



Before you begin deploying a VoIP service in your existing network, please consider consulting with a network engineer who is an expert in voice, data and network security.

There is a host of issues you need to take into consideration before you even think of deploying VoIP in your network. So please don't just order a service, let someone perform a network readiness assessment before you commit to this change. VoIP services have come a long way and have proved to be very reliable and provides great quality of service as long as your network can handle it.

iTalk IP Networks provides such consulting services and can do an onsite or offsite network readiness assessment to make sure your network elements, design and available bandwidth has the capacity to handle VoIP.

Here are some important basic guidelines in deploying VoIP in an existing data network. If you are not sure that your network meets the following guidelines or know that your network is not compatible, please contact iTalk IP Networks or your IT support firm to upgrade your network before to move any further.

Wiring: Inside CAT5 wiring must be in very good condition and up to the code. Make sure you change any handmade wires with factory made one wherever possible. Tag and label your network wires for ease of administration and diagnosis. Overall if you have a messy wiring closet with wires hanging all over the place, do yourself a favor and get it straightened out.

It is preferable that you have a whole set of CAT 5 wires for your IP phones. This means a user will have a separate CAT5 for computer and one for the IP phone.

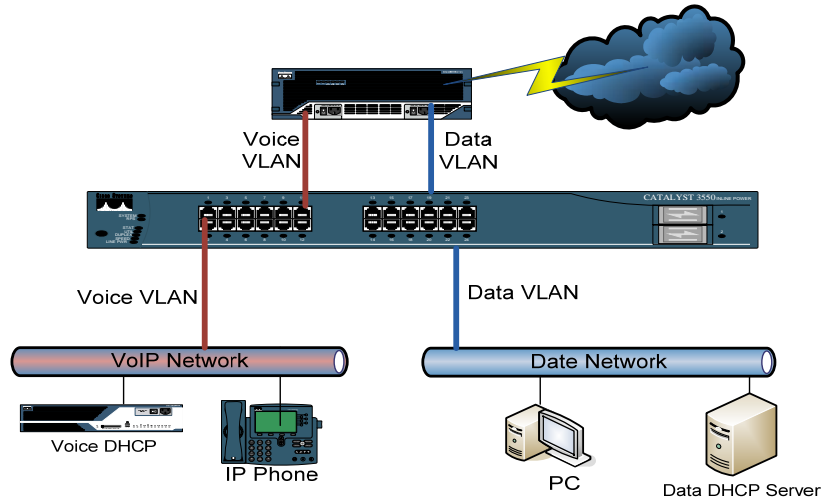
LAN Switch: NO hubs or devices broadcasting on the network. If you are using old networking equipment like hubs or even unmanaged switches, and can only provide one network connecting to the user both for data and IP phone, you need to upgrade to a managed switch with QOS and VLAN support.

VLANs: Your network must have voice and data VLANs and you should manage and prioritize voice traffic over data. If your switch does not support VLANs, you must update your switch.

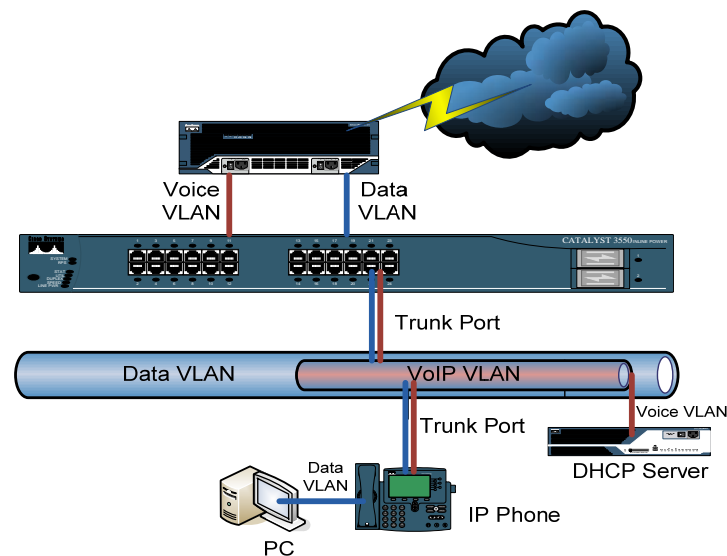
DHCP and IP address scheme: In an optimized IP Telephony network, IP addresses for telephones and PCs must be set up in different network segments. If Dynamic Host Configuration Protocol (DHCP) is used to assign addresses, then a DHCP server for each network segment is normally needed. However, you can use a single DHCP server to assign both ranges of addresses if you have routers capable of DHCP relay in your IP network.

Note: if you do not have a routing capable device, there are only two possibilities for assigning different IP addresses to telephones and PCs. You must either have a DHCP server with two network interface cards or have two DHCP servers.

Network design: Best case scenario is to have two completely isolated networks for voice and data.



However some environments can only provide one network connection to both voice and data. In such case, you must design a network with VLANs and setup DHCP server to allocate different IP address scheme to phone and PCs. This can be accomplished by using a trunk port for connecting phones to the switch and setup DHCP relay on your router to router (you must use a router with two internal interfaces)





WAN Bandwidth: The interface between Local Area Networks (LAN) and WAN can create a bottleneck of data transmission. While LAN generally has bandwidth to spare, Wide Area Networks extra bandwidth is usually quite limited. Thus businesses may be constrained in how they use their applications. You must consider 100k worth of bandwidth for every phone call. So you can figure out the required bandwidth by multiplying your estimated number of concurrent calls by 100K. For a small environment with 10 IP phones and estimated 5 active concurrent phone calls, you need to upgrade your WAN link to support at least 1.5MBPS up and down stream for data and voice usage. You may choose to obtain T1, Fast DSL, business grade cable or fiber optics connections.

Apply policies on your firewall to ban or police audio and video streaming applications like YouTube, internet radios, video chat, etc.

QOS settings: apply QOS to your router and switch. If you are deploying the isolated topology, limit the amount of inbound/outbound traffic flowing through the data router to leave enough bandwidth for the total number of provisioned voice calls at all times. If you are deploying the converged topology, turn on QOS on your router and limit the amount of inbound/outbound traffic flowing through the data VLAN and leave enough bandwidth for the VoIP protocol. You can alternatively achieve this by limiting the bandwidth on the switch port that is connected to the router interface.

Firewall: Newer firewalls that are made in the past two years are application aware and understand VoIP traffic and allow them in and out of the network dynamically to maintain security while allowing VoIP traffic. However if your firewall blocks VoIP traffic you need to open ports 5060, 5061 and also 10000 to 20000.

If you are planning to upgrade your firewall, consider upgrading to application aware firewalls for minimizing deployment issues.

Let us help you: If you are experiencing poor voice quality, dropped calls, jitter or other issues, the problems more likely are within your internal network. Engaging us in evaluating your existing network and planning to redesign the network to support VoIP is a valuable investment on your part that saves you time and money in the long run. Don't attempt to do this on your own if you are not a network engineer with special skills in converged networks. Simply contact our technical support and schedule a network assessment service to do it right.

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