Technical Information

Title: Audio Issue on IP Phone

Systems Affected: KX-TDA50/100/200/600, KX-TDE100/200/600, and KX-NCP500/1000

Associated Tech Notes: None

Applications:

• Identify and resolve audio issues on a network and over the Internet.

What is covered?

Troubleshooting VOIP audio issues may be new to you. By searching the phrase "troubleshooting voip audio issues" on the Web, you'll be able to find a lot of useful information. But before you search the Web, we would like to share with you the information that we have developed concerning the following topics:

• Use VoIP Tool Test to identified and prevent any issues with one-way audio on a network and over the Internet.
• Configure the router and/or firewall and PBX for both data voice traffic.
• Re-run the VoIP Tool Test to ensure that each UDP port numbers has been enabled for both data and voice traffic.

VoIP Test Tool Features:

1) You can confirm which UDP port numbers for VoIP signal are blocked by a router or firewall.
2) Audio test: Can talk using VoIP. (PC-to-PC talk)
3) Audio test: Pre recorded file can be played on the other PC and it is sent to your PC).
4) Audio test: Traffic option (Max. 100 VoIP channels can be sent in order to increase traffic and disturb talk test or disturb data transmission such as WEB access).
5) PING.
6) Trace Route.
7) Chat (You can use that as a tool to communicate to the Tech person in the other site).
8) Report.

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For the purpose of this technical document, Two PCs are required at each specific IP network for this test.

Important Note:
- Do not use any IP Softphone or SIP client while running this VoIP tool test.
- Run the test in both directions of the IP network to get an accurate test result from the VoIP tool test.

Preparation:
1) Go to the BTS Dealer website at www.btsdealer.com.
2) Click on the Technical Support tab.
3) Click on the Software tab.
4) Under the KX-TDA/KX-TDE Unified Programming Tool & VoIP Test Tool, save the VoIP Test Tool application onto the Local drive, preferable the Desktop folder.
5) Install the VoIP Test Tool onto both PCs.
6) Start the VoIP Test Tool on both PCs.
   (*Reminder: If you are considering testing the VoIP Test Tool on a Point to Point IP network, between two remote sites and you have verified that you are able to ping the remote gateway and PC, then another person must be available at the remote site to conduct and simulate the VoIP Test.)
7) Configure the VoIP Test options accordingly, whether it is the VoIP Signal Test or the Audio Test.
8) Start the VoIP test from either PC, such as Site A or Site B) by clicking on the Connect button in the Menu Bar.
9) The PC that started the connection will be Local and the other PC will be Remote.
10) The VoIP test will run for a period of 2 to 3 minutes and then will disconnect with the test result.
11) Save the test log onto you PC and run the same test on the remote PC.

Router Configuration:
1) Make sure you have either a router or a firewall with the latest firmware that can run and support VoIP networks. Quality of Service (QoS)
2) Make sure you have the following UDP (RTP: Real-Time Protocol) ports enable on either router or firewall to support VoIP traffic:
   A) 1719 and 1720
   B) 5004 through 5006.
   C) 5060.
   D) 5061.
   E) 8000 through 8034.
   F) 16384 through 16482.
3) Make sure that the router and firewall are configured for QoS: Quality Of Service and separate VLANs to ensure priority of data and voice traffic on the IP network.
   (*Note: Get assistance from the network administrator to configure the router, switch or firewall accordingly).
PBX setting:
Make sure you have the IP addresses for both the IPCMPR and VoIP-DSP in sequence and in the same IP range on the IP network. For example, if the private IP network is 192.168.0.0/24, then set the IPCMPR for 192.168.0.101, the VoIP-DSP for 192.168.0.102, Subnet mask 255.255.255.0 and the default gateway address is 192.168.0.1.

(*Note: You can assign public IP address scheme on both IPCMPR and VoIP-DSP as well, check with your provider for details.)

KX-NCP Screenshot:
From the System Menu, click on Configuration / Slot (1.1). Hover your mouse pointer onto the IPCMPR card and select Card Property. From the LAN Setting tab, here is where you want to set the IP address scheme for the PBX to communicate over the IP network.
KX-TDE Screenshot:
From the System Menu, click on Configuration / Slot (1.1). Hover your mouse pointer onto the IPCMPR card and select Card Property. From the LAN Setting tab, here is where you want to set the IP address scheme for the PBX to communicate over the IP network.
KX-TDA IPGW4 Screenshot:

(*Note: You will have to log onto the IPGW4 card via Microsoft Internet Explorer using the default IP address: 192.168.1.200, username / password: Administrator / Administrator. Make sure your PC is on the same network: 192.168.1.0 / subnet mask: 255.255.255.0 in order to log into the IPGW4 card.)

Once the router and PBX system have been configured, run the VoIP Test Tool again for the final test result.
Troubleshooting the audio issue on an IP Network:

1) Ping the remote IP address of the router and PBX to ensure connectivity of the remote site are still active. Ping Plotter, a useful tool to ping various nodes either at a remote site or over the Internet and get statistic of the test result, can be downloaded from their website: [http://www.pingplotter.com](http://www.pingplotter.com).

2) If using a VPN connection, make sure that packet forwarding is disabled on both VPN routers.

3) Make sure that the IP phone was configured on the same IP network as the PBX before relocating the phone to the remote site.

4) If you are experiencing audio issue from a remote site, consult with your network team to troubleshoot the NAT configuration. If NAT is involved in the call path, configuration of the various devices may be a problem.

5) Download, install and use the network sniffer-capturing application called WireShark from their website: [http://www.wireshark.org](http://www.wireshark.org) to capture the packets on existing IP network. You would conduct the following troubleshooting steps:
   - a. Start capturing from your PC at the local site.
   - b. Make a VoIP call that will have one-way audio.
   - c. Analyze the capture packet.
   - d. If the problem has been found, then resolve it and retest it again.
   - e. Otherwise run the capture tool, using another IP phone and restart the capturing test.

6) If the problem is intermittent, then a long-term simultaneous capture at multiple points can be used to attempt to capture a complete call with the problem. Most capture tools will let you capture only traffic from selected devices, so the volume of captured information can be kept to a reasonable size.

7) Finally, submit the test report to the Panasonic Technical Support’s e-mail address: kxtsupport@us.panasonic.com.