



EVOLVE IP

Network Awareness Guide

Network Awareness Guide

Overview

This document serves to make you aware of the network requirements to support your new Evolve IP UCaaS services. Deploying these services on an untested network can lead to delays in installation, stress, and operation-impacting downtime. Industry standards and real life experience have demonstrated mapping key network elements (routers, switches, firewalls, physical infrastructure, etc.) and taking steps to evaluate network readiness go hand-in-hand with a relaxed, successful implementation.

LAN Readiness Assessment

A LAN (local area network) Readiness Assessment is a prudent idea if substantial VoIP services are being deployed. The cost is minimal, and the benefits are many. Assessments can uncover dozens of potential problems, including:

- Bad or damaged cabling or connectors
- Switches or routers that do not respect Quality of Service (“QoS”) tags in VoIP packets
- Inadequate bandwidth between portions of a LAN or WAN
- Excessive packet loss
- Excessive packet latency
- Incorrectly configured router tables
- Improperly configured or lack of VLAN’s

Evolve IP typically provides all the necessary components (switches, routers, gateways) for VoIP deployment. Occasionally, customers elect to provide some or all of the network components. As a precursor to installing Evolve IP’s UCaaS services at your location, it is important to ensure your LAN is ready to handle a converged service such as VoIP. In order to do so, it is strongly advised the following best practices are deployed on your LAN so your voice and data applications flow seamlessly and uninterrupted through your network.

LAN Readiness

Best Practices

The following best practices were developed through a combination of industry standards and the research of the Evolve IP engineering teams. These practices are specifically-designed to provide your organization with optimal performance of your Evolve IP UCaaS services. Evolve IP-provided equipment is configured to these standards, and we require the same of customer-provided equipment and facilities:

- All internal cabling is CAT5, CAT5E, or CAT6 in good condition and terminated with standard RJ-45 ends.
- Customer-provided switches must support separate VLAN’s for voice and data. Specific instructions on this are available from your Project Manager or Technical Lead.
- Customer-supplied switches must support QoS. Voice traffic will be tagged with DSCP values and should be handled with proper classes of service.
- There should be no in-line network hubs between a switch and an Evolve IP handset. You must disclose all network hubs and/or switches to Evolve IP. In the event these devices are not known

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or are not disclosed, implementation timelines and call quality may be affected and your network will need to be assessed and reconfigured during or after the implementation.

- Please make sure your network meets these general performance statistics:
 - Total internet traffic does not regularly exceed 75% of the total available bandwidth.
 - No single application accounts for greater than 30% of all LAN traffic (for proper queuing)
 - Packet Loss should be less than 1%.
 - Jitter should be less than 30ms.
 - Latency should be less than 100ms.
 - To support paging through the phones, customer switches must support and pass multicast over IP.

If these standards are not met or are unknown, call quality and implementation timelines may be affected. In the event that you are unable or do not desire to support or manage your LAN or WAN to these specific requirements, Evolve IP can provide options for an assessment and subsequent network management.

Please remember, if Evolve IP is not in control of the LAN, you assume all responsibility for any alterations made to your network and Evolve IP is not responsible for any service interruptions or impairments caused by those changes or by LAN/WAN network quality issues outside of Evolve IP's control. If Evolve IP is not providing internet access, it is your responsibility to provide business class broadband internet access. For additional details, please read the WAN Readiness section below.

WAN Readiness

3rd Party Connections

If your organization chooses to use a third-party internet connection for your Evolve IP services, please ensure the connection meets the below criteria to ensure optimum performance and aid in a smooth implementation.

- For each WAN device being provided (router, firewall, etc.), Evolve IP requires a separate static IP address from your internet service provider. These addresses should be *unused* and *directly public-facing*. No other network appliances can be placed in front of these IP addresses.
- Each WAN device requires a separate Ethernet handoff. Many times, this can be accomplished using your ISP's modem, but sometimes an additional switch will need to be employed to provide the required number of handoffs. Your Project Manager or Technical Lead can provide additional clarification.
- The internet gateway (ISP modem, 3rd party router, etc.) should be configured to allow all incoming traffic. This sometimes involves turning off the firewall, SIP-ALG, or other settings.
- Adequate bandwidth must be available for your Evolve IP services. As a rule, each active phone call on the network uses only 30k worth of bandwidth, but data or other internet traffic may require more to be available.