MEDIUM	low	10G	continuous	64	5.09	7.05	51.91	non-congested	NA	NA	1
FC-LOW	low	10G	continuous	64	5.09	6.94	52.72	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	512	5.77	5.96	10.10	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	512	5.77	6.10	12.40	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	512	5.76	6.26	17.33	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	512	5.78	6.43	21.05	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	512	5.78	6.40	19.31	non-congested	NA	NA	1
FC-MEDIUM	low	10G	continuous	512	5.78	6.10	25.61	non-congested	NA	NA	1
FC-LOW	low	10G	continuous	512	5.78	6.32	23.38	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	1500	5.83	6.06	11.23	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	1500	5.84	6.08	13.48	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	1500	5.84	6.10	16.25	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	1500	5.81	6.36	22.66	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	1500	5.87	6.07	34.26	non-congested	NA	NA	1
FC-MEDIUM	low	10G	continuous	1500	5.87	6.06	30.42	non-congested	NA	NA	1
FC-LOW	low	10G	continuous	1500	5.87	6.07	32.43	non-congested	NA	NA	1

Table 4: Topology 1a Latency Result for Congested Continuous Traffic

The following table describes the ACX7024 performance when the strict-high queue is oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	5.83	6.17	12.44	1Q Congestion	strict-high	ACX7024	1
FC-LLQ	low-latency	10G	continuous	512	5.78	6.02	10.95	1Q Congestion	strict-high	ACX7024	1
FC-LLQ	low-latency	10G	continuous	1500	5.09	5.26	11.34	1Q Congestion	strict-high	ACX7024	1

Table 5: Topology 1a Latency Performance for Non-Congested Burst Traffic

The following table includes burst traffic type rather than continuous for Topology 1a with ACX7024, measuring performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained well below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	5.82	5.91	6.38	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	64	5.86	5.91	7.61	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	64	5.83	5.91	8.18	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	64	5.82	5.99	9.69	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	64	5.87	5.91	6.71	non-congested	NA	NA	1
FC-Medium	low	10G	burst	64	5.87	5.91	6.46	non-congested	NA	NA	1

FC-Low	low	10G	burst	64	5.87	5.91	9.13	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	64	5.87	5.91	6.43	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	burst	512	5.77	5.80	6.21	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	512	5.77	5.87	9.55	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	512	5.69	5.87	7.72	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	512	5.77	5.87	11.39	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	512	5.77	5.87	6.45	non-congested	NA	NA	1
FC-Medium	low	10G	burst	512	5.77	5.87	6.69	non-congested	NA	NA	1
FC-Low	low	10G	burst	512	5.77	5.87	6.64	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	512	5.77	5.87	6.34	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	burst	1500	5.08	5.12	6.31	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	1500	5.08	5.30	8.72	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	1500	5.00	5.30	8.95	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	1500	5.08	5.30	11.10	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	1500	5.08	5.30	6.79	non-congested	NA	NA	1
FC-Medium	low	10G	burst	1500	5.08	5.30	8.35	non-congested	NA	NA	1
FC-Low	low	10G	burst	1500	5.08	5.30	6.57	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	1500	5.08	5.30	6.30	non-congested	NA	NA	1

Table 6: Topology 1a Latency Performance for Congested Burst Traffic

The following table describes the ACX7024 performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	5.84	6.00	12.44	1Q Congestion	strict-high	ACX7024	1
FC-LLQ	low-latency	10G	burst	512	5.78	5.99	11.00	1Q Congestion	strict-high	ACX7024	1
FC-LLQ	low-latency	10G	burst	1500	5.09	5.16	11.39	1Q Congestion	strict-high	ACX7024	1

Table 7: Topology 1a Latency Result with Port-level shaper

The following table describes ACX7024 performance when the port level shaper is configured to 1gig and 3gig and when the high, medium, and low queues are oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	5.85	5.98	7.68	1G Shaper	high, medium, low	ACX7024	1
FC-LLQ	low-latency	10G	continuous	512	5.77	5.92	9.41	1G Shaper	high, medium, low	ACX7024	1
FC-LLQ	low-latency	10G	continuous	1500	5.07	5.24	9.29	1G Shaper	high, medium, low	ACX7024	1

FC-LLQ	low-latency	10G	continuous	64	5.85	6.14	7.78	3G Shaper	high,medium,low	ACX7024	1
FC-LLQ	low-latency	10G	continuous	512	5.77	6.20	9.58	3G Shaper	high,medium,low	ACX7024	1
FC-LLQ	low-latency	10G	continuous	1500	5.09	5.48	9.52	3G Shaper	high,medium,low	ACX7024	1

Figure 4: Topology 1b ACX7100-32C standalone DUT

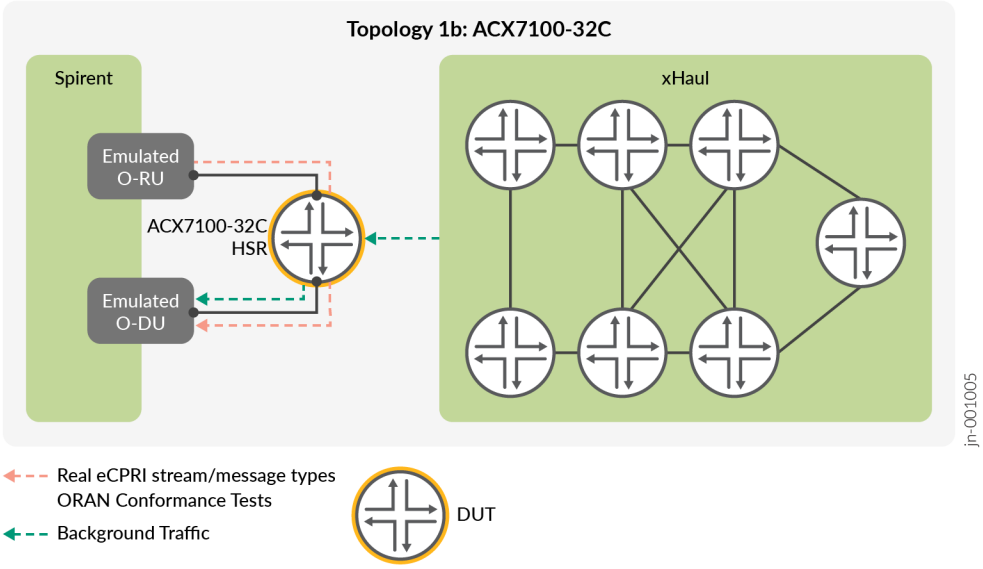


Table 8: Topology 1b Latency Result with Traffic only on Low-Latency Queue

The following table describes the ACX7100-32C performance when traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	4.35	4.44	7.82	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	512	5.05	5.18	5.57	non-congested	NA	NA	1

FC-LLQ	low-latency	10G	continuous	1500	4.68	4.88	5.86	non-congested	NA	NA	1

Table 9: Topology 1b Latency Result for Non-Congested Continuous Traffic

The following table describes ACX7100-32C performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	4.57	4.78	9.30	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	64	4.57	4.83	11.84	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	64	4.58	4.86	14.89	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	64	4.57	5.20	21.32	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	64	4.58	4.94	27.61	non-congested	NA	NA	1
FC-Medium	low	10G	continuous	64	4.61	4.96	31.12	non-congested	NA	NA	1
FC-Low	low	10G	continuous	64	4.58	4.95	25.48	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	512	5.29	5.53	8.85	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	512	5.29	5.70	12.28	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	512	5.34	5.83	18.32	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	512	5.29	5.95	17.89	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	512	5.29	5.94	28.39	non-congested	NA	NA	1

FC-Medium	low	10G	continuous	512	5.34	6.47	21.83	non-congested	NA	NA	1
FC-Low	low	10G	continuous	512	5.35	5.68	28.15	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	1500	4.91	5.29	10.27	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	1500	4.91	5.67	15.49	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	1500	4.96	6.14	18.20	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	1500	4.91	6.03	24.50	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	1500	4.96	6.45	39.09	non-congested	NA	NA	1
FC-Medium	low	10G	continuous	1500	4.96	7.52	50.54	non-congested	NA	NA	1
FC-Low	low	10G	continuous	1500	4.96	6.76	55.82	non-congested	NA	NA	1

Table 10: Topology 1b Latency Result for Congestion with Continuous Traffic

The following table describes ACX7100-32C performance when the strict-high queue is oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	4.58	4.89	11.04	1Q Congestion	strict-high	ACX7509	1
FC-Low	low-latency	10G	continuous	512	5.34	5.57	11.54	1Q Congestion	strict-high	ACX7509	1
FC-Low	low-latency	10G	continuous	1500	4.93	5.13	11.46	1Q Congestion	strict-high	ACX7509	1

Table 11: Topology 1b Latency Result for Non-Congested Burst Traffic

The following table includes burst traffic type rather than continuous for Topology 1c with ACX7100-32C, measuring performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained well below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	4.61	4.65	4.79	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	64	4.61	4.67	5.04	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	64	4.61	4.67	5.04	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	64	4.61	4.66	5.04	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	64	4.61	4.67	5.04	non-congested	NA	NA	1
FC-Medium	low	10G	burst	64	4.61	4.67	5.04	non-congested	NA	NA	1
FC-Low	low	10G	burst	64	4.61	4.67	5.04	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	64	4.61	4.67	5.03	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	burst	512	5.31	5.38	5.49	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	512	5.31	5.42	8.41	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	512	5.31	5.42	5.78	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	512	5.31	5.42	7.82	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	512	5.31	5.42	5.74	non-congested	NA	NA	1
FC-Medium	low	10G	burst	512	5.31	5.42	7.73	non-congested	NA	NA	1

FC-Low	low	10G	burst	512	5.31	5.42	5.74	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	512	5.31	5.42	5.74	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	burst	1500	4.94	5.01	5.87	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	1500	4.94	5.13	7.81	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	1500	4.94	5.13	8.42	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	1500	4.94	5.13	8.55	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	1500	4.94	5.13	5.69	non-congested	NA	NA	1
FC-Medium	low	10G	burst	1500	4.94	5.13	5.65	non-congested	NA	NA	1
FC-Low	low	10G	burst	1500	4.94	5.13	5.76	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	1500	4.94	5.13	5.92	non-congested	NA	NA	1

Table 12: Topology 1b Latency Result for Congested Burst Traffic

The following table describes the ACX7100-32C performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	burst	64	4.59	4.70	11.02	1Q Congestion	strict-high	ACX7509	1
FC-Low	low-latency	10G	burst	512	5.30	5.50	10.14	1Q Congestion	strict-high	ACX7509	1
FC-Low	low-latency	10G	burst	1500	4.92	5.03	11.09	1Q Congestion	strict-high	ACX7509	1

Table 13: Topology 1b Latency Result with Port-level shaper

The following table describes ACX7100-32C performance when the port level shaper is configured to 1gig and 3gig and when the high, medium and low queues are oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	4.91	5.07	5.98	1G Shaper	high, medium, low	ACX7100	1
FC-Low	low-latency	10G	continuous	512	5.69	5.81	7.07	1G Shaper	high, medium, low	ACX7100	1
FC-Low	low-latency	10G	continuous	1500	5.28	5.5	7.82	1G Shaper	high, medium, low	ACX7100	1
FC-Low	low-latency	10G	continuous	64	4.91	5.15	6.46	3G Shaper	high, medium, low	ACX7100	1
FC-Low	low-latency	10G	continuous	512	5.70	6.07	8.58	3G Shaper	high, medium, low	ACX7100	1
FC-Low	low-latency	10G	continuous	1500	5.29	5.70	8.71	3G Shaper	high, medium, low	ACX7100	1

Figure 5: Topology 1c ACX7509 standalone DUT

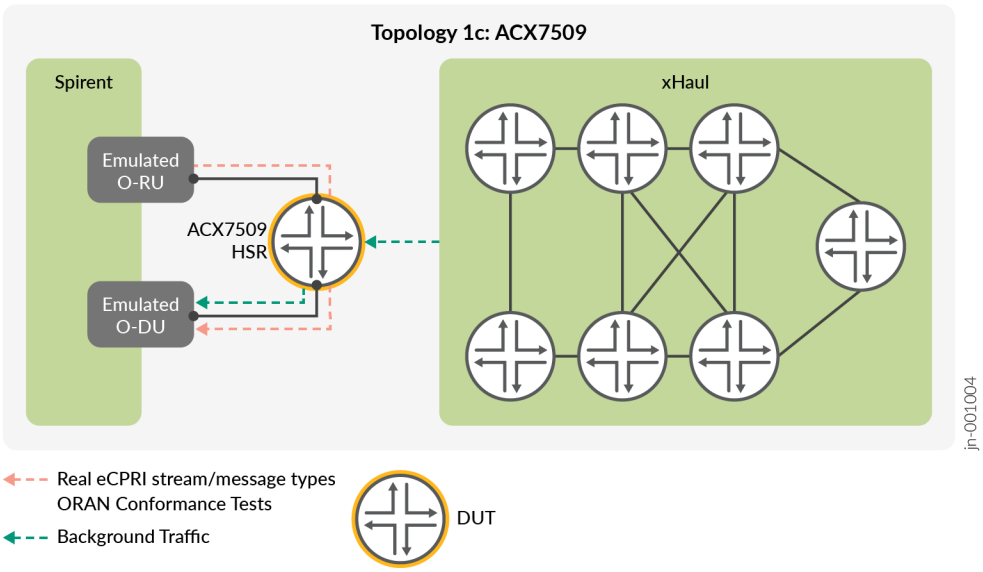


Table 14: Topology 1c Latency Result with Traffic only on Low-Latency Queue

The following table describes ACX7509 performance when traffic is sent only into the LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	4.72	5.16	8.49	non-congested	NA	NA	1
FC-Low	low-latency	10G	continuous	512	5.30	6.12	9.22	non-congested	NA	NA	1
FC-Low	low-latency	10G	continuous	1500	5.10	6.03	9.50	non-congested	NA	NA	1

Table 15: Topology 1c Latency Result for Non-Congested Continuous Traffic

The following table describes ACX7509 performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	4.93	5.24	9.85	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	64	4.95	5.31	12.62	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	64	4.97	5.34	15.32	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	64	4.92	6.04	21.86	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	64	4.97	5.41	36.48	non-congested	NA	NA	1
FC-Medium	low	10G	continuous	64	4.97	5.47	32.47	non-congested	NA	NA	1
FC-Low	low	10G	continuous	64	4.94	5.43	36.44	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	512	5.69	6.18	10.24	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	512	5.69	6.54	14.42	non-congested	NA	NA	1
FC-CONTROL	high	10G	continuous	512	5.72	6.65	19.17	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	512	5.69	7.69	22.86	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	512	5.69	7.32	37.08	non-congested	NA	NA	1
FC-Medium	low	10G	continuous	512	5.73	8.01	35.80	non-congested	NA	NA	1
FC-Low	low	10G	continuous	512	5.73	7.28	36.19	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	continuous	1500	5.34	5.91	12.29	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	continuous	1500	5.32	6.75	16.29	non-congested	NA	NA	1

FC-CONTROL	high	10G	continuous	1500	5.34	7.28	18.77	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	continuous	1500	5.34	8.00	26.09	non-congested	NA	NA	1
FC-HIGH	low	10G	continuous	1500	5.34	8.85	45.10	non-congested	NA	NA	1
FC-Medium	low	10G	continuous	1500	5.34	10.19	57.32	non-congested	NA	NA	1
FC-Low	low	10G	continuous	1500	5.34	9.30	60.16	non-congested	NA	NA	1

Table 16: Topology 1c Latency Result for Congested Continuous Traffic

The following table describes ACX7509 performance when the strict-high queue is oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	4.93	5.26	11.40	1Q Congestion	strict-high	ACX7100	1
FC-Low	low-latency	10G	continuous	512	5.71	5.94	11.89	1Q Congestion	strict-high	ACX7100	1
FC-Low	low-latency	10G	continuous	1500	5.30	5.52	11.50	1Q Congestion	strict-high	ACX7100	1

Table 17: Topology 1c Latency Result for Non-Congested Burst Traffic

The following table includes burst traffic type rather than continuous for Topology 1b with ACX7509, measuring performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained well below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	4.92	5.01	5.12	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	64	4.92	5.07	8.70	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	64	4.92	5.07	9.44	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	64	4.92	5.27	8.71	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	64	4.92	5.10	8.70	non-congested	NA	NA	1
FC-Medium	low	10G	burst	64	4.92	5.10	8.70	non-congested	NA	NA	1
FC-Low	low	10G	burst	64	4.92	5.10	8.70	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	64	4.92	5.10	8.69	non-congested	NA	NA	1
FC-LLQ	low-latency	10G	burst	512	5.71	5.75	5.85	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	512	5.71	6.00	9.73	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	512	5.71	6.00	11.56	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	512	5.71	6.19	10.54	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	512	5.71	6.00	9.43	non-congested	NA	NA	1
FC-Medium	low	10G	burst	512	5.71	6.00	9.43	non-congested	NA	NA	1
FC-Low	low	10G	burst	512	5.71	6.00	9.43	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	512	5.71	6.00	9.42	non-congested	NA	NA	1

FC-LLQ	low-latency	10G	burst	1500	5.30	5.38	7.37	non-congested	NA	NA	1
FC-SIGNALING	strict-high	10G	burst	1500	5.30	6.10	9.07	non-congested	NA	NA	1
FC-CONTROL	high	10G	burst	1500	5.30	6.10	9.21	non-congested	NA	NA	1
FC-REALTIME	medium-high	10G	burst	1500	5.30	6.13	12.20	non-congested	NA	NA	1
FC-HIGH	low	10G	burst	1500	5.30	6.10	9.06	non-congested	NA	NA	1
FC-Medium	low	10G	burst	1500	5.30	6.10	11.82	non-congested	NA	NA	1
FC-Low	low	10G	burst	1500	5.30	6.10	9.02	non-congested	NA	NA	1
FC-BEST-EFFORT	low	10G	burst	1500	5.30	6.10	10.72	non-congested	NA	NA	1

Table 18: Topology 1c Latency Result for Congested with Burst Traffic

The following table describes the ACX7509 performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

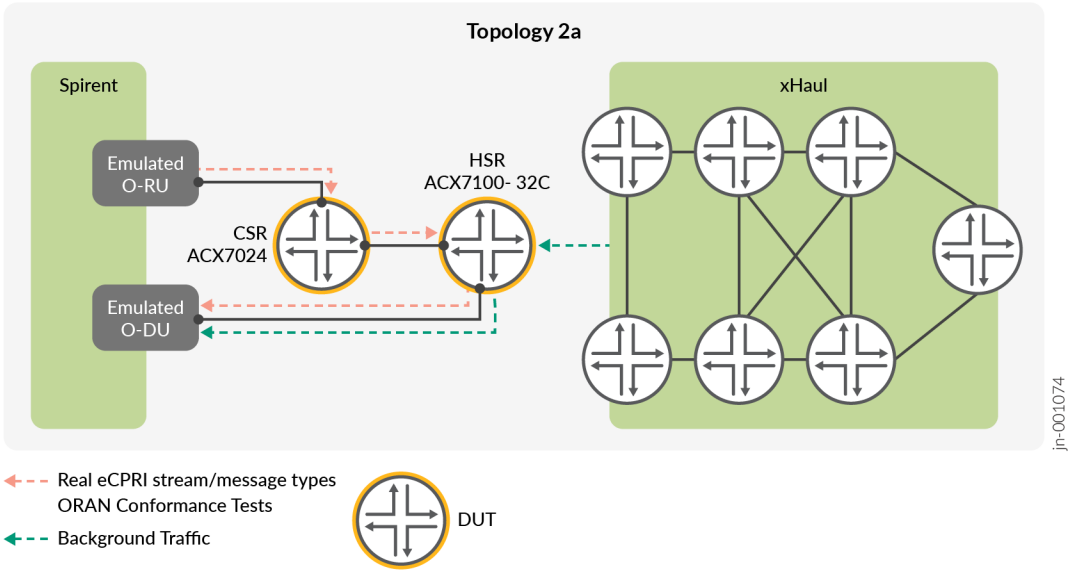
Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	burst	64	4.94	5.05	11.36	1Q Congestion	strict-high	ACX7100	1
FC-Low	low-latency	10G	burst	512	5.67	5.91	10.52	1Q Congestion	strict-high	ACX7100	1
FC-Low	low-latency	10G	burst	1500	5.32	5.40	11.48	1Q Congestion	strict-high	ACX7100	1

Table 19: Topology 1c Latency Result with Port-level shaper

The following table describes ACX7509 performance when the port level shaper is configured to 1gig and 3gig and when the high, medium, and low queues are oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	4.6	4.68	5.4	1G Shaper	high, medium, low	ACX7509	1
FC-Low	low-latency	10G	continuous	512	5.3	5.43	7.4	1G Shaper	high, medium, low	ACX7509	1
FC-Low	low-latency	10G	continuous	1500	4.93	5.06	7.27	1G Shaper	high, medium, low	ACX7509	1
FC-Low	low-latency	10G	continuous	64	4.60	4.77	6.14	3G Shaper	high, medium, low	ACX7509	1
FC-Low	low-latency	10G	continuous	512	5.31	5.72	8.54	3G Shaper	high, medium, low	ACX7509	1
FC-Low	low-latency	10G	continuous	1500	4.93	5.28	8.53	3G Shaper	high, medium, low	ACX7509	1

Figure 6: Topology 2a ACX7024 CSR and ACX7100-32C HSR



Topology 2a measures performance over point-to-point EVPN-VPWS services between CSR and HSR. ACX7024 acts as CSR DUT with ACX7100-32C as HSR DUTs.

Table 20: Topology 2a Latency Result with Traffic only on Low-Latency Queue

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures latency for traffic sent only into the LLQ without background traffic over Topology 2. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	10.45	10.59	10.96	non-congested	NA	NA	2
FC-Low	low-latency	10G	continuous	512	10.97	11.04	11.33	non-congested	NA	NA	2
FC-Low	low-latency	10G	continuous	1500	10.54	10.62	11.48	non-congested	NA	NA	2

Table 21: Topology 2a Latency Result for Non-Congested Continuous Traffic

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ low-latency queue in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	10.50	11.60	28.78	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	continuous	64	10.83	11.28	30.93	non-congested	NA	NA	2
FC-CONTROL	high	10G	continuous	64	10.85	11.24	16.61	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	continuous	64	10.81	11.52	27.88	non-congested	NA	NA	2
FC-HIGH	low	10G	continuous	64	10.85	11.32	30.82	non-congested	NA	NA	2
FC-Medium	low	10G	continuous	64	10.88	11.34	27.73	non-congested	NA	NA	2
FC-Low	low	10G	continuous	64	10.85	11.30	25.77	non-congested	NA	NA	2
FC-LLQ	low-latency	10G	continuous	512	10.92	11.91	27.03	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	continuous	512	11.30	11.91	28.48	non-congested	NA	NA	2
FC-CONTROL	high	10G	continuous	512	11.32	11.87	17.52	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	continuous	512	11.30	11.98	27.71	non-congested	NA	NA	2
FC-HIGH	low	10G	continuous	512	11.31	11.97	28.15	non-congested	NA	NA	2
FC-Medium	low	10G	continuous	512	11.31	11.96	24.92	non-congested	NA	NA	2
FC-Low	low	10G	continuous	512	11.31	11.91	22.91	non-congested	NA	NA	2

FC-LLQ	low-latency	10G	continuous	1500	10.54	11.08	17.19	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	continuous	1500	10.84	11.82	22.45	non-congested	NA	NA	2
FC-CONTROL	high	10G	continuous	1500	10.86	12.30	25.35	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	continuous	1500	10.84	12.08	31.15	non-congested	NA	NA	2
FC-HIGH	low	10G	continuous	1500	10.84	12.64	48.66	non-congested	NA	NA	2
FC-Medium	low	10G	continuous	1500	10.84	12.81	61.29	non-congested	NA	NA	2
FC-Low	low	10G	continuous	1500	10.85	12.98	57.77	non-congested	NA	NA	2

Table 22: Topology 2a Latency Result for Continuous Traffic with 1 Queue Congested

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ when the strict-high queue is oversubscribed and is dropping traffic. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	10.44	10.87	17.85	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	continuous	512	10.97	11.24	16.29	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	continuous	1500	10.52	10.83	17.23	1Q Congestion	strict-high	ACX7024	2

Table 23: Topology 2a Latency Result for Non-Congested Burst Traffic

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	10.44	10.58	10.78	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	burst	64	10.66	10.74	11.88	non-congested	NA	NA	2
FC-CONTROL	high	10G	burst	64	10.66	10.74	11.90	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	burst	64	10.64	10.74	15.83	non-congested	NA	NA	2
FC-HIGH	low	10G	burst	64	10.64	10.74	11.90	non-congested	NA	NA	2
FC-Medium	low	10G	burst	64	10.66	10.74	11.83	non-congested	NA	NA	2
FC-Low	low	10G	burst	64	10.66	10.74	11.86	non-congested	NA	NA	2
FC-LLQ	low-latency	10G	burst	512	10.48	10.72	11.51	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	burst	512	10.65	11.13	17.08	non-congested	NA	NA	2
FC-CONTROL	high	10G	burst	512	10.65	11.13	13.44	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	burst	512	10.65	11.13	16.98	non-congested	NA	NA	2
FC-HIGH	low	10G	burst	512	10.65	11.13	14.77	non-congested	NA	NA	2
FC-Medium	low	10G	burst	512	10.65	11.13	17.05	non-congested	NA	NA	2
FC-Low	low	10G	burst	512	10.65	11.13	17.86	non-congested	NA	NA	2
FC-LLQ	low-latency	10G	burst	1500	10.49	10.60	11.42	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	burst	1500	10.65	10.99	17.08	non-congested	NA	NA	2

FC-CONTROL	high	10G	burst	1500	10.65	10.99	13.44	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	burst	1500	10.65	10.99	16.98	non-congested	NA	NA	2
FC-HIGH	low	10G	burst	1500	10.65	10.99	14.77	non-congested	NA	NA	2
FC-Medium	low	10G	burst	1500	10.65	10.99	17.05	non-congested	NA	NA	2
FC-Low	low	10G	burst	1500	10.65	10.99	11.94	non-congested	NA	NA	2

Table 24: Topology 2a Latency Result for Burst Traffic with 1 Queue Congested

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency of traffic sent in LLQ when the strict-high queue is oversubscribed and is dropping traffic. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

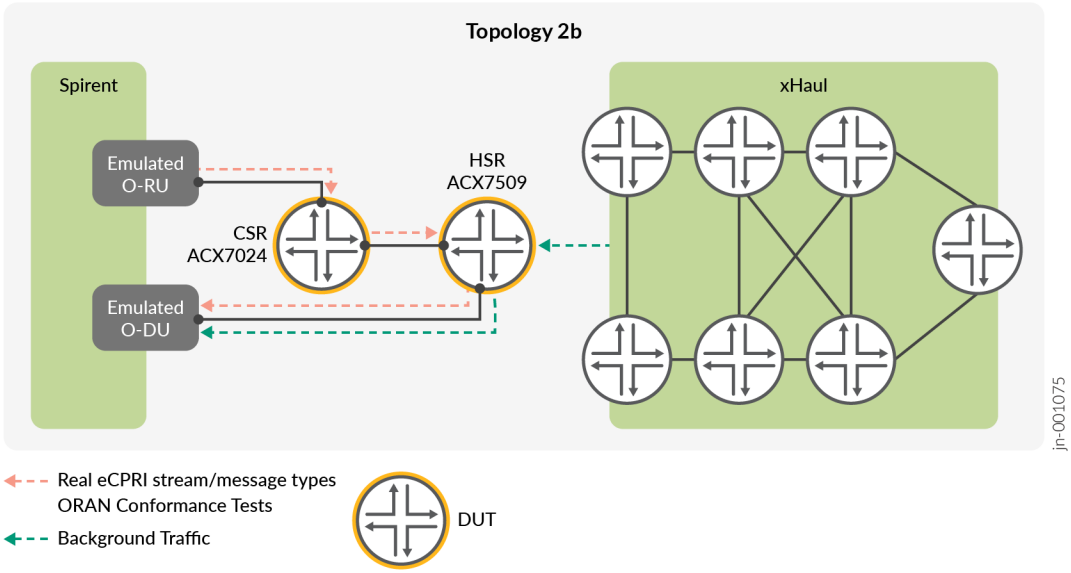
Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	burst	64	10.45	10.67	17.28	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	burst	512	10.89	11.19	15.78	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	burst	1500	10.47	10.68	16.73	1Q Congestion	strict-high	ACX7024	2

Table 25: Topology 2a Latency Result with Port-level shaper

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ when the port level shaper is configured to 1gig and 3gig, with high, medium, and low queues oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	10.45	10.69	13.57	1G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	512	10.92	11.14	14.4	1G Shaper	High ,medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	1500	10.53	10.74	14.74	1G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	64	10.44	11.05	13.72	3G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	512	10.89	11.39	14.64	3G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	1500	10.51	11.03	14.96	3G Shaper	high, medium, low	ACX7024	2

Figure 7: Topology 2b ACX7024 CSR and ACX7509 HSR



Topology 2b measures performance over point-to-point EVPN-VPWS services between CSR and HSR. ACX7024 acts as CSR DUT with ACX7509 as HSR DUT.

Table 26: Topology 2b Latency Result with Traffic Only on Low-Latency Queue

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures latency for traffic sent only into the LLQ without background traffic over Topology 2. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	10.51	10.64	10.86	non-congested	NA	NA	2
FC-Low	low-latency	10G	continuous	512	11.07	11.14	11.45	non-congested	NA	NA	2
FC-Low	low-latency	10G	continuous	1500	10.66	10.73	11.47	non-congested	NA	NA	2

Table 27: Topology 2b Latency Result for Non-Congested Continuous Traffic

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures latency for traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	10.49	11.04	15.88	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	continuous	64	10.48	11.10	18.77	non-congested	NA	NA	2
FC-CONTROL	high	10G	continuous	64	10.46	11.11	21.48	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	continuous	64	10.46	11.70	28.60	non-congested	NA	NA	2
FC-HIGH	low	10G	continuous	64	10.88	11.24	40.60	non-congested	NA	NA	2
FC-Medium	low	10G	continuous	64	10.89	11.22	30.88	non-congested	NA	NA	2
FC-Low	low	10G	continuous	64	10.89	11.22	40.42	non-congested	NA	NA	2
FC-LLQ	low-latency	10G	continuous	512	11.00	11.37	16.36	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	continuous	512	11.02	11.39	18.95	non-congested	NA	NA	2
FC-CONTROL	high	10G	continuous	512	10.99	11.47	25.16	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	continuous	512	10.98	11.63	27.93	non-congested	NA	NA	2
FC-HIGH	low	10G	continuous	512	11.40	12.28	42.93	non-congested	NA	NA	2
FC-Medium	low	10G	continuous	512	11.40	12.09	32.07	non-congested	NA	NA	2
FC-Low	low	10G	continuous	512	11.40	12.05	38.22	non-congested	NA	NA	2

FC-LLQ	low-latency	10G	continuous	1500	10.58	11.05	17.93	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	continuous	1500	10.85	12.04	23.80	non-congested	NA	NA	2
FC-CONTROL	high	10G	continuous	1500	10.86	12.24	28.36	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	continuous	1500	10.85	12.03	32.20	non-congested	NA	NA	2
FC-HIGH	low	10G	continuous	1500	10.52	12.60	49.16	non-congested	NA	NA	2
FC-Medium	low	10G	continuous	1500	10.52	12.81	60.78	non-congested	NA	NA	2
FC-Low	low	10G	continuous	1500	10.53	12.92	61.97	non-congested	NA	NA	2

Table 28: Topology 2b Latency Result for Congested Continuous Traffic

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures latency for traffic sent in LLQ when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	10.50	10.88	17.38	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	continuous	512	11.07	11.33	17.73	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	continuous	1500	10.65	10.90	17.15	1Q Congestion	strict-high	ACX7024	2

Table 29: Topology 2b Latency Result for Non-Congested Burst Traffic

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures latency for traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	10.51	10.64	10.86	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	burst	64	10.48	10.56	11.53	non-congested	NA	NA	2
FC-CONTROL	high	10G	burst	64	10.48	10.56	13.95	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	burst	64	10.47	10.56	13.93	non-congested	NA	NA	2
FC-HIGH	low	10G	burst	64	10.48	10.56	12.93	non-congested	NA	NA	2
FC-Medium	low	10G	burst	64	10.48	10.56	12.00	non-congested	NA	NA	2
FC-Low	low	10G	burst	64	10.48	10.56	11.51	non-congested	NA	NA	2
FC-LLQ	low-latency	10G	burst	512	11.02	11.14	11.43	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	burst	512	11.00	11.20	12.56	non-congested	NA	NA	2
FC-CONTROL	high	10G	burst	512	10.95	11.20	16.89	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	burst	512	11.00	11.20	14.75	non-congested	NA	NA	2
FC-HIGH	low	10G	burst	512	11.01	11.20	14.89	non-congested	NA	NA	2
FC-Medium	low	10G	burst	512	11.00	11.20	12.55	non-congested	NA	NA	2
FC-Low	low	10G	burst	512	11.00	11.20	12.55	non-congested	NA	NA	2
FC-LLQ	low-latency	10G	burst	1,500	10.58	10.73	11.68	non-congested	NA	NA	2
FC-SIGNALING	strict-high	10G	burst	1,500	10.59	10.97	16.48	non-congested	NA	NA	2

FC-CONTROL	high	10G	burst	1,500	10.56	10.97	14.08	non-congested	NA	NA	2
FC-REALTIME	medium-high	10G	burst	1,500	10.59	10.97	15.13	non-congested	NA	NA	2
FC-HIGH	low	10G	burst	1,500	10.59	10.97	14.25	non-congested	NA	NA	2
FC-Medium	low	10G	burst	1,500	10.59	10.97	13.19	non-congested	NA	NA	2
FC-Low	low	10G	burst	1,500	10.59	10.97	12.77	non-congested	NA	NA	2

Table 30: Topology 2b Latency Result for Congested Burst Traffic

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures latency for traffic sent in LLQ when the strict-high queue is oversubscribed and is dropping traffic. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

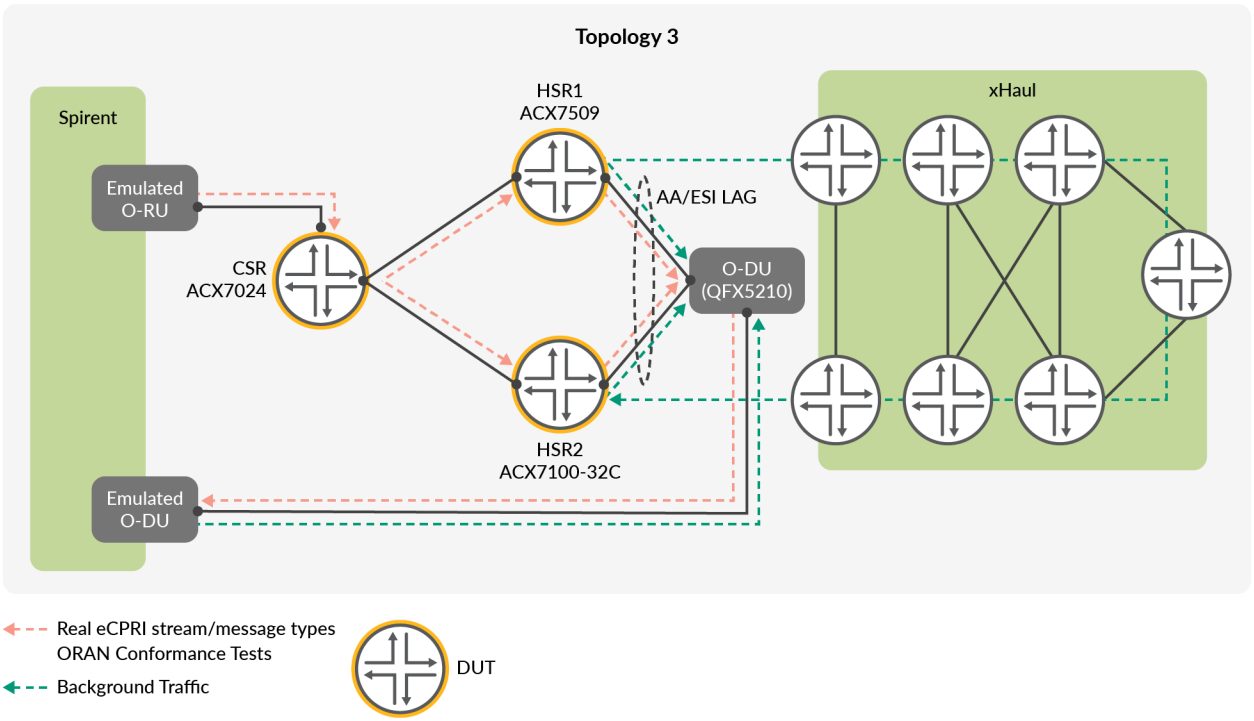
Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	burst	64	10.51	10.73	17.32	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	burst	512	11.02	11.31	15.89	1Q Congestion	strict-high	ACX7024	2
FC-Low	low-latency	10G	burst	1500	10.61	10.80	16.84	1Q Congestion	strict-high	ACX7024	2

Table 31: Topology 2b Latency Result with Port-level shaper

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures latency for traffic sent in LLQ low-latency queue when the port level shaper is configured to 1gig and 3gig, with high, medium, and low queues oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	10.49	10.74	13.99	1G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	512	11.03	11.24	14.76	1G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	1500	10.6	10.83	14.81	1G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	64	10.50	11.10	14.47	3G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	512	11.04	11.57	14.88	3G Shaper	high, medium, low	ACX7024	2
FC-Low	low-latency	10G	continuous	1500	10.62	11.27	15.11	3G Shaper	high, medium, low	ACX7024	2

Figure 8: Topology 3 CSR to Active HSR



Topology 3 measures performance across EVPN-VPWS Active-Active connectivity model with single CSR DUT to pair of HSR leveraging Active-Active ESI LAG toward DU (QFX5210).

Table 32: Topology 3 Latency Result with Traffic only on Low-Latency Queue

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures latency for traffic sent only into the LLQ without background traffic over Topology 3. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-Low	low-latency	10G	continuous	64	11.12	11.37	13.39	non-congested	NA	NA	3
FC-Low	low-latency	10G	continuous	512	11.89	11.99	13.39	non-congested	NA	NA	3
FC-Low	low-latency	10G	continuous	1500	12.18	12.27	13.36	non-congested	NA	NA	3

Table 33: Topology 3 Latency Result for Non-Congested Continuous Traffic

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	11.12	11.74	24.89	non-congested	NA	NA	3
FC-SIGNALING	strict-high	10G	continuous	64	11.12	11.79	36.10	non-congested	NA	NA	3
FC-CONTROL	high	10G	continuous	64	11.12	11.87	28.15	non-congested	NA	NA	3
FC-REALTIME	medium-high	10G	continuous	64	11.15	13.02	31.54	non-congested	NA	NA	3
FC-HIGH	low	10G	continuous	64	11.12	12.15	47.28	non-congested	NA	NA	3
FC-Medium	low	10G	continuous	64	11.12	12.13	56.19	non-congested	NA	NA	3
FC-Low	low	10G	continuous	64	11.13	11.93	51.61	non-congested	NA	NA	3
FC-LLQ	low-latency	10G	continuous	512	11.83	12.40	17.49	non-congested	NA	NA	3
FC-SIGNALING	strict-high	10G	continuous	512	11.86	12.57	22.22	non-congested	NA	NA	3
FC-CONTROL	high	10G	continuous	512	11.86	12.60	20.47	non-congested	NA	NA	3
FC-REALTIME	medium-high	10G	continuous	512	11.86	13.76	27.30	non-congested	NA	NA	3
FC-HIGH	low	10G	continuous	512	11.87	13.25	45.92	non-congested	NA	NA	3
FC-Medium	low	10G	continuous	512	11.86	14.82	57.22	non-congested	NA	NA	3
FC-Low	low	10G	continuous	512	11.87	13.65	56.80	non-congested	NA	NA	3

FC-LLQ	low-latency	10G	continuous	1500	12.11	12.85	21.25	non-congested	NA	NA	3
FC-SIGNALING	strict-high	10G	continuous	1500	12.09	13.62	24.92	non-congested	NA	NA	3
FC-CONTROL	high	10G	continuous	1500	12.07	13.56	24.57	non-congested	NA	NA	3
FC-REALTIME	medium-high	10G	continuous	1500	12.08	14.54	33.41	non-congested	NA	NA	3
FC-HIGH	low	10G	continuous	1500	12.12	15.15	51.25	non-congested	NA	NA	3
FC-Medium	low	10G	continuous	1500	12.14	18.21	70.01	non-congested	NA	NA	3
FC-Low	low	10G	continuous	1500	12.13	17.67	68.86	non-congested	NA	NA	3

Table 34: Topology 3 Latency Result for Congested Continuous Traffic

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE port speed, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	11.11	11.43	17.19	1Q Congestion	strict-high	ACX7100/ACX7509	3
FC-REALTIME	medium-high	10G	continuous	64	11.29	11.37	12.29	1Q Congestion	strict-high	ACX7100/ACX7509	3
FC-LLQ	low-latency	10G	continuous	512	11.89	12.16	17.15	1Q Congestion	strict-high	ACX7100/ACX7509	3
FC-REALTIME	medium-high	10G	continuous	512	12.14	12.34	13.69	1Q Congestion	strict-high	ACX7100/ACX7509	3

FC-LLQ	low-latency	10G	continuous	1500	12.18	12.45	19.43	1Q Congestion	strict-high	ACX7100/ACX7509	3
FC-REALTIME	medium-high	10G	continuous	1500	12.50	12.89	14.11	1Q Congestion	strict-high	ACX7100/ACX7509	3

Table 35: Topology 3 Latency Result for Non-Congested Burst Traffic

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	11.05	11.30	11.55	non-congested	NA	NA	3
FC-SIGNALING	strict-high	10G	burst	64	11.10	11.21	12.66	non-congested	NA	NA	3
FC-CONTROL	high	10G	burst	64	11.08	11.21	12.69	non-congested	NA	NA	3
FC-REALTIME	medium-high	10G	burst	64	11.06	11.21	14.50	non-congested	NA	NA	3
FC-HIGH	low	10G	burst	64	11.09	11.21	12.68	non-congested	NA	NA	3
FC-Medium	low	10G	burst	64	11.10	11.21	12.63	non-congested	NA	NA	3
FC-Low	low	10G	burst	64	11.10	11.21	12.68	non-congested	NA	NA	3
FC-LLQ	low-latency	10G	burst	512	11.92	12.11	12.43	non-congested	NA	NA	3
FC-SIGNALING	strict-high	10G	burst	512	11.93	12.16	15.40	non-congested	NA	NA	3
FC-CONTROL	high	10G	burst	512	11.93	12.16	15.12	non-congested	NA	NA	3

FC-REALTIME	medium-high	10G	burst	512	11.93	12.16	15.65	non-congested	NA	NA	3
FC-HIGH	low	10G	burst	512	11.94	12.16	13.58	non-congested	NA	NA	3
FC-Medium	low	10G	burst	512	11.94	12.16	13.56	non-congested	NA	NA	3
FC-Low	low	10G	burst	512	11.93	12.16	13.57	non-congested	NA	NA	3
FC-LLQ	low-latency	10G	burst	1,500	12.32	12.49	13.46	non-congested	NA	NA	3
FC-SIGNALING	strict-high	10G	burst	1,500	12.29	12.72	15.91	non-congested	NA	NA	3
FC-CONTROL	high	10G	burst	1,500	12.29	12.72	14.98	non-congested	NA	NA	3
FC-REALTIME	medium-high	10G	burst	1,500	12.29	12.72	16.99	non-congested	NA	NA	3
FC-HIGH	low	10G	burst	1,500	12.30	12.72	15.89	non-congested	NA	NA	3
FC-Medium	low	10G	burst	1,500	12.30	12.72	16.12	non-congested	NA	NA	3
FC-Low	low	10G	burst	1,500	12.29	12.72	14.81	non-congested	NA	NA	3

Table 36: Topology 3 Latency Result for Congested Burst Traffic

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE port speed, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	burst	64	11.07	11.43	17.00	1Q Congestion	strict-high	ACX7100	3
FC-LLQ	low-latency	10G	burst	512	11.95	12.28	16.88	1Q Congestion	strict-high	ACX7100	3

FC-LLQ	low-latency	10G	burst	1500	12.32	12.55	17.41	1Q Congestion	strict-high	ACX7100	3

Table 37: Topology 3 Latency Result with Port-level shaper

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures latency for traffic sent in LLQ when the port level shaper is configured to 1gig and 3gig, with high, medium, and low queues oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to LLQ. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
FC-LLQ	low-latency	10G	continuous	64	11.15	11.29	13.41	1G Shaper	high, medium, low	ACX7100/ACX7509	3
FC-LLQ	low-latency	10G	continuous	512	11.87	12.05	13.62	1G Shaper	high, medium, low	ACX7100/ACX7509	3
FC-LLQ	low-latency	10G	continuous	1500	12.16	12.34	14.68	1G Shaper	high, medium, low	ACX7100/ACX7509	3
FC-LLQ	low-latency	10G	continuous	64	11.11	11.47	14.14	3G Shaper	high, medium, low	ACX7100/ACX7509	3
FC-LLQ	low-latency	10G	continuous	512	11.86	12.31	15.05	3G Shaper	high, medium, low	ACX7100/ACX7509	3
FC-LLQ	low-latency	10G	continuous	1500	12.12	12.64	16.87	3G Shaper	high, medium, low	ACX7100/ACX7509	3

eCPRI Validation Summary

Latency Validation

This section summarizes latency validation across multiple topologies with 10G and 100G ports.

Topology-1(a)

Topology 1(a) includes only AN4 (ACX7024) incurred latency. The following tables capture the latency data in various scenarios.

Table 38: Latency with Continuous Traffic only in Low-Latency Queue

The following table describes ACX7024 performance when continuous eCPRI traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	5.71	5.86	12.72	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	5.56	5.76	12.33	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	4.88	5.20	12.45	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	5.71	6.01	6.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	5.74	5.85	6.36	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	5.78	5.80	6.43	non-congested	NA	NA	1

Table 39: Latency with burst traffic only in low-latency queue

The following table describes the ACX7024 performance when burst eCPRI traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	5.70	5.82	6.36	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.45	5.68	6.40	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.95	4.99	6.45	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	5.74	6.00	6.54	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	5.73	5.84	6.35	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	5.77	5.79	6.40	non-congested	NA	NA	1

Table 40: Latency with Continuous Traffic in Non-Congested Scenario

The following table describes the performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues with continuous eCPRI traffic. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	5.88	6.52	11.14	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	strict-high	10G	continuous	64	5.90	6.56	14.40	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	64	5.90	6.56	16.59	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	64	5.87	6.85	22.72	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.92	6.67	31.10	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.92	6.64	37.72	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.92	6.64	33.64	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.88	6.73	43.90	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	6.18	7.20	11.80	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	512	6.18	7.41	15.18	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	512	6.16	7.46	19.58	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	512	6.18	8.06	24.64	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.18	8.29	46.36	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.18	8.18	46.20	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.18	8.27	43.38	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.18	8.95	52.46	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.30	7.65	14.11	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	1500	6.30	8.25	16.05	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	1500	6.24	8.25	2.59	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	1500	6.30	9.20	25.17	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.30	10.45	59.06	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.30	10.48	76.04	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.30	10.48	93.01	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.20	11.83	121.16	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	5.77	6.04	8.85	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	strict-high	100G	continuous	64	5.69	6.04	8.96	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	64	5.69	6.05	11.99	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	64	5.75	5.99	10.34	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	5.72	6.38	30.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	5.68	6.36	29.70	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	5.69	6.43	36.13	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	5.69	6.44	54.82	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	5.71	6.20	8.31	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	512	5.73	6.19	8.73	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	512	5.68	6.18	9.51	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	512	5.70	6.11	9.77	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	5.73	6.60	22.96	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	100G	continuous	512	5.72	6.54	22.61	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	5.74	6.76	29.84	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	5.71	6.82	30.15	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	5.78	6.11	7.48	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	1500	5.78	6.20	8.53	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	1500	5.69	6.23	9.09	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	1500	5.77	6.39	9.88	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	5.78	6.70	16.84	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	5.78	6.66	18.23	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	5.78	6.85	20.26	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	5.69	6.99	23.84	non-congested	NA	NA	1

Table 41: Latency with Continuous Traffic in 1 Queue Congestion Scenario

The following table describes ACX7024 performance when the strict-high queue is oversubscribed and is dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	5.88	7.24	15.96	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	6.18	7.50	16.27	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.28	7.78	19.60	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	5.70	6.02	7.02	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	5.72	5.87	6.84	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	5.78	5.81	6.89	1Q-congestion	strict-high	ACX7024	1

Table 42: Latency with Continuous Traffic in 2 Queue-Congestion Scenario

The following table describes ACX7024 performance when the strict-high and high queues are oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	5.90	7.71	22.88	2Q-congestion	strict-high, high	ACX7024	1

eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	6.18	7.37	16.89	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.29	7.39	23.58	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	5.77	6.07	7.55	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	5.71	5.93	7.23	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	5.78	5.85	7.17	2Q-congestion	strict-high, high	ACX7024	1

Table 43: Latency with Burst Traffic in Non-Congested Scenario

The table below describes the performance of the low-latency queue (FC-LLQ) is measured in conjunction with multi-level priority queues with burst eCPRI traffic. From the results, we can see that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	5.73	6.45	38.58	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	64	5.73	6.45	47.54	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	64	5.72	6.60	36.67	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	64	5.72	6.37	16.94	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	10G	burst	64	5.71	6.36	15.27	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.69	6.35	11.40	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.68	6.64	24.92	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.67	6.55	49.04	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.64	6.77	10.99	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	512	5.65	6.92	16.33	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	512	5.56	7.01	18.48	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	512	5.64	7.72	22.41	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.64	8.19	47.63	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.64	7.80	51.43	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.65	7.65	54.65	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.64	8.65	72.49	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.95	6.75	15.41	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	1500	4.96	7.01	14.72	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	1500	4.90	7.25	18.98	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	1500	4.95	8.18	71.08	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.95	9.94	82.81	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.95	9.99	85.24	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.96	12.35	111.66	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.95	11.99	107.83	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	5.79	6.03	8.85	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	64	5.69	6.04	8.96	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	64	5.67	6.04	11.28	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	64	5.75	5.98	10.21	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	100G	burst	64	5.71	6.37	29.96	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	5.68	6.35	33.00	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	5.67	6.42	40.39	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	5.68	6.44	43.95	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	5.70	6.19	7.95	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	512	5.71	6.17	8.67	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	512	5.67	6.17	9.02	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	512	5.69	6.10	9.75	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	5.72	6.58	19.76	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	5.72	6.52	23.81	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	5.71	6.70	27.73	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	5.70	6.84	30.54	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	5.77	6.10	7.58	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	1500	5.77	6.19	8.44	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	1500	5.68	6.23	8.92	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	1500	5.76	6.39	10.08	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	5.77	6.69	16.93	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	5.77	6.67	18.13	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	5.77	6.84	20.42	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	5.69	6.99	21.20	non-congested	NA	NA	1

Table 44: Latency with burst traffic in 1Q-Congestion Scenario

The following table describes ACX7024 performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	5.69	6.07	12.23	1Q-congestion	strict-high	ACX7024	1

eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.64	5.87	10.56	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.95	5.12	12.88	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	5.77	6.02	6.95	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	5.71	5.86	6.86	1Q-congestion	strict-high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	5.77	5.80	6.83	1Q-congestion	strict-high	ACX7024	1

Table 45: Latency with Burst Traffic in 2-Queue Congestion Scenario

The following table describes ACX7024 performance when the strict-high and high queues are oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	5.70	6.52	16.33	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.64	6.17	14.18	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.95	5.35	15.74	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	5.77	6.06	7.54	2Q-congestion	strict-high, high	ACX7024	1

eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	5.70	5.92	7.15	2Q-congestion	strict-high, high	ACX7024	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	5.77	5.84	7.16	2Q-congestion	strict-high, high	ACX7024	1

Topology-1(b)

Topology 1(b) includes only the AG1.2 (ACX7100-32C) incurred latency. The following tables capture the latency data in various scenarios.

Table 46: Latency with Continuous Traffic only in Low-Latency Queue

The following table describes ACX7100-32C performance when continuous eCPRI traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	4.94	5.81	12.40	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	5.68	6.36	12.40	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	5.33	6.26	11.81	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.44	4.47	4.71	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.47	4.53	4.69	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.44	4.60	4.71	non-congested	NA	NA	1

Table 47: Latency with Burst Traffic only in Low-Latency Queue

The following table describes ACX7100-32C performance when burst eCPRI traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.91	4.98	5.15	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.69	5.77	5.92	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	5.33	5.38	6.29	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.43	4.60	4.71	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.47	4.53	4.73	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.44	4.46	4.70	non-congested	NA	NA	1

Table 48: Latency with Continuous Traffic in Non-Congested Scenario

The following table describes ACX7100-32C performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	5.03	6.78	11.08	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	64	5.04	6.85	15.96	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	64	5.06	6.87	16.10	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	64	5.04	7.45	25.58	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.03	7.36	40.10	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.04	7.26	41..89	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.04	7.98	46.53	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	5.03	7.36	34.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	6.12	7.62	11.56	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	512	6.13	7.84	16.10	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	512	6.13	7.92	19.55	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	medium-high	10G	continuous	512	6.12	8.91	28.40	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.12	10.76	61.44	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.13	10.44	69.39	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.13	12.92	63.85	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	6.13	13.43	66.78	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.49	8.45	15.50	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	1500	6.49	8.70	16.17	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	1500	6.49	9.05	19.95	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	1500	6.49	10.13	25.59	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.49	13.68	68.32	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.49	13.48	81.13	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.49	16.50	98.03	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.49	18.37	104.46	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.44	4.75	5.95	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	64	4.44	4.82	6.67	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	64	4.44	4.86	7.19	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	64	4.44	5.03	8.18	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.44	5.39	15.42	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.44	5.41	16.73	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.44	5.60	20.06	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.44	5.70	19.68	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.47	4.74	5.72	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	512	4.48	4.75	6.33	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	512	4.46	4.76	6.97	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	medium-high	100G	continuous	512	4.47	4.94	7.98	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.48	5.18	14.57	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.48	5.12	15.20	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.48	5.19	17.89	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.48	5.33	19.24	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.42	4.56	6.00	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	1500	4.36	4.56	6.73	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	1500	4.38	4.56	7.88	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	1500	4.41	4.61	6.14	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.35	4.59	19.66	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.35	4.59	21.99	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.39	4.60	21.89	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.37	4.60	23.07	non-congested	NA	NA	1

Table 49: Latency with Continuous Traffic in 1-Q Congestion Scenario

The following table describes ACX7100-32C performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	5.03	7.16	16.29	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	6.14	7.69	15.61	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.49	8.61	21.39	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.44	4.49	5.08	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.47	4.55	5.07	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.42	4.61	5.48	1Q-congestion	strict-high	ACX7100	1

Table 50: Latency with Continuous Traffic in 2-Queue Congestion Scenario

The following table describes ACX7100-32C performance when the strict-high and high queues are oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	4.98	7.09	22.41	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	6.10	7.40	16.54	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.49	8.55	26.38	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.41	4.65	5.84	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.47	4.58	5.44	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.44	4.52	5.68	2Q-congestion	strict-high, high	ACX7100	1

Table 51: Latency with Burst Traffic in Non-Congested Scenario

The following table describes ACX7100-32C performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.99	7.15	10.31	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	strict-high	10G	burst	64	5.00	7.18	13.86	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	64	5.03	7.41	17.30	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	64	5.00	7.97	22.36	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.03	7.76	36.80	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.06	7.80	38.39	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.03	9.90	49.51	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	5.04	7.67	41.15	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.70	7.14	9.91	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	512	5.70	7.31	15.25	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	512	5.75	7.36	14.28	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	512	5.71	8.35	19.31	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.70	9.45	33.73	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	10G	burst	512	5.74	9.17	38.06	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.75	10.44	59.60	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.74	11.01	42.29	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	5.35	7.26	13.79	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	1500	5.35	7.60	14.56	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	1500	5.35	8.80	19.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	1500	5.35	9.18	25.29	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	5.35	13.06	61.15	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	5.35	13.02	66.63	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	5.35	19.05	99.52	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	5.35	12.80	90.96	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.41	4.58	6.00	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	strict-high	100G	burst	64	4.35	4.59	6.75	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	64	4.35	4.59	7.80	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	64	4.41	4.63	7.61	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.35	4.62	20.31	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.35	4.61	22.67	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.37	4.65	24.08	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.36	4.66	26.79	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.47	4.82	5.70	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	512	4.47	4.87	6.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	512	4.47	4.86	7.16	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	512	4.47	5.03	7.86	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.48	5.29	14.40	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	100G	burst	512	4.48	5.18	15.58	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.48	5.52	17.35	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.48	5.52	18.63	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.44	4.87	6.01	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	1500	4.44	4.96	6.89	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	1500	4.44	4.99	7.50	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	1500	4.43	5.17	8.26	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.44	5.66	16.06	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.44	5.61	17.36	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.44	5.95	20.15	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.44	6.22	21.70	non-congested	NA	NA	1

Table 52: Latency with Burst Traffic in 1-Queue Congestion Scenario

The following table describes ACX7100-32C performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.91	5.28	11.45	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.70	5.96	12.00	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	5.30	5.42	12.01	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.41	4.61	5.41	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.46	4.54	5.07	1Q-congestion	strict-high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.44	4.48	5.23	1Q-congestion	strict-high	ACX7100	1

Table 53: Latency with Burst Traffic in 2-Queue Congestion Scenario

The following table describes ACX7100-32C performance when the strict-high and high queues are oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.91	5.81	15.77	2Q-congestion	strict-high, high	ACX7100	1

eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.70	6.31	13.40	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	5.33	5.97	16.20	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.12	4.37	5.02	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.19	4.25	4.87	2Q-congestion	strict-high, high	ACX7100	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.15	4.19	5.07	2Q-congestion	strict-high, high	ACX7100	1

Topology-1(c)

Topology 1(c) includes only AG1.1 (ACX7509) incurred latency. The following tables capture the latency data in various scenarios.

Table 54: Latency with Continuous Traffic only in Low-Latency Queue

The following table describes ACX7509 performance when continuous eCPRI traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	4.59	4.66	8.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	5.30	5.43	8.92	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	4.92	5.12	10.40	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	5.71	6.01	6.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	5.74	5.85	6.36	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	5.78	5.80	6.43	non-congested	NA	NA	1

Table 55: Latency with Burst Traffic only in Low-Latency Queue

The following table describes ACX7509 performance when burst eCPRI traffic is sent only into LLQ without background traffic. No queues are congested during this time.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.59	4.63	4.82	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	4.93	5.16	5.88	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.93	5.01	5.88	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.12	4.37	4.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.19	4.24	4.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.15	4.16	4.58	non-congested	NA	NA	1

Table 56: Latency with Continuous Traffic in Non-Congested Scenario

The following table describes ACX7509 performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	4.65	6.02	10.04	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	64	4.64	6.06	13.32	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	64	4.66	6.07	15.38	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	64	4.70	6.35	21.66	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	4.66	6.26	30.02	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	4.64	6.20	33.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	4.67	6.17	28.43	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	64	4.68	6.23	31.99	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	5.71	6.73	10.36	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	strict-high	10G	continuous	512	5.71	6.91	14.21	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	512	5.71	6.96	18.70	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	512	5.71	7.49	22.20	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	5.71	7.74	32.97	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	5.71	5.74	33.97	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	5.71	7.74	39.76	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	512	5.71	8.01	83.48	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.10	7.78	14.10	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	1500	6.13	8.02	14.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	continuous	1500	6.11	8.33	18.92	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	1500	6.12	8.96	24.80	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.13	10.24	54.30	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.14	10.25	60.88	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.14	9.74	70.29	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	6.14	12.37	71.52	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.13	4.40	5.53	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	64	4.14	4.49	6.15	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	64	4.14	4.53	6.66	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	64	4.13	4.68	7.80	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.13	4.96	13.94	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.14	4.96	15.79	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.13	5.06	16.93	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	64	4.13	5.23	17.51	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.18	4.41	5.31	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	strict-high	100G	continuous	512	4.18	4.43	5.75	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	512	4.18	4.43	6.61	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	512	4.18	4.59	7.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.18	4.73	12.59	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.18	4.69	13.94	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.18	5.00	15.39	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	512	4.18	4.86	15.72	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.12	4.27	5.83	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	1500	4.10	4.27	6.58	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	continuous	1500	4.09	4.27	6.96	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	1500	4.11	4.34	6.32	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.05	4.23	19.55	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.07	4.23	21.99	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.07	4.23	24.59	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	4.07	4.23	27.25	non-congested	NA	NA	1

Table 57: Latency with Continuous Traffic in 1-Q Congestion Scenario

The following table describes ACX7509 performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	4.64	6.63	14.89	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	5.71	7.14	14.85	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.09	8.04	20.25	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.13	4.17	4.94	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.18	4.24	4.76	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.10	4.36	4.96	1Q-congestion	strict-high	ACX7509	1

Table 58: Latency with Continuous Traffic in 2-Q Congestion Scenario

The following table describes ACX7509 performance when the strict-high and high queues are oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	4.60	6.54	19.92	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	5.69	6.93	15.62	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	6.10	7.70	21.52	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	4.12	4.39	5.52	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	4.18	4.26	5.16	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	4.13	4.21	5.38	2Q-congestion	strict-high, high	ACX7509	1

Table 59: Latency with Burst Traffic in Non-Congested Scenario

The following table describes ACX7509 performance of the low-latency queue (FC-LLQ) in conjunction with multi-level priority queues. The results show that LLQ is given preferential treatment for latency constraints. In these scenarios, lower priority queues are also maintained below 10µs average latency goal.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.61	5.50	9.48	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	64	4.62	5.84	20.37	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	64	4.60	5.67	25.93	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	64	4.60	5.62	22.82	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	4.63	5.56	27.41	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	4.62	6.17	33.11	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	4.61	5.53	14.60	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	64	4.61	5.56	13.88	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.31	6.68	9.75	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	512	5.33	6.68	14.24	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	512	5.35	6.72	14.92	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	medium-high	10G	burst	512	5.31	7.50	18.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.32	9.43	45.86	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.36	7.94	41.01	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.36	7.95	44.06	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	512	5.38	12.50	65.04	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.93	6.68	12.35	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	10G	burst	1500	4.95	6.68	14.45	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	10G	burst	1500	4.97	6.94	17.41	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	10G	burst	1500	4.93	7.87	23.30	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.95	9.59	53.64	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.97	9.83	61.13	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.97	9.10	71.91	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	10G	burst	1500	4.97	13.76	79.19	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.14	4.30	6.24	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	64	4.12	4.31	6.65	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	64	4.10	4.30	7.55	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	64	4.14	4.37	7.56	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.07	4.28	33.65	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.09	4.28	26.71	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.09	4.30	36.83	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	64	4.09	4.30	71.12	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.20	4.49	5.33	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	512	4.20	4.53	6.20	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	512	4.18	4.53	6.73	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	medium-high	100G	burst	512	4.19	4.68	7.25	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.20	4.87	12.86	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.20	4.41	14.26	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.20	4.97	15.26	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	512	4.20	5.10	17.06	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.15	4.57	5.64	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	strict-high	100G	burst	1500	4.15	4.67	6.48	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	high	100G	burst	1500	4.15	4.71	7.29	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	medium-high	100G	burst	1500	4.15	4.87	7.95	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.15	5.30	14.47	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.15	5.56	16.03	non-congested	NA	NA	1
eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.15	5.55	18.88	non-congested	NA	NA	1

eCPRI-ORAN Raw Stream	low	100G	burst	1500	4.15	5.76	19.86	non-congested	NA	NA	1

Table 60: Latency with Burst Traffic in 1-Q Congestion Scenario

The following table describes ACX7509 performance when the strict-high queue is oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.59	4.92	11.10	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.30	5.57	11.17	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.59	4.68	12.39	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.12	4.37	5.02	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.19	4.25	4.87	1Q-congestion	strict-high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.15	4.19	5.07	1Q-congestion	strict-high	ACX7509	1

Table 61: Latency with Burst Traffic in 2-Q Congestion Scenario

The following table describes ACX7509 performance when the strict-high and high queues are oversubscribed and dropping traffic. The LLQ design prevents such scenarios from causing significant disruption to the low-latency queue. The results show that the average latency budget is preserved below 10µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	4.59	5.46	15.42	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	5.30	5.88	15.93	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	4.93	5.60	15.82	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	4.13	4.41	5.57	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	4.19	4.27	5.18	2Q-congestion	strict-high, high	ACX7509	1
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	4.15	4.22	5.37	2Q-congestion	strict-high, high	ACX7509	1

Topology-2(a)

Topology 2(a) includes only AG1.2 (ACX7100) and AN4 (ACX7024) in the data path. The following tables capture the latency data in various scenarios.

Table 62: Latency with Continuous Traffic only in Low-Latency Queue

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent only into LLQ without background traffic over Topology 2. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.45	10.59	10.89	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	10.89	11.04	11.40	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	10.48	10.61	11.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.00	10.50	10.94	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.10	10.21	10.48	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.12	10.23	10.60	non-congested	NA	NA	2

Table 63: Latency with Burst Traffic only in Low-Latency Queue

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent only into LLQ without background traffic over Topology 2. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.46	10.59	10.84	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	10.90	11.05	11.32	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.46	10.62	11.47	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.40	10.80	11.17	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.47	10.59	10.93	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.43	10.58	11.01	non-congested	NA	NA	2

Table 64: Latency with Continuous Traffic in Non-Congested Scenario

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures latency for eCPRI traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.74	12.42	17.54	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	64	10.74	12.50	21.50	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	continuous	64	10.74	12.54	25.58	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	64	10.70	13.48	30.98	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.73	14.42	70.23	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.74	13.89	78.60	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.74	14.51	92.51	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.74	15.74	114.97	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.47	12.78	18.34	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	512	11.52	13.00	22.29	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	continuous	512	11.53	13.07	25.93	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	512	11.52	13.97	32.50	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.52	14.68	69.74	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.52	14.37	78.68	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.53	14.40	85.14	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.53	15.79	99.46	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	11.78	13.64	21.09	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	1500	11.88	14.04	21.38	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	continuous	1500	11.87	14.28	26.08	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	1500	11.87	15.10	30.85	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.86	16.75	72.50	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.87	16.79	78.10	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.87	15.53	97.68	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.85	18.60	104.57	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.17	10.82	13.39	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	64	10.08	10.84	15.40	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	continuous	64	10.08	10.85	16.77	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	64	9.91	10.49	19.90	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	100G	continuous	64	9.93	12.80	44.66	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	9.91	12.48	40.71	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	9.90	13.08	53.55	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	9.90	15.16	151.84	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.07	10.28	11.41	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	512	10.09	10.32	12.65	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	continuous	512	10.07	10.33	14.18	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	512	10.06	10.41	15.04	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.08	10.46	18.42	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.09	10.45	18.96	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.09	10.47	20.14	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.05	10.46	20.57	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.11	10.34	11.74	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	1500	10.21	10.63	13.15	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	continuous	1500	10.15	10.68	14.00	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	1500	10.19	10.72	14.86	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.20	10.80	18.34	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.20	10.81	20.17	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.20	10.95	20.83	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.12	10.83	20.43	non-congested	NA	NA	2

Table 65: Latency with Continuous Traffic in 1-Q Congestion Scenario

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ low-latency queue when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.71	12.11	20.12	1Q-congestion	strict-high	ACX7024	2

eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.50	12.89	21.10	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	11.87	13.53	22.96	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.01	10.60	11.53	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.08	10.25	11.27	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.10	10.26	11.16	1Q-congestion	strict-high	ACX7024	2

Table 66: Latency with Continuous Traffic in 2-Q Congestion Scenario

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high and high queues are oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.65	11.56	23.78	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.46	12.64	22.78	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	11.82	13.07	28.35	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.01	12.11	17.33	2Q-congestion	strict-high, high	ACX7024	2

eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.08	10.33	11.98	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.10	10.31	11.82	2Q-congestion	strict-high, high	ACX7024	2

Table 67: Latency with Burst Traffic in Non-Congested Scenario

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.60	12.40	17.65	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	burst	64	10.60	12.45	21.57	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	burst	64	10.61	12.49	26.17	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	burst	64	10.60	13.52	33.05	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	64	10.60	14.74	69.24	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	64	10.60	14.23	79.15	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	64	10.61	15.24	103.30	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	10G	burst	64	10.61	16.23	147.35	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	10.97	12.34	17.51	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	burst	512	11.00	12.53	21.82	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	burst	512	11.02	12.62	25.15	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	burst	512	10.99	13.60	31.46	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	10.99	14.33	74.58	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.00	14.00	77.24	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	10.98	14.44	88.98	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.03	15.38	96.91	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.54	12.36	18.41	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	burst	1500	10.55	12.61	22.33	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	burst	1500	10.58	12.95	25.09	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	medium-high	10G	burst	1500	10.56	13.94	30.62	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.56	15.78	65.11	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.57	15.89	71.82	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.55	15.21	88.86	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.58	18.06	94.31	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.49	10.83	12.70	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	burst	64	10.37	10.84	13.26	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	burst	64	10.34	10.83	17.65	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	burst	64	10.37	10.71	14.31	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.30	11.13	40.48	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.29	11.12	49.87	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.29	11.12	48.84	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	100G	burst	64	10.30	11.08	54.45	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.46	11.64	13.62	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	burst	512	10.45	11.66	15.30	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	burst	512	10.48	11.67	15.09	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	burst	512	10.44	11.74	16.30	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.50	12.52	28.25	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.50	12.40	26.57	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.50	12.91	13.98	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.50	13.13	33.59	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.52	11.24	13.14	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	burst	1500	10.55	11.43	14.35	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	burst	1500	10.55	11.44	14.49	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	medium-high	100G	burst	1500	10.55	11.74	15.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.55	12.53	24.51	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.55	12.53	25.87	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.55	12.98	30.80	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.56	13.36	32.15	non-congested	NA	NA	2

Table 68: Latency with Burst Traffic in 1-Q Congestion Scenario

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ low-latency queue when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.46	10.74	16.30	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	10.90	11.23	16.20	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.50	10.78	16.51	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.41	10.84	11.94	1Q-congestion	strict-high	ACX7024	2

eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.44	10.64	11.70	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.43	10.62	11.58	1Q-congestion	strict-high	ACX7024	2

Table 69: Latency with Burst Traffic in 2-Q Congestion Scenario

The following table shows data for Topology 2a, including ACX7024 as CSR and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high and high queues are oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic pattern. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.46	10.97	19.95	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	10.92	11.52	20.39	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.46	11.07	19.02	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.40	10.95	12.96	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.43	10.73	12.29	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.44	10.70	12.23	2Q-congestion	strict-high, high	ACX7024	2

Topology-2(b)

Topology 2(b) includes only AG1.1 (ACX7509) and AN4 (ACX7024) in the data path. The following tables capture the latency data in various scenarios.

Table 70: Latency with Continuous Traffic only in Low-Latency Queue

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent only into LLQ without background traffic over Topology 2. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.50	10.64	10.89	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.01	11.15	11.40	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	10.61	10.73	11.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.44	10.58	10.93	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.47	10.59	10.87	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.37	10.79	11.15	non-congested	NA	NA	2

Table 71: Latency with Burst Traffic only in Low-Latency Queue

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent only into LLQ without background traffic over Topology 2. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.50	10.66	10.91	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.02	11.15	11.42	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.63	10.74	11.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	9.98	10.48	10.85	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.10	10.23	10.51	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.10	10.21	10.56	non-congested	NA	NA	2

Table 72: Latency with Continuous Traffic in Non-Congested Scenario

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.73	12.41	17.44	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	strict-high	10G	continuous	64	10.78	12.51	21.93	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	continuous	64	10.78	12.52	25.73	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	64	10.74	13.49	30.69	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.78	14.37	67.47	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.78	13.91	70.66	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.79	15.39	73.68	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	64	10.78	15.55	119.06	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.60	12.79	18.85	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	512	11.60	13.24	22.96	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	continuous	512	11.54	13.27	26.81	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	512	11.60	14.00	32.27	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.60	14.70	70.05	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.60	14.45	78.48	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.60	15.40	97.73	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	512	11.58	15.48	108.96	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	11.96	13.62	19.84	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	1500	11.97	14.67	24.29	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	continuous	1500	11.97	14.78	28.58	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	1500	11.97	15.32	34.34	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.97	16.98	64.59	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.97	16.81	75.60	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.97	18.32	97.02	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	11.97	18.25	97.50	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.52	10.83	12.71	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	strict-high	100G	continuous	64	10.39	10.85	13.66	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	continuous	64	10.38	10.83	17.00	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	64	10.36	10.72	14.67	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.30	11.11	35.71	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.28	11.09	35.05	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.32	11.14	44.25	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.30	11.11	58.84	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.44	11.64	13.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	512	10.47	11.66	14.89	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	continuous	512	10.47	11.68	15.22	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	512	10.44	11.75	16.29	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.50	12.53	25.82	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.49	12.41	26.95	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.49	12.99	31.27	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	512	10.49	13.16	40.75	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.49	11.26	13.01	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	1500	10.55	11.44	14.30	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	continuous	1500	10.55	11.47	14.97	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	1500	10.56	11.77	15.67	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.56	12.55	25.20	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.56	12.56	25.80	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.56	13.04	31.73	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	10.56	13.42	34.62	non-congested	NA	NA	2

Table 73: Latency with Continuous Traffic in 1-Q Congestion Scenario

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame

sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.72	12.16	20.15	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.61	12.98	21.50	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	11.96	13.64	23.12	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.45	10.61	11.68	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.43	10.64	11.65	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.37	10.84	11.93	1Q-congestion	strict-high	ACX7024	2

Table 74: Latency with Continuous Traffic in 2-Q Congestion Scenario

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high and high queues are oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	10.68	11.59	23.98	2Q-congestion	strict-high, high	ACX7024	2

eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.58	12.73	22.87	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	11.96	13.18	23.10	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.37	10.95	12.90	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	10.44	10.73	12.36	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	10.44	10.69	12.29	2Q-congestion	strict-high, high	ACX7024	2

Table 75: Latency with Burst Traffic in Non-Congested Scenario

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.52	11.42	16.02	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	burst	64	10.54	11.48	20.32	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	burst	64	10.58	11.52	26.20	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	burst	64	10.51	12.51	31.06	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	10G	burst	64	10.56	13.91	63.14	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	64	10.54	13.14	76.43	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	64	10.55	16.12	111.03	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	64	10.54	15.18	143.06	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.07	12.52	18.67	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	burst	512	11.09	12.76	22.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	burst	512	11.07	12.83	25.79	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	burst	512	11.08	13.86	32.08	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.08	14.80	78.66	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.11	14.62	80.17	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.08	14.78	89.35	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.11	16.31	98.55	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.63	12.63	20.18	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	10G	burst	1500	10.67	14.51	32.95	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	10G	burst	1500	10.67	16.65	67.31	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	10G	burst	1500	10.68	16.64	80.80	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.71	13.72	24.12	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.70	13.48	27.83	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.67	20.41	107.11	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	10G	burst	1500	10.68	17.49	108.62	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.15	10.74	13.34	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	burst	64	10.04	10.77	13.63	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	burst	64	10.03	10.75	18.41	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	burst	64	9.89	10.37	19.66	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low	100G	burst	64	9.90	12.44	43.99	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	64	9.88	12.18	44.59	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	64	9.88	12.68	59.32	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	64	9.88	14.18	110.30	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.03	10.37	12.39	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	burst	512	10.07	10.43	12.92	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	burst	512	10.07	10.41	13.81	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	burst	512	10.05	10.53	15.24	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.07	10.56	20.36	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.07	10.56	20.60	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.08	10.49	21.53	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	512	10.03	10.48	21.98	non-congested	NA	NA	2

eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.10	10.38	11.82	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	strict-high	100G	burst	1500	10.19	10.61	13.23	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	high	100G	burst	1500	10.12	10.66	14.04	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	medium-high	100G	burst	1500	10.17	10.81	14.43	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.18	10.93	20.07	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.18	10.97	21.81	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.18	11.03	22.94	non-congested	NA	NA	2
eCPRI-ORAN Raw Stream	low	100G	burst	1500	10.10	11.01	24.13	non-congested	NA	NA	2

Table 76: Latency with Burst Traffic in 1-Q Congestion Scenario

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.50	10.77	16.36	1Q-congestion	strict-high	ACX7024	2

eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.01	11.32	16.38	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.60	10.89	17.43	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.10	10.52	11.64	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.07	10.26	11.31	1Q-congestion	strict-high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.10	10.25	11.16	1Q-congestion	strict-high	ACX7024	2

Table 77: Latency with Burst Traffic in 2-Q Congestion Scenario

The following table shows data for Topology 2b, including ACX7024 as CSR and ACX7509 as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high and high queues are oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	10.51	10.95	19.99	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.02	11.60	18.62	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	10.60	11.17	18.80	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	9.97	13.06	17.65	2Q-congestion	strict-high, high	ACX7024	2

eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	10.01	13.81	20.73	2Q-congestion	strict-high, high	ACX7024	2
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	10.08	11.18	16.75	2Q-congestion	strict-high, high	ACX7024	2

Topology-3

Topology 3 includes only AG1.1 (ACX7509)/AG1.2 (ACX7100) and AN4 (ACX7024) in the data path. The following tables capture the latency data in various scenarios.

Table 78: Latency with Continuous Traffic only in Low-Latency Queue

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table below measures the latency for eCPRI traffic sent only into the LLQ low-latency queue without background traffic over Topology 3. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	11.09	11.24	11.79	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	11.78	11.94	12.47	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	12.09	12.23	13.54	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.95	11.35	11.66	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	11.07	11.20	11.53	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	11.11	11.18	11.63	non-congested	NA	NA	3

Table 79: Latency with Burst Traffic only in Low-Latency Queue

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent only into the LLQ low-latency queue without background traffic over Topology 3. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	11.09	11.25	11.77	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.79	11.94	12.49	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	11.80	12.22	13.56	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	10.99	11.39	11.70	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	11.12	11.24	11.59	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	11.15	11.22	11.68	non-congested	NA	NA	3

Table 80: Latency with Continuous Traffic in Non-Congested Scenario

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	

eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	11.32	13.02	16.56	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	64	11.34	13.12	21.19	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	10G	continuous	64	11.34	13.10	21.08	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	64	11.33	14.22	25.94	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	64	11.34	16.22	67.81	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	64	11.34	15.47	74.58	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	64	11.34	20.18	86.08	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	64	11.34	16.93	92.82	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	12.44	14.04	17.82	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	512	12.46	14.52	22.76	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	10G	continuous	512	12.46	14.48	26.78	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	512	12.45	15.53	32.98	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	low	10G	continuous	512	12.46	18.54	74.22	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	512	12.46	17.69	80.11	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	512	12.46	21.67	110.38	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	512	12.46	21.69	109.24	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	13.53	15.39	22.09	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	10G	continuous	1500	13.54	16.49	26.64	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	10G	continuous	1500	13.54	16.59	28.79	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	10G	continuous	1500	13.54	17.39	35.60	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	13.54	21.56	77.09	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	13.54	21.13	89.50	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	13.54	28.13	110.98	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	continuous	1500	13.54	24.91	103.05	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	11.07	11.42	13.62	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	64	10.92	11.26	15.27	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	100G	continuous	64	10.91	11.43	13.60	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	64	10.91	11.43	17.59	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.94	11.78	25.95	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.85	11.75	25.78	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.85	11.79	27.61	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	64	10.87	11.80	26.95	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	11.03	11.24	12.30	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	512	11.03	11.38	15.74	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	100G	continuous	512	11.05	11.27	13.58	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	512	11.05	11.28	14.78	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	low	100G	continuous	512	11.04	11.50	20.06	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	512	11.04	11.47	20.39	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	512	11.04	11.48	21.37	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	512	11.01	11.45	21.37	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	11.05	11.28	12.60	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	100G	continuous	1500	11.14	11.68	16.42	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	100G	continuous	1500	11.15	11.78	19.24	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	100G	continuous	1500	11.15	11.78	19.55	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	11.07	11.84	21.30	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	11.15	11.82	21.41	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	continuous	1500	11.15	11.61	15.29	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	Low	100G	continuous	1500	11.15	11.55	14.19	non-congested	NA	NA	3

Table 81: Latency with Continuous Traffic in 1-Q Congestion Scenario

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ low-latency queue when the strict-high queue is oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	11.32	12.71	20.91	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	12.44	14.01	21.78	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	13.52	15.35	25.50	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	10.83	11.38	12.51	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	11.03	11.20	12.18	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	11.06	11.21	12.22	1Q-congestion	strict-high	ACX7100/ACX7509	3

Table 82: Latency with Continuous Traffic in 2-Q Congestion Scenario

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ low-latency queue when the strict-high and high queues are oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and continuous traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	64	11.33	12.54	25.68	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	512	12.40	13.72	25.47	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	continuous	1500	13.51	14.98	27.73	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	64	11.08	15.61	17.93	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	512	15.07	15.38	17.45	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	continuous	1500	11.07	14.32	17.39	2Q-congestion	strict-high, high	ACX7100/ACX7509	3

Table 83: Latency with Burst Traffic in Non-Congested Scenario

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ in conjunction with multi-level priority queues. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	11.10	13.04	16.48	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	strict-high	10G	burst	64	11.12	13.10	21.02	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	10G	burst	64	11.12	13.10	21.54	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	10G	burst	64	11.11	14.29	30.77	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	64	11.12	17.84	73.28	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	64	11.12	16.40	71.71	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	64	11.12	24.57	96.09	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	64	11.12	21.14	98.83	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.86	13.44	17.21	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	10G	burst	512	11.86	13.67	22.03	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	10G	burst	512	11.87	13.69	24.20	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	10G	burst	512	11.86	14.88	26.70	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.87	17.32	67.10	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	low	10G	burst	512	11.86	16.86	79.62	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.87	19.79	85.41	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	512	11.87	19.96	89.23	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	12.15	14.01	21.23	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	10G	burst	1500	12.16	14.37	24.09	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	10G	burst	1500	12.16	14.50	25.67	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	10G	burst	1500	12.17	15.84	29.33	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	1500	12.16	19.62	75.47	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	1500	12.16	19.78	87.13	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	1500	12.17	21.51	109.58	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	10G	burst	1500	12.16	24.63	124.22	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	11.19	11.51	13.28	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	strict-high	100G	burst	64	11.02	11.51	13.83	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	100G	burst	64	10.99	11.51	15.86	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	100G	burst	64	10.98	11.43	15.32	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.91	12.14	26.00	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.92	12.13	29.16	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.91	12.15	28.84	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	64	10.90	12.18	29.30	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	11.07	11.35	13.23	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	100G	burst	512	11.09	11.36	13.88	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	100G	burst	512	11.09	11.38	14.71	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	100G	burst	512	11.06	11.51	15.20	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	512	11.08	11.71	23.44	non-congested	NA	NA	3

eCPRI-ORAN Raw Stream	low	100G	burst	512	11.08	11.67	28.05	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	512	11.09	11.67	30.28	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	512	11.05	11.71	28.61	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	11.10	11.40	12.97	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	strict-high	100G	burst	1500	11.18	11.60	14.21	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	high	100G	burst	1500	11.18	11.69	15.00	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	medium-high	100G	burst	1500	11.18	11.86	15.38	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	1500	11.19	12.03	23.74	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	1500	11.19	12.06	22.62	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	1500	11.19	12.04	23.51	non-congested	NA	NA	3
eCPRI-ORAN Raw Stream	low	100G	burst	1500	11.11	12.03	24.32	non-congested	NA	NA	3

Table 84: Latency with Burst Traffic in 1-Q Congestion Scenario

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high queue is oversubscribed and dropping traffic. Results are

provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	11.09	11.41	16.99	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.81	12.13	18.65	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	12.09	12.41	18.08	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	11.03	11.41	12.65	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	11.08	11.27	12.35	1Q-congestion	strict-high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	11.11	11.26	11.29	1Q-congestion	strict-high	ACX7100/ACX7509	3

Table 85: Latency with Burst Traffic in 2-Q Congestion Scenario

The following table shows data for Topology 3, including ACX7100-48L as CSR, ACX7509 and ACX7100-32C as HSR. The table measures the latency for eCPRI traffic sent in LLQ when the strict-high and high queues are oversubscribed and dropping traffic. Results are provided across different frame sizes, 10GbE and 100GbE port speeds, and burst traffic patterns. Latency is always measured in microseconds (µs). In all cases, the per-device average latency is measured less than the 10µs objective with majority ≤6µs.

Queue Name	Queue Priority	Port Speed	Traffic Duration Mode	Frame Size	Latency (us)			Scenario	Congestion at		No of Hops
					Min	Avg	Max		Queue	Router	
eCPRI-ORAN Raw Stream	low-latency	10G	burst	64	11.08	11.62	20.63	2Q-congestion	strict-high, high	ACX7100/ACX7509	3

eCPRI-ORAN Raw Stream	low-latency	10G	burst	512	11.81	12.41	23.91	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	10G	burst	1500	12.12	12.71	20.88	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	64	11.10	13.91	18.05	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	512	11.07	11.35	13.11	2Q-congestion	strict-high, high	ACX7100/ACX7509	3
eCPRI-ORAN Raw Stream	low-latency	100G	burst	1500	11.10	12.76	17.51	2Q-congestion	strict-high, high	ACX7100/ACX7509	3

eCPRI Message Integrity Validation

eCPRI message Type4/Type5/Type6/Type7 are tested as part of this JVD testing for integrity by emulating O-RU and O-DU on a tester device. These messages are validating for integrity at the receiving end of the tester. Below tables show the summary results of all the DUTs i.e. ACX7024, ACX7509 and ACX7509.

ACX7024

Type4: Remote Memory Access

Figure 9: eCPRI Event Indication Message Results

eCPRI Event Indication Message Results (LIVE)
(1 of 2)

Port Name	Device Name	State	Tx Fault Indication Count	Rx Fault Indication Count	Tx Fault Indication Acknowledge Count	Rx Fault Indication Acknowledge Count	Tx Notification Indication Count	Rx Notification Indication Count	Tx Synchronization Request Count	Rx Synchronization Request Count	Tx Synchronization Acknowledge Count
Port //10/1	RT3	Stopped	0	20	20	0	0	0	10	10	10
Port //10/2	RT10	Stopped	20	0	0	20	0	0	10	10	10

eCPRI Event Indication Message Results (LIVE)
(2 of 2)

Port Name	Device Name	Rx Synchronization Acknowledge Count	Tx Synchronization End Count	Rx Synchronization End Count
Port //10/1	RT3	10	10	10
Port //10/2	RT10	10	10	10

Type5: One Way Delay Measurement

Figure 10: eCPRI Delay Measurement Results (LIVE)

Port Name	Device Name	Message Name	Measurement ID	Current Delay (µs)	Minimum Delay (µs)	Maximum Delay (µs)	Average Delay (µs)
Port //10/1	RT3	EcpriOneWayDelayMeasurementConfig 6	1	6.20	5.82	6.85	6.19
Port //10/2	RT10	EcpriOneWayDelayMeasurementConfig 7	1	6.20	5.82	6.85	6.27

Type6: Remote Reset

Figure 11: eCPRI Remote Reset Message Results

eCPRI Remote Reset Message Results (LIVE)

Port Name	Device Name	State	Tx Remote Reset Request Count	Rx Remote Reset Request Count	Tx Remote Reset Response Count	Rx Remote Reset Response Count
Port //10/1	RT3	Stopped	10	0	0	10
Port //10/2	RT10	Stopped	0	10	10	0

Type7: Event Indication

Figure 12: eCPRI Event Indication Message Results

eCPRI Event Indication Message Results (LIVE)
(1 of 2)

Port Name	Device Name	State	Tx Fault Indication Count	Rx Fault Indication Count	Tx Fault Indication Acknowledge Count	Rx Fault Indication Acknowledge Count	Tx Notification Indication Count	Rx Notification Indication Count	Tx Synchronization Request Count	Rx Synchronization Request Count	Tx Synchronization Acknowledge Count
Port //10/1	RT3	Stopped	0	20	20	0	0	0	10	10	10
Port //10/2	RT10	Stopped	20	0	0	20	0	0	10	10	10

eCPRI Event Indication Message Results (LIVE)
(2 of 2)

Port Name	Device Name	Rx Synchronization Acknowledge Count	Tx Synchronization End Count	Rx Synchronization End Count
Port //10/1	RT3	10	10	10
Port //10/2	RT10	10	10	10

ACX7100

Type4: Remote Memory Access

Figure 13: eCPRI Remote Memory Access Message Results

eCPRI Remote Memory Access Message Results (LIVE)
(1 of 2)

Port Name	Device Name	State	Tx Read Request Count	Rx Read Request Count	Tx Read Response Count	Rx Read Response Count	Tx Write Request Count	Rx Write Request Count	Tx Write Response Count	Rx Write Response Count	Tx Write No Response Count	Rx Write No Response Count	Tx Failure Read Response Count	Rx Failure Read Response Count	Tx Failure Write Response Count
Port //10/3	RT3	Stopped	10	0	0	0	10	0	0	10	0	0	0	0	0
Port //10/8	RT10	Stopped	0	10	0	0	0	10	10	0	0	0	0	0	0

eCPRI Remote Memory Access Message Results (LIVE)
(2 of 2)

Port Name	Device Name	Rx Failure Write Response Count	Tx Partial Read Response Count	Rx Partial Read Response Count	Tx Partial Write Response Count	Rx Partial Write Response Count
Port //10/3	RT3	0	0	10	0	0
Port //10/8	RT10	0	10	0	0	0

Type5: One Way Delay Measurement

Figure 14: eCPRI Delay Measurement Results

eCPRI Delay Measurement Results (LIVE)

Port Name	Device Name	Message Name	Measurement ID	Current Delay (µs)	Minimum Delay (µs)	Maximum Delay (µs)	Average Delay (µs)
Port //10/3	RT3	EcpriOneWayDelayMeasurementConfig 6	1	4.59	4.56	4.89	4.63
Port //10/8	RT10	EcpriOneWayDelayMeasurementConfig 7	1	4.59	4.56	4.89	4.63

Type6: Remote Reset

Figure 15: eCPRI Remote Reset Message Results

eCPRI Remote Reset Message Results (LIVE)

Port Name	Device Name	State	Tx Remote Reset Request Count	Rx Remote Reset Request Count	Tx Remote Reset Response Count	Rx Remote Reset Response Count
Port //10/3	RT3	Stopped	10	0	0	10
Port //10/8	RT10	Stopped	0	10	10	0

Type7: Event Indication

Figure 16: eCPRI Event Indication Message Results

eCPRI Event Indication Message Results (LIVE)
(1 of 2)

Port Name	Device Name	State	Tx Fault Indication Count	Rx Fault Indication Count	Tx Fault Indication Acknowledge Count	Rx Fault Indication Acknowledge Count	Tx Notification Indication Count	Rx Notification Indication Count	Tx Synchronization Request Count	Rx Synchronization Request Count	Tx Synchronization Acknowledge Count
Port //10/3	RT3	Stopped	0	20	20	0	0	0	10	10	10
Port //10/8	RT10	Stopped	20	0	0	20	0	0	10	10	10

eCPRI Event Indication Message Results (LIVE)
(2 of 2)

Port Name	Device Name	Rx Synchronization Acknowledge Count	Tx Synchronization End Count	Rx Synchronization End Count
Port //10/3	RT3	10	10	10
Port //10/8	RT10	10	10	10

ACX7509

Type4: Remote Memory Access

Figure 17: eCPRI Remote Memory Access Message Results

eCPRI Remote Memory Access Message Results (LIVE)
(1 of 2)

Port Name	Device Name	State	Tx Read Request Count	Rx Read Request Count	Tx Read Response Count	Rx Read Response Count	Tx Write Request Count	Rx Write Request Count	Tx Write Response Count	Rx Write Response Count	Tx Write No Response Count	Rx Write No Response Count	Tx Failure Read Response Count	Rx Failure Read Response Count	Tx Failure Write Response Count
Port //10/9	RT4	Stopped	10	0	0	0	10	0	0	10	0	0	0	0	0
Port //10/10	RT11	Stopped	0	10	0	0	0	10	10	0	0	0	0	0	0

eCPRI Remote Memory Access Message Results (LIVE)
(2 of 2)

Port Name	Device Name	Rx Failure Write Response Count	Tx Partial Read Response Count	Rx Partial Read Response Count	Tx Partial Write Response Count	Rx Partial Write Response Count
Port //10/9	RT4	0	0	10	0	0
Port //10/10	RT11	0	10	0	0	0

Type5: One Way Delay Measurement

Figure 18: eCPRI Delay Measurement Results

eCPRI Delay Measurement Results (LIVE)

Port Name	Device Name	Message Name	Measurement ID	Current Delay (µs)	Minimum Delay (µs)	Maximum Delay (µs)	Average Delay (µs)
Port //10/9	RT4	EcpriOneWayDelayMeasurementConfig 6	1	4.97	4.88	4.97	4.93
Port //10/10	RT11	EcpriOneWayDelayMeasurementConfig 7	1	4.97	4.88	4.97	4.92

Type6: Remote Reset

Figure 19: eCPRI Remote Reset Message Results

eCPRI Remote Reset Message Results (LIVE)

Port Name	Device Name	State	Tx Remote Reset Request Count	Rx Remote Reset Request Count	Tx Remote Reset Response Count	Rx Remote Reset Response Count
Port //10/9	RT4	Stopped	10	0	0	10
Port //10/10	RT11	Stopped	0	10	10	0

Type7: Event Indication

Figure 20: eCPRI Event Indication Message Results

eCPRI Event Indication Message Results (LIVE)
(1 of 2)

Port Name	Device Name	State	Tx Fault Indication Count	Rx Fault Indication Count	Tx Fault Indication Acknowledge Count	Rx Fault Indication Acknowledge Count	Tx Notification Indication Count	Rx Notification Indication Count	Tx Synchronization Request Count	Rx Synchronization Request Count	Tx Synchronization Acknowledge Count
Port //10/9	RT4	Stopped	0	20	20	0	0	0	10	10	10
Port //10/10	RT11	Stopped	20	0	0	20	0	0	10	10	10

eCPRI Event Indication Message Results (LIVE)
(2 of 2)

Port Name	Device Name	Rx Synchronization Acknowledge Count	Tx Synchronization End Count	Rx Synchronization End Count
Port //10/9	RT4	10	10	10
Port //10/10	RT11	10	10	10

Buffer Occupancy Detail:

Buffer occupancy detail when low priority queue FC-LOW is congested, when traffic is sent on both low latency queue FC-LLQ and low priority queue FC-LOW.

```
[edit]
regress@jvd-awan-acx7024-e# show class-of-service forwarding-classes | display set
set class-of-service forwarding-classes class FC-BEST-EFFORT queue-num 0
set class-of-service forwarding-classes class FC-CONTROL queue-num 3
set class-of-service forwarding-classes class FC-HIGH queue-num 4
set class-of-service forwarding-classes class FC-LLQ queue-num 6
set class-of-service forwarding-classes class FC-LOW queue-num 1
set class-of-service forwarding-classes class FC-MEDIUM queue-num 2
set class-of-service forwarding-classes class FC-REALTIME queue-num 5
set class-of-service forwarding-classes class FC-SIGNALING queue-num 7

[edit]
regress@jvd-awan-acx7024-e# run show interfaces voq et-0/0/4 forwarding-class FC-LOW
Physical interface: et-0/0/4, up, Physical link is Up
  Interface index: 1233, SNMP ifIndex: 513

Queue: 1, Forwarding classes: FC-LOW

  FPC number: 0
    PFE: 0
    Queued:
      Packets              :              6450348              563177 pps
      Bytes                :           9679260864          6760764120 bps
    Transmitted:
```

```
      Packets               :               5703736               498340 pps
      Bytes                 :            8558946684            5982417464 bps
    Dropped:
      Tail-dropped packets  :                     0                    0 pps
      Tail-dropped bytes    :                     0                    0 bps
      RED-dropped packets   :                746612                64837 pps
      RED-dropped bytes     :            1120314180             778346656 bps
    Queue-depth bytes:
      Current               :              49997760
      Peak                  :                     0
      Average               :                     0

[edit]
regress@jvd-awan-acx7024-e# run show interfaces voq et-0/0/4 forwarding-class FC-LLQ
Physical interface: et-0/0/4, up, Physical link is Up
  Interface index: 1233, SNMP ifIndex: 513

Queue: 6, Forwarding classes: FC-LLQ

  FPC number: 0
    PFE: 0
    Queued:
      Packets               :               3646662               321429 pps
      Bytes                 :            5469993000            3857149656 bps
    Transmitted:
      Packets               :               3646662               321429 pps
      Bytes                 :            5469993000            3857149656 bps
    Dropped:
      Tail-dropped packets  :                     0                    0 pps
      Tail-dropped bytes    :                     0                    0 bps
      RED-dropped packets   :                     0                    0 pps
      RED-dropped bytes     :                     0                    0 bps
    Queue-depth bytes:
      Current               :                     0
      Peak                  :                     0
      Average               :                     0

[edit]
regress@jvd-awan-acx7024-e# exit
Exiting configuration mode

regress@jvd-awan-acx7024-e> exit

[vrf:none] regress@jvd-awan-acx7024-e:~# vty fpc0.0
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.

jnx(/dev/pts/5)# show cos voq buffer-profile ifd 1233
Rate Class Hardware Configuration

================================================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:0    Voq Index:168    Profile Id:8
 ------------------------------------------------------------------------------------------
----------------------
```

```
 |                        Tail Drop Config                                 |
WRED Drop Config       |
 ------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------
----------------------
 |  Green   |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Red     |               6144 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------
----------------------

==============================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:1    Voq Index:169    Profile Id:8
 ------------------------------------------------------------------------------
----------------------
 |                        Tail Drop Config                                 |
WRED Drop Config       |
 ------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------
----------------------
 |  Green   |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Red     |               6144 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------
----------------------

==============================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:2    Voq Index:170    Profile Id:28
 ------------------------------------------------------------------------------
----------------------
 |                        Tail Drop Config                                 |
WRED Drop Config       |
 ------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------
----------------------
 |  Green   |              24832 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |              24832 |        49999872 |                   0 |
0 |               0 |
```

```
 |  Red     |              24832 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------
----------------------

==============================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:3    Voq Index:171    Profile Id:8
 ------------------------------------------------------------------------------
----------------------
 |                         Tail Drop Config                                |
WRED Drop Config       |
 ------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------
----------------------
 |  Green   |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Red     |               6144 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------
----------------------

==============================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:4    Voq Index:172    Profile Id:32
 ------------------------------------------------------------------------------
----------------------
 |                         Tail Drop Config                                |
WRED Drop Config       |
 ------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------
----------------------
 |  Green   |              37376 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |              37376 |        49999872 |                   0 |
0 |               0 |
 |  Red     |              37376 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------
----------------------

==============================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:5    Voq Index:173    Profile Id:28
 ------------------------------------------------------------------------------
----------------------
 |                         Tail Drop Config                                |
WRED Drop Config       |
```

```
 ------------------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------------------
----------------------
 |  Green   |              24832 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |              24832 |        49999872 |                   0 |
0 |               0 |
 |  Red     |              24832 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------------------
----------------------

==========================================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:6    Voq Index:174    Profile Id:33
 ------------------------------------------------------------------------------------------
----------------------
 |                        Tail Drop Config                                  |
WRED Drop Config       |
 ------------------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------------------
----------------------
 |  Green   |              12288 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |              12288 |        49999872 |                   0 |
0 |               0 |
 |  Red     |              12288 |        49999872 |                   0 |
0 |               0 |
 ------------------------------------------------------------------------------------------
----------------------

==========================================================================================
======================
    Ifd Index:1233    Unit:0    Port:17    Queue:7    Voq Index:175    Profile Id:8
 ------------------------------------------------------------------------------------------
----------------------
 |                        Tail Drop Config                                  |
WRED Drop Config       |
 ------------------------------------------------------------------------------------------
----------------------
 |  colour  |  Dedicated Buffer  |  Shared Buffer  |  Dynamic Threshold  |  Min
Threshold  |  Max Threshold  |
 ------------------------------------------------------------------------------------------
----------------------
 |  Green   |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Yellow  |               6144 |        49999872 |                   0 |
0 |               0 |
 |  Red     |               6144 |        49999872 |                   0 |
0 |               0 |
```

```
 ------------------------------------------------------------------------------------------
----------------------

jnx(/dev/pts/5)#

jnx(/dev/pts/5)# show cos voq buffer-occupancy ifd 1233
IFD rate-limit information
         Ifd Index      : 1233
         Port Speed     : 10000000000 bps
         Shaping Rate   : 10000000000 bps

######## VOQ dynamic congestion occupancy Info: #########

******************
Unit           : 0
Core           : 0
******************

         Queue Id                  : 168
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0

         Queue Id                  : 169
         total_size_bytes          : 49997984
         size_sram_bytes           : 4608
         size_dram_bytes           : 49993376

         Queue Id                  : 170
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0

         Queue Id                  : 171
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0

         Queue Id                  : 172
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0

         Queue Id                  : 173
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0

         Queue Id                  : 174
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0

         Queue Id                  : 175
         total_size_bytes          : 0
         size_sram_bytes           : 0
         size_dram_bytes           : 0
```

Host-outbound-traffic mapping:

```
[edit]
regress@jvd-awan-acx7024-e# run clear interfaces statistics all

[edit]
regress@jvd-awan-acx7024-e# run show interfaces voq et-0/0/4 forwarding-
class FC-HIGH
Physical interface: et-0/0/4, up, Physical link is Up
  Interface index: 1239, SNMP ifIndex: 513

Queue: 4, Forwarding classes: FC-HIGH

  FPC number: 0
    PFE: 0
    Queued:
      Packets              :                     0                     0
pps
      Bytes                :                     0                     0
bps
    Transmitted:
      Packets              :                     0                     0
pps
      Bytes                :                     0                     0
bps
    Dropped:
      Tail-dropped packets :                     0                     0
pps
      Tail-dropped bytes   :                     0                     0
bps
      RED-dropped packets  :                     0                     0
pps
      RED-dropped bytes    :                     0                     0
bps
    Queue-depth bytes:
      Current              :                     0
      Peak                 :                     0
      Average              :                     0

[edit]
regress@jvd-awan-acx7024-e# set class-of-service host-outbound-traffic
forwarding-class FC-HIGH

[edit]
regress@jvd-awan-acx7024-e# commit
commit complete

[edit]
regress@jvd-awan-acx7024-e# show class-of-service host-outbound-traffic
forwarding-class FC-HIGH;

[edit]
regress@jvd-awan-acx7024-e# run clear interfaces statistics all

[edit]
regress@jvd-awan-acx7024-e# run show interfaces voq et-0/0/4 forwarding-
class FC-HIGH
```

```
Physical interface: et-0/0/4, up, Physical link is Up
  Interface index: 1239, SNMP ifIndex: 513

Queue: 4, Forwarding classes: FC-HIGH

  FPC number: 0
    PFE: 0
    Queued:
      Packets              :                2499                     5
pps
      Bytes                :              252313                  5448
bps
    Transmitted:
      Packets              :                2499                     5
pps
      Bytes                :              252313                  5448
bps
    Dropped:
      Tail-dropped packets  :                   0                     0
pps
      Tail-dropped bytes    :                   0                     0
bps
      RED-dropped packets   :                   0                     0
pps
      RED-dropped bytes     :                   0                     0
bps
    Queue-depth bytes:
      Current              :                   0
      Peak                 :                   0
      Average              :                   0


[edit]
regress@jvd-awan-acx7024-e#
```

Multifield Classifier

eCPRI Traffic sent from Ixia with ether-type 0xaefe is classified to FC-BEST-EFFORT based on BA classification.

```
[edit]
regress@jvd-awan-acx7100-i# run show interfaces queue ae25 forwarding-class
FC-BEST-EFFORT
Physical interface: ae25, up, Physical link is Up
  Interface index: 1289, SNMP ifIndex: 784
Forwarding classes: 8 supported, 8 in use
Egress queues: 8 supported, 8 in use
Queue: 0, Forwarding classes: FC-BEST-EFFORT
  Queued:
    Packets              :               100515               10111 pps
    Bytes                :            149649925            120423400 bps
  Transmitted:
    Packets              :               100515               10111 pps
    Bytes                :            149649925            120423400 bps
```

```
    Tail-dropped packets :                      0                      0 pps
    Tail-dropped bytes   :                      0                      0 bps
    RED-dropped packets  :                      0                      0 pps
    RED-dropped bytes    :                      0                      0 bps
```

Configuring Multifield classifier to classify the packet to forwarding class FC-LLQ

```
[edit]
regress@jvd-awan-acx7100-i# show firewall family ccc filter FF-ECPRI |
display set
set firewall family ccc filter FF-ECPRI term 1 from ether-type 0xaefe
set firewall family ccc filter FF-ECPRI term 1 then forwarding-class FC-LLQ
set firewall family ccc filter FF-ECPRI term 1 then accept
set firewall family ccc filter FF-ECPRI term 2 then accept
set firewall family ccc filter FF-ECPRI interface-specific
```

Applied the input filter on the ingress interface

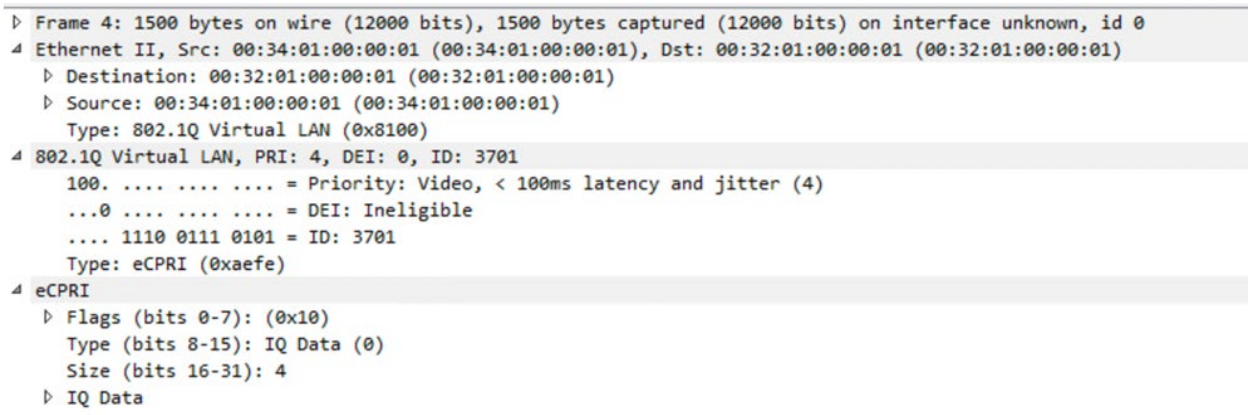
```
set class-of-service schedulers SC-SIGNALING buffer-size percent 5
set class-of-service schedulers SC-LLQ buffer-size percent 10
set class-of-service schedulers SC-REALTIME buffer-size percent 20
set class-of-service schedulers SC-HIGH buffer-size percent 30
set class-of-service schedulers SC-CONTROL buffer-size percent 5
set class-of-service schedulers SC-MEDIUM buffer-size percent 20
set class-of-service schedulers SC-LOW buffer-size percent 10
set class-of-service schedulers SC-BEST-EFFORT buffer-size remainder
```

eCPRI Traffic sent from Ixia with ether-type 0xaefe is classified to FC-LLQ based on Multifield classification

```
[edit]
regress@jvd-awan-acx7100-i# run show interfaces queue ae25 forwarding-class
FC-LLQ
Physical interface: ae25, up, Physical link is Up
  Interface index: 1289, SNMP ifIndex: 784
Forwarding classes: 8 supported, 8 in use
Egress queues: 8 supported, 8 in use
Queue: 6, Forwarding classes: FC-LLQ
  Queued:
    Packets              :                155078                10026 pps
    Bytes                :             227935540             119824048 bps
  Transmitted:
    Packets              :                155078                10026 pps
    Bytes                :             227935540             119824048 bps
    Tail-dropped packets :                     0                    0 pps
    Tail-dropped bytes   :                     0                    0 bps
    RED-dropped packets  :                     0                    0 pps
    RED-dropped bytes    :                     0                    0 bps
```

Packet Capture

Figure 21: Packet Capture



CoS Summarized Results

Table 86: Class of Service Summarized Results

Traffic Scenario	Ingress Classification Mapped to FC				Scheduler Rates Honored					Codepoints Rewritten			Bits Preserved
Fixed Classifier	**Custom**	**802.1p**	**DSCP**	**EXP**	**LLQ**	**SH**	**High**	**Med-High**	**Low**	**802.1p**	**DSCP**	**EXP**	**E2E**
EVPN-VPWS	--	--	--	✓	✓	--	--	--	--	✓	--	✓	✓
EVPN-FXC	--	--	--	✓	✓	--	--	--	--	✓	--	✓	✓
L2Circuit	--	--	--	✓	--	--	--	--	✓	✓	--	✓	✓
EVPN IRB anycast with L3VPN MH	--	--	--	✓	--	--	--	✓	--	✓	--	✓	✓
BD IRB anycast static MAC/IP with L3VPN	--	--	--	✓	--	--	--	✓	--	✓	--	✓	✓
BA Classifier	Custom	802.1p	DSCP	EXP	LLQ	SH	High	Med-High	Low	802.1p	DSCP	EXP	E2E

EVPN-VPWS	--	✓	--	✓	--	✓	✓	✓	✓	✓	--	✓	✓
EVPN-FXC	--	✓	--	✓	--	✓	✓	✓	✓	✓	--	✓	✓
EVPN-ELAN	--	✓	--	✓	--	✓	✓	✓	✓	✓	--	✓	✓
EVPN IRB anycast with L3VPN MH	--	✓	--	✓	✓	✓	✓	✓	✓	✓	--	✓	✓
L3VPN	--	--	✓	✓	--	✓	✓	✓	✓	--	✓	✓	✓
VPLS	--	✓	--	✓	--	--	--	--	✓	✓	--	✓	✓
BD IRB anycast static MAC/IP with L3VPN	--	✓	--	✓	✓	✓	✓	✓	✓	✓	--	✓	✓
MultiField Classifier	Custom	802.1p	DSCP	EXP	LLQ	SH	High	Med-High	Low	802.1p	DSCP	EXP	E2E
eCPRI	✓	--	--	✓	✓	--	--	--	--	--	--	✓	✓
PTP	✓	--	--	✓	✓	--	--	--	--	--	--	✓	✓
OAM	✓	--	--	✓	✓	--	--	--	--	--	--	✓	✓

Traffic Profiles

Table 87: Custom iMIX definition

Custom iMIX-1	
Size	**Weight**
64	1
128	1
256	1

512	1
1024	1
1500	1
2000	1

Custom iMIX-1	
Size	**Weight**
64	1
128	1
256	1
512	1
1024	1
1500	1
2000	1
9000	1

Table 88: Traffic Load Distribution

Traffic Item Name	Feature Name	FPS	Frame Size
L2-MIDHAUL-L2CKT-L2-NO-COS	L2Circuit	1000pps	1500
L2-MIDHAUL-VPLS-L2-NO-COS	VPLS	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-SH-TO-AG1.1-L2-FIX-LLQ	EVPN-VPWS-SH	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-SH-TO-AG1.2-L2-FIX--LLQ	EVPN-VPWS-SH	1000pps	1500
L2-MIDHUAL-EVPN-FXC-MH-L2-NO-COS	EVPN-FXC-MH-L2	1000pps	1500

L3-MBH-L3VPN-IPV4-BA-SIGNALLING	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV4-BA-CONTROL	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV4-BA-REALTIME	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV4-BA-HIGH	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV4-BA-MEDIUM	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV4-BA-LOW	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV4-BA-BEST-EFFORT	L3VPN-IPv4	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-SIGNALLING	L3VPN-IPv6	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-CONTROL	L3VPN-IPv6	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-REALTIME	L3VPN-IPv6	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-HIGH	L3VPN-IPv6	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-MEDIUM	L3VPN-IPv6	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-LOW	L3VPN-IPv6	1000pps	1500
L3-MBH-L3VPN-IPV6-BA-BEST-EFFORT	L3VPN-IPv6	1000pps	1500
L2-MBH-VPLS-L2-BA-HIGH	VPLS	1000pps	1500
L2-MBH-VPLS-L2-BA-MEDIUM	VPLS	1000pps	1500
L2-MBH-VPLS-L2-BA-LOW	VPLS	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-SIGNALLING	EVPN-VPWS-L2	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-CONTROL	EVPN-VPWS-L2	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-REALTIME	EVPN-VPWS-L2	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-HIGH	EVPN-VPWS-L2	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-MEDIUM	EVPN-VPWS-L2	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-LOW	EVPN-VPWS-L2	1000pps	1500
L2-MBH-EVPN-VPWS-L2-BA-BEST-EFFORT	EVPN-VPWS-L2	1000pps	1500

5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-SIGNALLING	EVPN-FXC-SH	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-CONTROL	EVPN-FXC-SH	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-REALTIME	EVPN-FXC-SH	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-HIGH	EVPN-FXC-SH	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-MEDIUM	EVPN-FXC-SH	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-LOW	EVPN-FXC-SH	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-BEST-EFFORT	EVPN-FXC-SH	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-FIX-REALTIME	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-FIX-REALTIME	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-FIX-REALTIME	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-FIX-REALTIME	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-LLQ	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-SIGNALLING	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-CONTROL	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-REALTIME	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-HIGH	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-MEDIUM	L3VPN-IRB-EVPN-IPv4	1000pps	1500

5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-LOW	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-BA-BEST-EFFORT	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-LLQ	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-SIGNALLING	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-CONTROL	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-REALTIME	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-HIGH	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-MEDIUM	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-LOW	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-BA-BEST-EFFORT	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-LLQ	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-SIGNALLING	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-CONTROL	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-REALTIME	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-HIGH	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-MEDIUM	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-LOW	L3VPN-IRB-BD-IPV4	1000pps	1500

5G-MIDHAUL-L3VPN-IRB-BD-IPV4-BA-BEST-EFFORT	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-LLQ	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-SIGNALLING	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-CONTROL	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-REALTIME	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-HIGH	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-MEDIUM	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-LOW	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-BA-BEST-EFFORT	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-SIGNALLING	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-CONTROL	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-REALTIME	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-HIGH	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-MEDIUM	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-LOW	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-BEST-EFFORT	EVPN-ELAN-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-SIGNALLING	EVPN-FXC-MH-L2	1000pps	1500

5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-CONTROL	EVPN-FXC-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-REALTIME	EVPN-FXC-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-HIGH	EVPN-FXC-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-MEDIUM	EVPN-FXC-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-LOW	EVPN-FXC-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-BEST-EFFORT	EVPN-FXC-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-LLQ	EVPN-VPWS-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-SIGNALLING	EVPN-VPWS-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-CONTROL	EVPN-VPWS-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-REALTIME	EVPN-VPWS-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-HIGH	EVPN-VPWS-MH-L2	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-BEST-EFFORT	EVPN-VPWS-MH-L2	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-MFC-REALTIME	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-MFC-HIGH	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-MFC-MEDIUM	L3VPN-IRB-EVPN-IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV4-MFC-LOW	L3VPN-IRB-EVPN-IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-LLQ	IPv4	1000pps	1500

TOPO1A-AN4-TO-AN4-IPV4-BA-SIGNALLING	IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-CONTROL	IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-REALTIME	IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-HIGH	IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-MEDIUM	IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-LOW	IPv4	1000pps	1500
TOPO1A-AN4-TO-AN4-IPV4-BA-BEST-EFFORT	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-LLQ	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-SIGNALLING	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-CONTROL	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-REALTIME	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-HIGH	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-MEDIUM	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-LOW	IPv4	1000pps	1500
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-BEST-EFFORT	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-LLQ	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-SIGNALLING	IPv4	1000pps	1500

TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-CONTROL	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-REALTIME	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-HIGH	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-MEDIUM	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-LOW	IPv4	1000pps	1500
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-BEST-EFFORT	IPv4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-MFC-REALTIME	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-MFC-HIGH	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-MFC-MEDIUM	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-EVPN-IPV6-MFC-LOW	L3VPN-IRB-EVPN-IPv6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-MFC-REALTIME	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-MFC-HIGH	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-MFC-MEDIUM	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV4-MFC-LOW	L3VPN-IRB-BD-IPV4	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-MFC-REALTIME	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-MFC-HIGH	L3VPN-IRB-BD-IPV6	1000pps	1500
5G-MIDHAUL-L3VPN-IRB-BD-IPV6-MFC-MEDIUM	L3VPN-IRB-BD-IPV6	1000pps	1500

5G-MIDHAUL-L3VPN-IRB-BD-IPV6-MFC-LOW	L3VPN-IRB-BD-IPV6	1000pps	1500
L2-MBH-L2CKT-L2-FIX-HIGH	L2Circuit	1000pps	1500
L2-MBH-L2CKT-L2-FIX-MEDIUM	L2Circuit	1000pps	1500
L2-MBH-L2CKT-L2-FIX-LOW	L2Circuit	1000pps	1500
5G-FRONTHAUL-EVPN-VPWS-SH-TO-AG1.1-L2-FIX-LLQ	EVPN-VPWS-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-SH-TO-AG1.2-L2-FIX--LLQ	EVPN-VPWS-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-SIGNALLING	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-CONTROL	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-REALTIME	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-HIGH	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-MEDIUM	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-LOW	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV4-BA-BEST-EFFORT	L3VPN-IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-SIGNALLING	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-CONTROL	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-REALTIME	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-HIGH	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-MEDIUM	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-LOW	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
L3-MBH-L3VPN-IPV6-BA-BEST-EFFORT	L3VPN-IPv6	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-SIGNALLING	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-CONTROL	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2

5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-REALTIME	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-HIGH	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-MEDIUM	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-LOW	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-SH-TO-AG1.1-L2-BA-BEST-EFFORT	EVPN-FXC-SH	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-SIGNALLING	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-CONTROL	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-REALTIME	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-HIGH	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-MEDIUM	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-LOW	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-ELAN-MH-L2-BA-BEST-EFFORT	EVPN-ELAN-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-SIGNALLING	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-CONTROL	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-REALTIME	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-HIGH	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-MEDIUM	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2

5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-LOW	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-FXC-MH-L2-BA-BEST-EFFORT	EVPN-FXC-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-LLQ	EVPN-VPWS-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-SIGNALLING	EVPN-VPWS-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-CONTROL	EVPN-VPWS-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-REALTIME	EVPN-VPWS-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-HIGH	EVPN-VPWS-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
5G-FRONTHAUL-EVPN-VPWS-MH-L2-MFC-BEST-EFFORT	EVPN-VPWS-MH-L2	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-LLQ	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-SIGNALLING	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-CONTROL	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-REALTIME	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-HIGH	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-MEDIUM	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1A-AN4-TO-AN4-IPV4-BA-LOW	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-LLQ	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-SIGNALLING	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-CONTROL	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2

TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-REALTIME	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-HIGH	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-MEDIUM	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1B-AG1.2-TO-AG1.2-IPV4-BA-LOW	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-LLQ	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-SIGNALLING	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-CONTROL	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-REALTIME	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-HIGH	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-MEDIUM	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2
TOPO1C-AG1.1-TO-AG1.1-IPV4-BA-LOW	IPv4	1000pps	Customer iMIX-1 and Customer iMIX-2

High Level Features Tested

- AE, LACP
- ISIS, ISIS-SR
- L2Circuit, VPLS
- IBGP, EBGP
- BFD
- CFM
- L3VPN-OSPF, L3VPN-BGP
- TI-LFA
- MP-BGP
- BGP-LU
- EVPN-VPWS SH, EVPN-VPWS Active-Active MH
- EVPN-FXC SH, EVPN-FXC Active-Active MH
- EVPN-ELAN Active-Active MH
- FAT-PW
- L3VPN Anycast with VLANS & static ARP
- L3VPN Anycast with EVPN-ELAN

- Classifiers (DSCP, DSCPv6, Fixed, MF, 802.1P, EXP)
- Rewrite-rules (DSCP, DSCPv6, 802.1P, EXP)
- Scheduling
- Shaping
- Rate-limiting

Event Testing

The following events have been tested.

- Restart or kill of critical Junos or Junos Evo processes and assess its impact.
- Device reboot to evaluate impact in the network.
- Interface flap events to evaluate impact on the traffic.
- Deletion or configuration of QoS configuration to evaluate impact of the traffic flow.
- Deactivate or Activate QoS configuration to evaluate impact of the traffic flow.
- Clearing protocol sessions to simulate protocol session flap and assess its impact on service and traffic.

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