

**QWEST CORPORATION (“QC”) DOMESTIC METRO OPTICAL ETHERNET
SERVICE LEVEL AGREEMENT
(not applicable to services offered under the Qwest Wholesale and Enhanced Services Agreements)**

QC Metro Optical Ethernet Service (“MOE”) is a flexible, easy-to-use, transport service that uses established Ethernet transport technology. MOE allows customers to connect multiple enterprise locations within a service area using native Ethernet protocol. MOE is available over three distinct designs: Customer Premises, Central Office, and Ethernet with Extended Transport (EwET). This Service Level Agreement (“SLA”) applies to intrastate and interstate MOE. Qwest offers this SLA in accordance with the applicable state tariffs, FCC 1, and Technical Publication 77411 (“Tech Pub”). If MOE becomes deregulated at the state level in a particular state, this SLA will no longer be offered in accordance with the state tariffs in that state. If MOE becomes deregulated at the federal level, this SLA will no longer be offered in accordance with FCC1. In the event of a conflict between the terms of this document and the tariffs or Tech Pub, the terms of the tariffs and Tech Pub will control. Capitalized terms not defined herein are defined in customer’s agreement or acknowledgment for MOE.

Customer Premises MOE supports transmission speeds as low as 5 Mbps and up to 1 Gbps in increments of 10 Mbps from 10 to 100 Mbps and in increments of 100 Mbps from 100 to 1,000 Mbps. Central Office MOE supports transmission speeds of 100 Mbps, 600 Mbps and 1,000 Mbps. EwET MOE supports transmission speeds as low as 5 Mbps and up to 40 Mbps.

The provisioning of MOE contemplates the use of existing facilities. There may be occasions when MOE is not available due to facilities limitations, or when it may be necessary to construct facilities. If special construction is involved, the regulations as set forth in FCC 2 will apply for interstate MOE and the applicable state tariff(s) will apply for special construction for intrastate MOE.

A customer may request that the facilities used to provide MOE be specifically routed. The regulations, rates, and charges for special facilities routing (i.e., diversity) are set forth in Section 11 of FCC 1 for interstate MOE and in the applicable state tariff(s) for intrastate MOE.

1. Service Availability Objective.

Service availability is defined as the ability of a customer to exchange data packets with the MOE network at the User-Network Interface (“UNI”) via customer provided equipment (“CPE”). Availability specifies the percentage of time the customer’s MOE meets (or exceeds) the throughput, latency, and packet loss performance objectives over any calendar month and may be expressed as:

$$\% \text{ Availability} = \frac{\text{Total Time} - \text{Outage Time}}{\text{Total Time}} \times 100$$

All User-Network Interfaces	Availability Objective (Monthly)
With Single Cable Entrance	99.9%
With Dual Cable Entrances (see Note a. below)	99.95%

Notes:

- a. Equipment located on the customer’s premises will have a single cable entrance unless the building owner elects to provide two physically separated cable entrances into the building. A second entrance to the customer’s premises affords further diversity protection. When desired, it is a customer’s responsibility to provide a second entrance. That second entrance must meet existing QC entrance facility standards. For additional information see QC Technical Publication 77344, *Diversity and Avoidance*.
- b. Service availability includes all components of the MOE network from edge site / switch to edge site / switch within a metro region for customers with two or more locations of from edge site / switch to core switch for customers with one location in a metro.
- c. Service interruptions caused by QC planned network maintenance activities, maintenance at the customer premises, or loss of customer traffic due to malfunction of CPE are excluded from the availability calculation. The MOE availability objective assumes two hours every six months for the network maintenance window.

2. Throughput Objective.

The MOE bandwidth profile is a limit on the rate at which Ethernet frames can traverse the User Network Interface (“UNI”). MOE offers a better than best effort bandwidth or throughput for each customer network access link. Specifically, the MOE Committed Information Rate (CIR) is the minimum bandwidth or throughput that the MOE network will deliver for at least 256 byte frames in both ingress and egress directions under normal operating conditions. For smaller frame sizes customer packets may be dropped.

Through CIR, bandwidth will be available in the increments ordered by the customer. CIR rates will be met by adequate rate-limiting of the MOE Layer 2 edge and core switches, and SONET transport infrastructure where applicable.

3. Latency Objective.

Latency or delay is defined as the time interval between the transmission of a signal at one point and the reception or detection of the same signal at another point. Unidirectional or One-Way Delay (“OWD”) is the elapsed time between when a node sends a packet and when the packet is received by another node. OWD is also referred to as end-to-end transit delay.

For MOE service, the one-way delay is the time measured between when the first bit of an Ethernet frame enters the ingress User-Network Interface to when the last bit of the same frame leaves the egress UNI. Specifically, from edge site / switch to edge site /

switch within a metro region for customers with two or more locations or from edge site /switch to core switch for customers with one location in a metro. The latency performance objective across a single MOE network will be as indicated below:

Latency (One-Way)	Objective (Monthly Average)
Maximum	Less than 25 milliseconds
Typical	Less than 15 milliseconds

Thus, over any calendar month, 100% of the successfully delivered egress frames (discarded or lost frames are not counted) will have an average one-way delay of less than 25 milliseconds. This MOE performance parameter applies to all supported Ethernet line / data rates (at the UNI), i.e. access ports and bandwidth profiles, frame sizes, alternate fiber routes where applicable and represents the total delay attributable to the MOE network.

4. Packet Loss Objective.

The packet loss performance parameter identifies the percentage of in-profile Ethernet frames (“green” frames that are within CIR) not reliably delivered between UNIs over a given measurement interval. Any frames that are out-of-profile (“yellow” or “red” frames, i.e. exceeding the CIR) are not counted towards the number of lost frames.

Customer frames that may additionally be blocked or discarded at the UNI and not counted towards the packet loss objective include the following:

- Runts or frame size less than 64 bytes
- Jumbo frames with a maximum transmission unit greater than 1522 bytes
- Corrupted frames with cyclic redundancy check, frame check sequence of alignment errors

Packet loss is defined as the percentage of packets that are dropped within, or between switches that are a part of, the MOE network. Specifically, from edge site / switch to edge site / switch within a metro region for customers with two or more locations or from edge site / switch to core switch for customers with one location in a metro. QC will engineer the MOE network to minimize packet loss such that the performance objective will not exceed the following:

Performance Parameter	Dropped Packets Objective (Monthly Average)
Packet Loss Ratio	No more than 0.1%
	No more than 0.001% for priority 1 (“P1”) packets in the MOE core network

Note: The MOE core network is defined as from the first (QC-provided) core switch to the last core switch in a metro for a particular Ethernet Virtual Connections (“EVC”) traffic flow. Thus, over any calendar month the MOE network will successfully deliver at least 99.9% of the customer’s packets from UNI to UNI or 99.999% for P1 traffic in the core.

5. VLAN Leakage Objective.

There will be zero VLAN or MAC address leakage across the MOE network. MOE does not currently support the routing or communication of traffic between VLANs or EVCs.

6. Quality of Service Objective.

When Quality of Service is purchased by the customer then the following applies:

- The service level availability commitment for Quality of Service is that 99.999% of the packets will conform to the bandwidth profile delivered across the core network, without being dropped or lost as a result of a fault within the Virtual Ethernet Network. This equates to a Quality of Service Pack loss ratio of no more than 0.001%. Thus, over any calendar month the MOE network will successfully deliver at least 99.999% of a customer’s packets from core to core.
- When the SLA is not met, the SLA credit will apply to the monthly recurring charge (MRC) for every increment of 5 Mbps of P1 traffic.
- The credit will equal 1/30th of the MRC for every 5 Mbps of affected Priority 1 traffic.
- The maximum amount of credit provided in a given month will not exceed the total MRC for the affected Service.

7. Protect Routing Objective.

When protect routing is purchased by the customer then the following applies:

- The service guarantee will be for a 99.99% circuit availability over a 30 day period which equates to 4 minutes 20 seconds of downtime.
- No credit will be allowed for an interruption of less than 4 minutes 20 seconds, multiple outages of each less than 4 minutes 20 seconds will not be added together.
- A credit of 1/30th of the monthly recurring charge (MRC) will be paid out for any outage occurrence that exceeds 4 minutes 20 seconds. Credit will be limited to one credit for each 24 hour period in which an outage(s) occur. Credit will be comprised of all affected MRC elements.

- The Maximum amount of credit provided in a given month will not exceed the total MRC for the affected MOE.

8. Mean Time to Repair Objective.

QC is responsible for maintaining all equipment and cable on the MOE network side of the UNI at customer locations, and the transmission facility between UNIs.

QC will furnish the customer with a trouble reporting telephone number.

Upon receipt of a trouble alarm or report, QC will initiate action within 20 minutes to clear the trouble and will commit to the following service restoral times for MOE:

- Four hours maximum in the event of a service interruption due to an electronic component failure
- Eight hours maximum if the trouble is caused by a cable failure