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SD-WAN and VoIP - Quick View

VoIP Over SD-WAN

SD-WAN provides VoIP a clear path over the network to ensure high-quality voice calls with no clipping or dropped calls.

The ability for network administrators to assign policies to prioritize traffic over the network.

Software-defined WAN (SD-WAN) looks into the network path and bandwidth of these paths as well as the priority of each application, then intelligently steers traffic accordingly. VoIP traffic, for example, could be labeled as high priority—more important than, say, cat videos on YouTube, which could be labeled as low priority.

SD-WAN also assesses the condition of the network to ensure calls make it to their intended destination intact and without delay.

To obtain near real-time network information, SD-WAN embeds probes within the voice traffic that measure the latency in each direction, and adds time stamps and other information to each packet to measure the behavior of the packets over the SD-WAN network.

Packet cloning, for one, replicates traffic across all defined links so the receiving SD-WAN node is guaranteed to get all packets, even if part of the packets' journey is less than ideal. Once the packets are received and put in their proper order (thanks to the packet identifier at the head of each packet), the clones are discarded. This is ideal for VoIP as the overhead of voice packets is low and marginal.

VoIP Over SD-WAN

In addition, application performance and transport monitoring further ensures call quality. If on certain connections packets are being degraded or not arriving on time—or the connection isn't working—SD-WAN will remove the connection from the route and send the traffic over a connection that will support that connectivity.

The result is seamless failover that goes unnoticed by the recipient.

SD-WAN forward error correction (FEC) technology can regenerate dropped packets on calls where up to 25 percent of packets are dropping. It inserts a loss-recovery packet with a signature after every four packets, and any missing packets can be regenerated using the signature number. This eliminates unnecessary packet retransmission, further reducing latency and enabling a better customer experience.

Does SD-WAN guarantee QoS?

SD-WAN can guarantee QoS. The marketing says that SD-WAN can measure packet loss, jitter and latency and compensate them.

However, consider the following:

Compensating for packet loss is taken care by using technology such as forward error correction; this is what some vendors do.

Compensating for latency coming from distance (think about Internet links) is NOT possible for the same path, at least by physics.

Compensating for jitter may be possible by using buffers, but this would create delays and would destroy the QoS for real-time applications like voice and video rather than compensating it.

So why the Vendors says that the SDWAN can provide QoS? What they actually mean is that they can select the best path among the paths available, so if a connection has bad performance indicators like packet loss, jitter and delay, they will switch you to another path that has better performance indicators.

So the SD-WAN can detect and measure latency, packet loss and Jitter. It can compensate for packet loss but not for latency and jitter. It can switch you to the best paths among the paths available. If all paths are bad, it cannot guarantee you the QoS.

Thank You

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