



TECHNICAL NOTE

Managing IP Phones on a Virtual LAN (VLAN) interface



Why should I do this?

There are several benefits to hosting your handsets on a VLAN. Separating your phones onto a virtual network offers improvements in performance, security and ease of maintenance.

By isolating your IP phones on to a VLAN you are able to limit the scope of your IP phone broadcasting. This means that information about the IP phones will only be broadcast to devices on the VLAN and not to all devices on the physical network. This reduces traffic on the infrastructure and can help performance.

You are also able to partition voice IP traffic, associated with VoIP calls, from data IP traffic, associated with internet browsing or FTP downloads. Now, in a managed LAN environment, bandwidth allocation and packet prioritization can ensure better QoS for VoIP based networks.

How do can I do this?

A simple, GUI based procedure for configuring a VLAN between the Com.X IP PBX and a Yealink IP phone is described in the technical note below.

Network Port and DHCP server settings

By default Yealink IP phones are configured as DHCP clients and do not to request DHCP on a VLAN network. For this reason, we first need to provide the phone with DHCP from a physical LAN port, and in that DHCP negotiation, enable the relevant VLAN DHCP settings on the IP phone. In order to do this, you must configure a DHCP server on the Com.X Ethernet port that hosts your VLAN interface.

Using the Com.X web base GUI, navigate to “Network” tab, and then select the desired interface from the available interface list. Right-click and select “Edit”. Navigate to the “Servers” tab, and enable the interface as a DHCP server. You will need to enter a suitable range of IP address for the interface to serve.

Name	Description	Hardware Address	Enabled	AutoDHCP	IP	Network	Gateway	Servers	Status
vlan0	vlan1	30.90.90.10-30.90.90.10	Yes	Yes	192.168.1.1	192.168.1.0/24			OK
vlan1	vlan2	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan2	vlan3	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan3	Internal	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan4	vlan5	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan5	vlan6	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan6	vlan7	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan7	vlan8	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan8	vlan9	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan9	vlan10	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan10	vlan11	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan11	vlan12	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan12	vlan13	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan13	vlan14	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan14	vlan15	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan15	vlan16	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan16	vlan17	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan17	vlan18	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan18	vlan19	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan19	vlan20	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan20	vlan21	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan21	vlan22	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan22	vlan23	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan23	vlan24	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan24	vlan25	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan25	vlan26	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan26	vlan27	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan27	vlan28	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan28	vlan29	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan29	vlan30	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan30	vlan31	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan31	vlan32	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan32	vlan33	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan33	vlan34	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan34	vlan35	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan35	vlan36	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan36	vlan37	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan37	vlan38	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan38	vlan39	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan39	vlan40	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan40	vlan41	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan41	vlan42	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan42	vlan43	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan43	vlan44	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan44	vlan45	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan45	vlan46	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan46	vlan47	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan47	vlan48	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan48	vlan49	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan49	vlan50	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan50	vlan51	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan51	vlan52	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan52	vlan53	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan53	vlan54	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan54	vlan55	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan55	vlan56	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan56	vlan57	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan57	vlan58	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan58	vlan59	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan59	vlan60	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan60	vlan61	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan61	vlan62	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan62	vlan63	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan63	vlan64	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan64	vlan65	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan65	vlan66	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan66	vlan67	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan67	vlan68	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan68	vlan69	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan69	vlan70	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan70	vlan71	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan71	vlan72	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan72	vlan73	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan73	vlan74	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan74	vlan75	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan75	vlan76	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan76	vlan77	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan77	vlan78	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan78	vlan79	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan79	vlan80	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan80	vlan81	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan81	vlan82	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan82	vlan83	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan83	vlan84	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan84	vlan85	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan85	vlan86	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan86	vlan87	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan87	vlan88	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan88	vlan89	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan89	vlan90	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan90	vlan91	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan91	vlan92	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan92	vlan93	30.90.90.10-30.90.90.10	Yes	No	192.168.1.1	192.168.1.0/24			OK
vlan93	vlan94	30.90.90.10-30.90.90.10							



TECHNICAL NOTE

Thereafter, select or create a VLAN port on the same interface and configure it as a DHCP server. Navigate to the “Status” page of the GUI, select the Networking service from the Services list. Right-click and restart the service.

Service	Description	Status	Required	Start at Boot
asteriskcomxa-1.8	Asterisk PBX	RUNNING	YES	YES
apache2	Apache Web Server	RUNNING	YES	YES
comxa-gui	Comxa GUI	RUNNING	YES	YES
comxamgr	Comxa Device Manager	RUNNING	YES	YES
comxamgr0000	ComxaMAN0000 Agent	RUNNING	NO	YES
cron	CRON Scheduler	RUNNING	NO	UNKNOWN
dahdi	DHDI TDM Device Driver	RUNNING	YES	YES
dhcp3-server	DHCP Server	RUNNING	NO	YES
fail2ban	Fail to Ban Service	RUNNING	NO	YES
fgp2	Flash Operator Panel 2	RUNNING	NO	YES
fsdn	rsDN Driver	RUNNING	YES	YES
mysq	MySQL Database Server	RUNNING	YES	UNKNOWN
nagios3	NAGIOS Monitoring Suite	RUNNING	NO	YES
networking	Network Interfaces	UNKNOWN	NO	UNKNOWN
shorewall	Shorewall Firewall		NO	YES
ntp	Network Time Server		NO	YES
ptlib	DNS Proxy Service		NO	YES
sendmail	Mail Transport Agent		NO	YES

Hardware Configuration

Navigate to the “Hardware” page of the GUI, and enable Auto-detect, under the Scan menu. This allows the Com.X to acquire information from devices to which it is supplying DHCP.

Once the IP phone is detected, add it to the detected list and edit the Attached Network setting to contain the VLAN interface.

Yealink Configuration

Device name: 00_15_65_45_8b_a3

Model Type: T20

Auto IP

MAC Address: 00:15:65:45:8b:a3

IP Address: 10.0.0.2

Network Mask:

Attached Network: vlan2.1

Configuration Path: http://xmanaged_sip:12345@10.0.0.1/auto

Autoprovision Firmware: Enter value

Accept Cancel

Finally, press “Review/Apply” to apply these configuration settings on your Com.X device.

The IP phone will detect a change in configuration and restart itself, pulling its configuration from the VLAN interface on restart. Edit the hardware interface and confirm that the Configuration path references the VLAN interface's IP address and not that of any physical LAN port. You can also test by dialing a feature code from the IP phone and confirming that the PBX accepts and processes the call.

The IP phone is now under control of the GUI, and sitting on a virtual network, hosted by the configured VLAN port. Any changes you make to the device on the Com.X GUI will persist on the phone.