AltiGen KB

Diagnosing and Troubleshooting Excess Broadcast Traffic

Dropped VoIP packets result in poor quality, and one of the most common reasons for dropped packets on a LAN is excessive broadcast traffic. This can overwhelm the network interface on both IP phones and the server, causing garbled conversation, as well as intermittent simplex or duplex conversation. Broadcast traffic is a network necessity, and cannot be done away with. Many protocols, such as ARP and DHCP use broadcast traffic by design. Total elimination of broadcast traffic is, therefore, not possible. The purpose of this document is to assist in identifying excessive broadcast traffic and troubleshooting problems that arise because of this.

Prior to packet sniffing to try to locate problems, check for quality issues by connecting a single phone to the AltiGen server's network jack with a cross-over Ethernet cable. The phone will have to be assigned a static IP address on the same subnet as the server. If the problem no longer occurs, then add a switch between the phone and the server. If the call is still good, add only the IP phones to the network. If the calls are still good, then add PC's to the network, and proceed to look for broadcast issues.

Wireshark should be installed on a computer in a way that it can sniff packets from the device that is receiving the signal. If this is the AltiServ, then install Wireshark on the server itself. If it is an IP phone, then install it on a PC connected to the same hub as the phone, or on a switch that supports port mirroring.

This article provides instructions for running Wireshark, and should be consulted if you are unfamiliar with Wireshark. Wireshark should be run without any capture filter applied. Switch the Time and Display settings to "Time of Day." Make a test call and attempt to reproduce the problem. When the problem occurs, note the exact time, to the second that the problem occurred. Use the Windows clock on the PC that you are running Wireshark on to reference the time.

Look at the packet capture at this time. In a network that has a subnet mask of 255.255.255.0, all packets with a destination address that ends in .255 will be broadcast packets, and will be forwarded to all hosts on the network. Look for an increase in broadcast packets, or even general network traffic at this point in time.

If broadcast traffic is determined to be a problem, check to see if it is always from the same source IP address. If so, there may be a problem with that particular device. If the broadcast traffic issues seem to be from a variety of devices on the network, then the best course of action would be to segment the network with a routing device, and put the phones and AltiServ on a different subnet or VLAN from the network PC's. This will still allow network traffic from the PC's, such as AltiAgent, and MaxCommunicator, to reach the server. Broadcast traffic, by definition, will not cross from one subnet to another.