

# Tele2 Växel

## Deployment information

Tele2 Sverige AB  
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www.tele2.se  
Reg No 556267-5164  
VAT No SE556267516401

2020-05-11

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## About this document

This document describes hosts and ports for various types of traffic to and from Tele2 Växel.

The document will be updated upon changes in the Tele2 Växel platform and/or surrounding systems.

We recommend that you occasionally revisit the document to ensure that your firewall has the correct settings at all times.

## For whom is this document?

This instruction is aimed at personnel with sufficient knowledge in configuring the company firewall.

## Update April 2020

A new firmware server for Mitel desk phones is added, as the previous server has been removed.

New host:  
193.12.60.49 (firmware.tele2vaxel.se) port 80

## Update September 2018

During fall 2018, the platform will be expanded with additional edge nodes, for which new networks have been added in this document wherever communication with the Tele2 Växel platform is described.

The complete set of networks are:  
213.100.32.64/27  
213.100.32.240/28 (New)  
213.100.33.0/28 (New)

\* For some hosts, Tele2 cannot reliably provide the underlying IP addresses. See more information under "How do I find out the IP-address for a DNS hostname?"

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## Contents

<b>For whom is this document? .....</b>	<b>2</b>
<b>Update April 2020 .....</b>	<b>2</b>
<b>Update September 2018 .....</b>	<b>2</b>
<b>1 Customer Firewall/CPE settings .....</b>	<b>4</b>
1.1 Mitel devices	4
1.2 Cisco SPA112	5
1.3 Konftel 300IPx	5
1.4 Snom devices	5
1.5 Yealink W52P	5
1.6 Fanvil PA2	6
<b>2 Provisioning Mitel SIP desk phones .....</b>	<b>7</b>
2.1 Mitel 6800 startup sequence	7
<b>3 DHCP .....</b>	<b>7</b>
DHCP options and LLDP	7
<b>Signalling explained .....</b>	<b>8</b>
Normal call	8
Time settings	8
<b>How do I find out the IP-address for a DNS hostname? .....</b>	<b>9</b>

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## 1 Customer Firewall/CPE settings

Host	Direction	Destination port	Protocol	Transport	Comments
Tele2 Växel tele2vaxel.se 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Outgoing	443	HTTP(S)	TLS	Web services, e.g. downloading software using secure HTTP, Microsoft Exchange calendar integration
Tele2 Växel tele2vaxel.se 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Incoming Outgoing	5061	SIP(S)	TLS	Signalling between Tele2 Växel and connected devices. SIP inspection must in some cases be disabled in the firewall
Tele2 Växel tele2vaxel.se 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Incoming Outgoing	49152 - 65535	(S)RTP/RTCP	UDP	Media/speech traffic for Mitel 6800 devices, Tele2 Växel Softphone and other IP device. Ports within this range are randomly allocated when the call is set up.
Tele2 Växel tele2vaxel.se 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Outgoing	123	NTP	UDP	Time synchronization between Tele2 Växel and connected devices

### 1.1 Mitel devices

Mitel rcs.aastra.com*	Outgoing	80/443	HTTP(S)	TCP	Mitel device settings distribution via the supplier's redirection system
Mitel 1.aastra.pool.ntp.org* 2.aastra.pool.ntp.org* 3.aastra.pool.ntp.org*	Outgoing	123	NTP	UDP	Time synchronization during the auto-configuration process for Mitel 6800 devices
Tele2 firmware.tele2vaxel.se 193.12.60.49	Outgoing	80	HTTP	TCP	Firmware repository for Mitel 6800 devices

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2020-05-11

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<b>1.2 Cisco SPA112</b>					
Tele2 Växel 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Incoming Outgoing	16384 - 16482	(S)RTP/RTCP	UDP	Media/speech traffic. Depending on the customer network architecture, these ports might have to be opened in addition to the basic range in the Tele2 Växel system. Ports within this range are randomly allocated when the call is set up
<b>1.3 Konftel 300IPx</b>					
Konftel zti.konftel.com*	Outgoing	443	HTTP(S)	TCP	Konftel device settings distribution via the supplier's redirection system
Konftel upgrade.konftel.com*	Outgoing	80	HTTP	TCP	Firmware repository for Konftel devices
Konftel pool.ntp.org*	Outgoing	123	NTP	UDP	Time synchronization for Konftel 300IPx devices
Tele2 Växel 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Incoming Outgoing	4000 - 4008	(S)RTP/RTCP	UDP	Media/speech traffic. Depending on the customer network architecture, these ports might have to be opened in addition to the basic range in the Tele2 Växel system. Ports within this range are randomly allocated when the call is set up
<b>1.4 Snom devices</b>					
Tele2 Växel tele2vaxel.se 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Outgoing	9443	HTTPS	TCP	Downloading provisioning settings for Snom devices
Snom provisioning.snom.com* downloads.snom.com*	Outgoing	80	HTTP	TCP	Firmware repository for Snom devices
<b>1.5 Yealink W52P</b>					
Tele2 Växel 213.100.32.64/27 213.100.32.240/28	Incoming Outgoing	11780 - 11800	(S)RTP/RTCP	UDP	Media/speech traffic. Depending on the customer network architecture, these ports might have

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213.100.33.0/28					to be opened in addition to the basic range in the Tele2 Växel system. Ports within this range are randomly allocated when the call is set up. Default is 11780 RTP / 11781 RTCP
cn.pool.ntp.org* time.windows.com*	Outgoing	123	NTP	UDP	Time Synchronization for Yealink W52P. cn.pool.ntp.org is primary, time.windows.com is secondary.
<b>1.6 Fanvil PA2</b>					
Tele2 Växel 213.100.32.64/27 213.100.32.240/28 213.100.33.0/28	Incoming Outgoing	10000 - 10200	(S)RTP/RTCP	UDP	Media/speech traffic. Depending on the customer network architecture, these ports might have to be opened in addition to the basic range in the Tele2 Växel system. Ports within this range are randomly allocated when the call is set up.
time.nist.gov* pool.ntp.org*	Outgoing	123	NTP	UDP	Time synchronization for Fanvil PA2. Time.nist.gov is primary, pool.ntp.org is secondary

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## 2 Provisioning Mitel SIP desk phones

Every phone has a unique identifier, called MAC address.

Tele2 will preconfigure this address in the phone supplier's redirection service. Upon first start, the phone contacts the redirection service and gets directed to Tele2 Växel.

When the phone is registered in Tele2 Växel, Tele2 assigns it to a user and selects preferred firmware. Next time the phone is restarted or at a specific time interval it will download firmware and settings files automatically.

This provisioning procedure is only used for new phones. Once configured the phones will connect directly to Tele2 Växel, which will distribute future firmware updates and settings files.

### 2.1 Mitel 6800 startup sequence

When the phones are first unboxed, they are preconfigured with generic settings, not controlled by Tele2.

The phones first perform DHCP and LLDP. Then they contact the NTP servers specified under 1.1 Mitel devices to set the device time and date, enabling the security certificates to work properly. After that, the phones contact rcs.aastra.com to perform an initial firmware update and configuration files redirecting the phone to the correct customer in Tele2 Växel based on MAC address. If no configuration exist in the RCS the phone will retry a few times and then lock down the auto-configuration functionality. If this happens the phone can be factory reset to enable the functionality again.

## 3 DHCP

All equipment relies on a customer network DHCP server to assign IP addresses, DNS server addresses and similar basic network configuration. This is noteworthy for example when devices are installed in a former "telephony network" or other solutions for separating IP telephony equipment from other network resources, as this needs to be routed to access the Internet and the required hosts and ports mentioned in the chapter Customer Firewall/CPE settings.

### DHCP options and LLDP

Most IP devices support some LLDP functionality or DHCP options for providing control of different functionality, DHCP option 66 is for example a common way to control where the device tries to fetch configuration information, but other options can affect devices as well.

When migrating from or having the Tele2 Växel solution co-exist with other communication platforms, the network might have DHCP options in place for sending IP devices to internal configuration servers, or for example to the other PBX solution. LLDP might be used for directing certain equipment to a VLAN or similar.

These kinds of automatic control of devices might prevent any auto-provisioning or auto-configuration functionality in place to direct devices to Tele2 Växel, as well as making devices

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connect to internal network destinations instead of the Internet, and the general recommendation is to remove such DHCP options from the network prior to the installation of new devices with Tele2 Växel.

## **Signalling explained**

In order to understand the different types of connections and firmware settings, we are describing the most common scenarios below.

### **Normal call**

The phone call is set up through SIP messages using port 5061 (secure).

When the call is answered a random port from 49152 to 65534 is used for the media stream. Status- and indication messages (call clearing, DTMF) are sent and received using the SIP port.

### **Time settings**

Depending on model the phone will fetch the current time from Tele2's NTP server. This is normally performed during boot up but also during up time within a specific interval.

For some devices, third party NTP servers are used for different purposes. If it isn't possible to allow traffic to those, an option is to add DHCP option 42 in the network and use a local NTP instead.

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2020-05-11

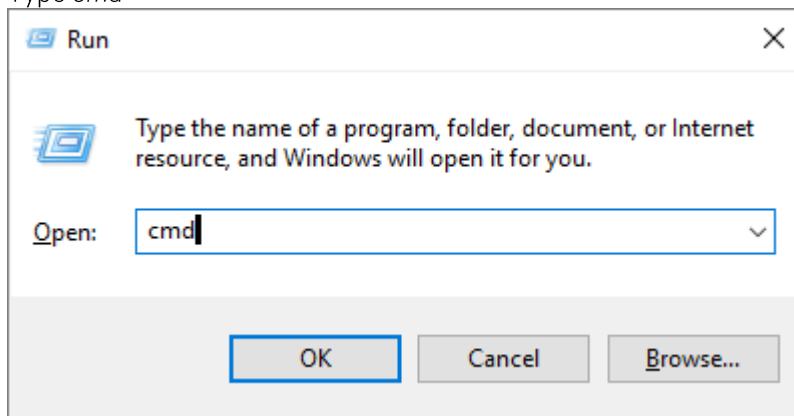
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## How do I find out the IP-address for a DNS hostname?

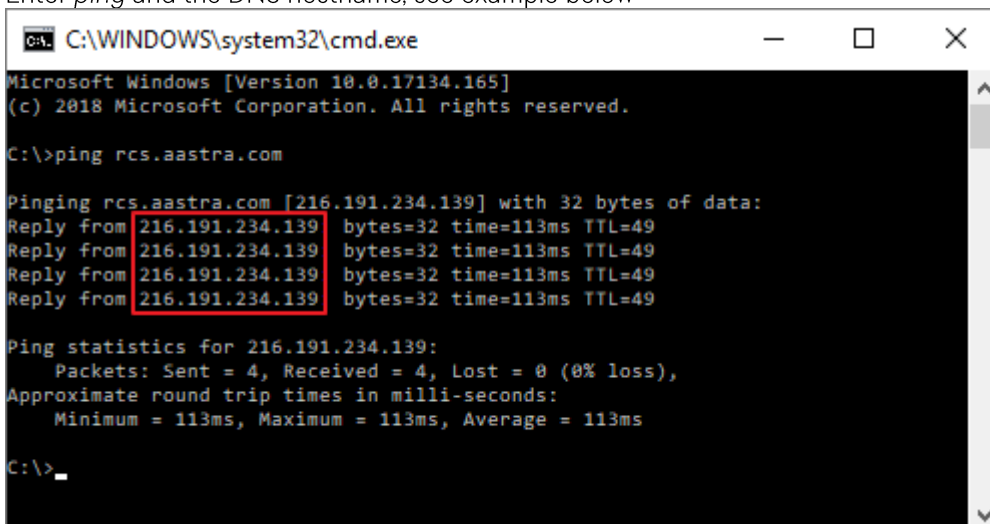
Many devices connect to servers outside the Tele2 Växel systems, e.g. for time synchronization or initial configuration. Tele2 doesn't always get updated on changes in the network structure and IP-addresses for those servers. If the customer network for example is restricting access to common services like NTP and HTTPS servers and cannot allow traffic to a DNS hostname, the current IP address for the servers in question can be obtained by the following method:

1. Press  + 

2. Type `cmd`



3. Enter `ping` and the DNS hostname, see example below



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.17134.165]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\>ping rcs.aastra.com

Pinging rcs.aastra.com [216.191.234.139] with 32 bytes of data:
Reply from 216.191.234.139 bytes=32 time=113ms TTL=49
Reply from 216.191.234.139 bytes=32 time=113ms TTL=49
Reply from 216.191.234.139 bytes=32 time=113ms TTL=49
Reply from 216.191.234.139 bytes=32 time=113ms TTL=49

Ping statistics for 216.191.234.139:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 113ms, Maximum = 113ms, Average = 113ms

C:\>
```

4. Run the `ping hostname` multiple times to increase the possibility to find out if there currently are different addresses behind the hostname, for example due to load-balancing or geographic redundancy.

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