

Customer Owned Switch Requirements for ProConnect

Summary

This document outlines the requirements for providing Consolidated's ProConnect service using a customer provided switching fabric. The requirements listed below should be considered minimum requirements to deliver ProConnect services over customer equipment.

Customer agrees that they are responsible for the installation, management and troubleshooting of the customer provided LAN switch used for ProConnect service.

ProConnect voice traffic (phones and other devices) must connect through a voice VLAN. The voice VLAN feature enables access ports to carry IP voice traffic from an IP phone. When the switch is connected to an IP phone, the phone sends voice traffic with Layer 3 IP precedence and Layer 2 class of service (CoS) values.

Switch Requirements

The customer's network must fully meet all LAN requirements. Individual requirements are outlined below for convenience.

- The customer's existing switching infrastructure must support:
 - Power over Ethernet (802.11af), ensuring the switch has sufficient power for all connected devices.
 - *PoE is preferred. Power bricks may be used with the phones in lieu of PoE switches.*
 - VLANs and VLAN Trunking (802.1q – Voice VLANs)
 - Ethernet Quality of Service (802.1p)
 - Link Layer Discovery Protocol – Media Endpoint (LLDP-MED) (802.1AB)
- The customer must implement Consolidated's Voice VLAN across all switches (Consolidated recommends to standardize on VLAN 46).
- The customer must hand VoIP and public data to Consolidated's equipment over an 802.1q trunk interface.
- Consolidated recommends all Voice VLAN traffic is prioritized over all other LAN traffic. The customer must provide LLDP-MED for the Voice VLAN.
- **The customer must identify and make the changes to their switching infrastructure in order to support all items above or identify an external contact who will at the customer's expense.**

Internet Connectivity Requirements

Consolidated will place an edge Session Border Controller (SBC) at the customer's premise.

- Customer to provide space and power for the SBC at no charge to Consolidated.
- Customer to provide Consolidated with a public facing static IP for the SBC to connect to the internet.
- The SBC must connect to the customer's internet circuit directly and not pass through a firewall.

LAN Addressing Requirements

- Preferred network: 192.168.0.0 /24
- Standard exclusions: 192.168.0.0 thru 192.168.0.20
192.168.0.230 thru 192.168.0.255 (this upper exclusion is what Consolidated uses for our switch management)
Option would be to use a 10.x.x.x network to prevent overlap within an existing network
- Requirements for the port facing the Consolidated SBC (generally an Adtran device):
 - Switch port Mode: Access
 - Switch port access VLAN is the same as the global voice VLAN (i.e. VLAN 46)
 - Some switches will also require that the native VLAN be the same as the access/voice VLAN on this port also (this appears to be a requirement on Cisco switches).
 - Some switches require that the voice VLAN also be an explicitly called out 'allowed' VLAN.

LAN Cabling Requirements

- Must meet 100BASE-TX standards
 - (e.g.) Cabling must be copper, and must be category 5 or better.
- All cables must be properly terminated to RJ-45 connectors.
- Cables must run directly from the receiving Ethernet jack to the switch/telephony closet without splices and without passing through another hub, switch, or repeater.
- Ethernet wiring must be separated from sources of EMI (electromagnetic interference).
 - (e.g.) It should not run parallel to electrical wiring, should not cross florescent light fixtures or air conditioning units.
- All cables must have both endpoints identified and labeled.
 - (e.g.) Ethernet jacks must be labeled and have a corresponding label on the cable or patch panel in the switch room/telephony closet.

- All cabling must be indoors or properly shielded in a conduit.
- No Ethernet cable should be longer than 100 meters.

Customer Vendor Requirement

- **Consolidated will not provide management of customer owned switch equipment.** Customer will provide IT Staff or Data Vendor who can configure and maintain their switching equipment.
- **The IT Staff or Data Vendor must be available during service cutover.**