

G4 95TH PERCENTILE USAGE BILLING POLICY

G4's usage-based circuits are billed to customers based on the amount of bandwidth used. This enables G4's customers to burst to the full capacity of the circuit, and still pay for only the amount of capacity they actually use. G4 computes customer usage using the 95th percentile measurement method.

Usage Data Collection

G4 samples usage on customer circuits in 60-second intervals throughout the month [1]. Usage values for each sampling interval are computed for data flowing in both the inbound and outbound directions for each customer circuit. The deemed usage for each sampling interval, in each direction, is computed as the difference in interface "counter values" taken at the beginning and end of each interval. The counter values cumulatively track the number of data octets traversing the circuit interfaces at each sampling interval, and these octet amounts are translated into megabits to determine usage over the customer circuit interface during each sampling period. G4's policy is to round these usage calculations to three decimal places. This sampling method translates into between 43,200 and 44,640 bi-directional samples being collected each month for each customer circuit, depending on the number of days in a month and assuming a usage sample is taken at each interval [2]. The sampling is done without affecting performance on customer circuits using standard SNMP (Simple Network Management Protocol) requests to the switch interfaces.

95th Percentile Usage?

G4 generally measures customer circuit usage using the 95th percentile measurement method. Under this method, two separate 95th percentile values are computed: one based on inbound data samples collected; and one based on outbound data samples collected. For billing purposes, the higher of the inbound or outbound 95th percentile value is used, except for directional services which are billed at the sum of the respective inbound and outbound 95th percentile values. For services that have multiple physical circuits, such as ethernet circuits, the sum of concurrent one minute averages of 60-second intervals will be used in the calculation of the 95th percentile values. For data flowing into the routers from both the inbound and outbound directions, the 95th percentile value is calculated using all of the usage data samples collected in a given month. This is a statistical method to compute a value reflecting a point at which 5% of the samples are greater in value, and 95% of the samples are lesser in value, than the 95th percentile value. In other words, the 95th percentile calculation establishes a usage "threshold of acceptance" for customer billing purposes, which effectively discards, for billing purposes, the peaks in customer usage and establishes a more representative circuit usage value.

[1] The reference to 60-second sampling intervals means that, on average, the sampling is performed every 60 seconds. In certain cases, due to the limitations of the sampling methodology, a sample may not be obtained precisely at a 60 second point. In these cases, the data collector "adjusts" so that the next sample is taken, for example, one or two seconds earlier or later than the previous sample such that, on average, the sampling occurs in 60 second increments.

[2] If G4's data collection process fails to collect a particular sampling point on a customer circuit, it is G4's policy to discard that sampling point for purposes of computing 95th percentile usage.

To illustrate this graphically, the diagram below shows how data usage might be distributed over a billing period. Notice that the top 5% of the circuit usage is discarded for billing purposes (higher of the red line):

