

Grandstream Networks, Inc.

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UCM6510 series

**How To Configure T1 On UCM6510**



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## OVERVIEW

The UCM6510 supports T1/E1/J1 digital trunk and data trunk. Digital trunk allows voice transmission in digital signal while data trunk is used for data transmission so that the device can connect to the Internet. On the UCM6510, the system administrator can configure both trunks allowing voice and data transmission at the same time by specifying the channels. This document introduces how to set up T1 trunk on the UCM6510 as a configuration sample.

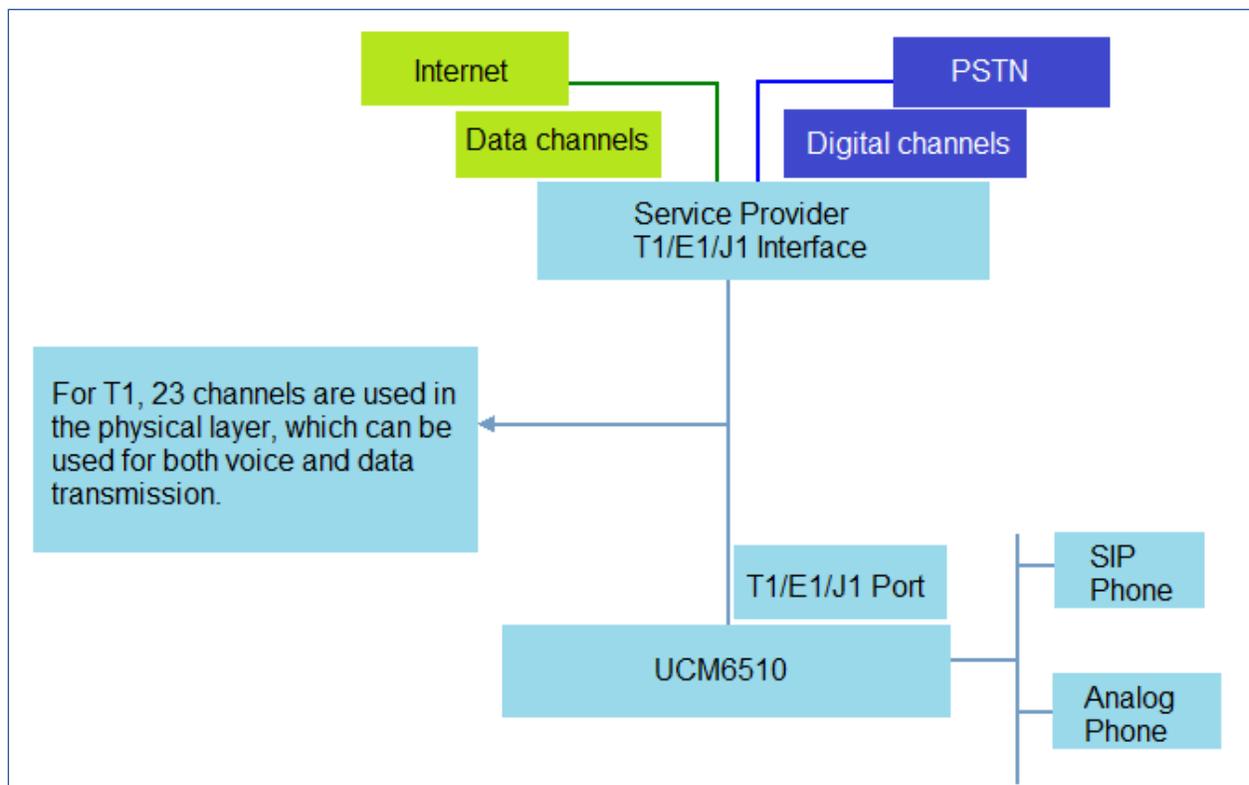


Figure 1: Sample T1 Topology Using UCM6510

For more information about how to configure UCM6510, please refer to the UCM6510 user manual in [www.grandstream.com/support](http://www.grandstream.com/support).



## CONNECTING T1 PORT

The following figure shows the UCM6510 front view where you can see the T1/E1/J1 port.

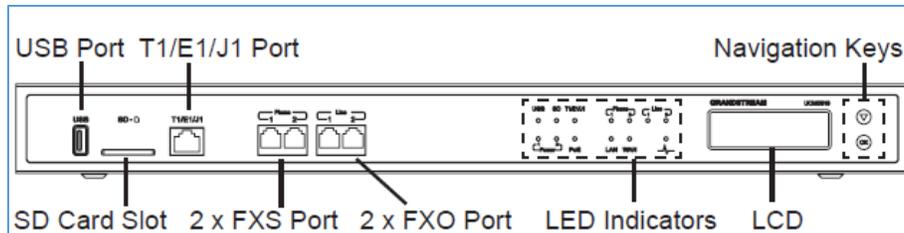


Figure 2: UCM6510 Front View

Use a T1 crossover cable to plug one end into the UCM6510 T1/E1/J1 port. Plug the other end into the T1/E1/J1 walljack. Please check if the T1 crossover cable can be provided from the service provider. The proper T1 crossover cable pin-out is shown in the following figure.

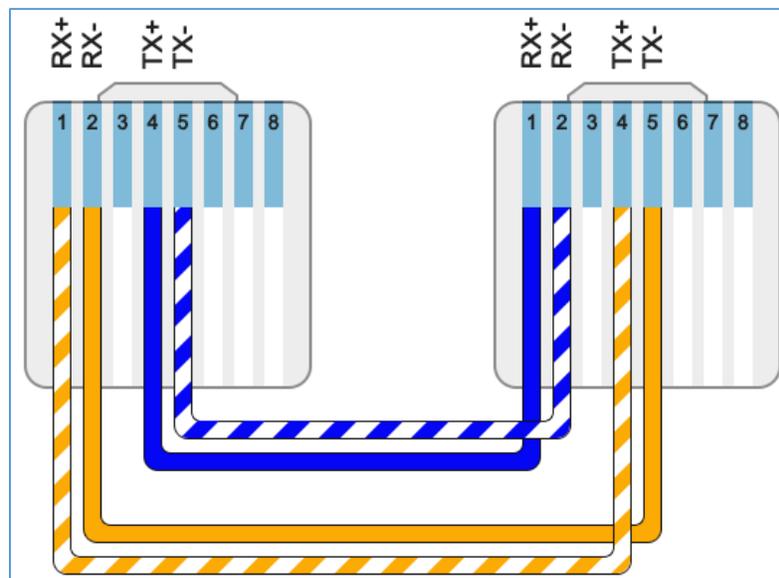
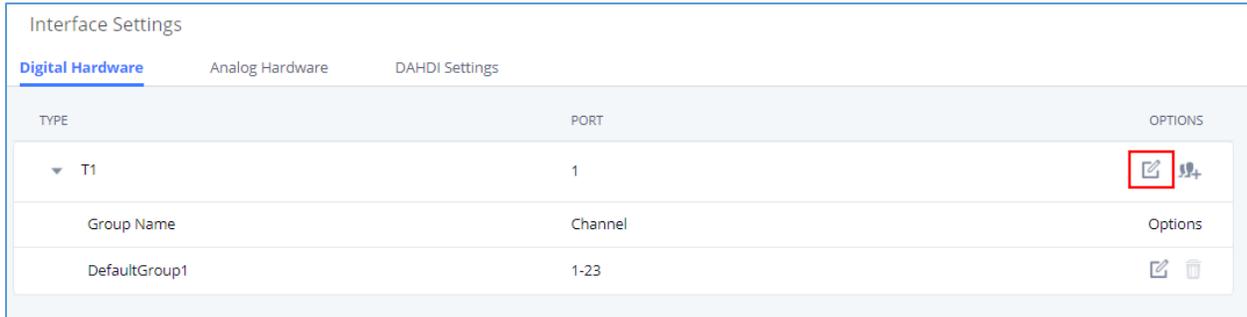


Figure 3: T1 Crossover Cable Pin-out



## CONFIGURING T1 CHANNELS

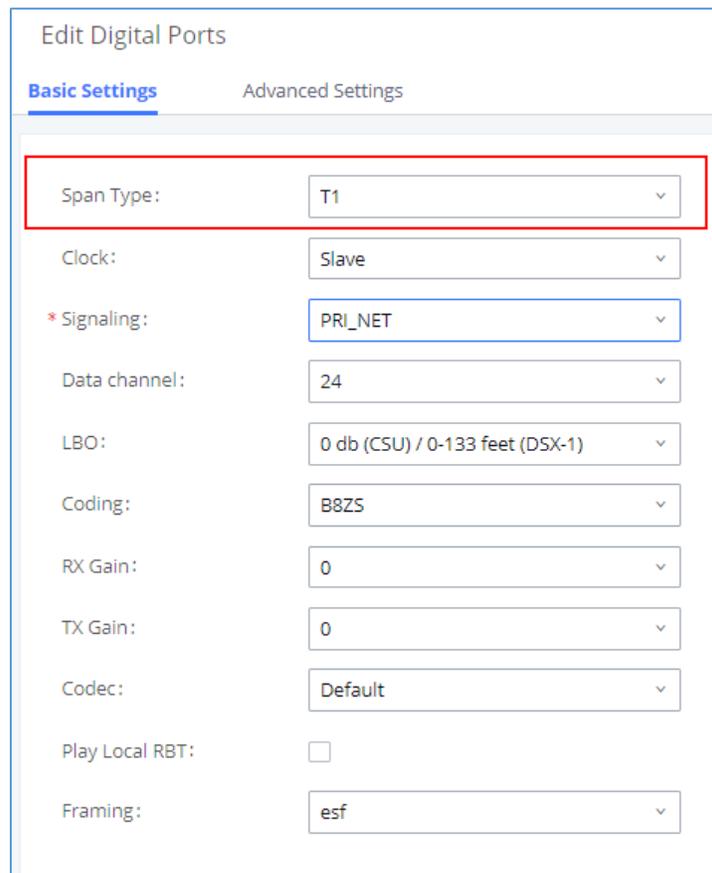
1. Go to **UCM6510 web UI → PBX Settings → Interface Settings → Digital Hardware** page. Click on  to configure the digital hardware type.



Interface Settings		
Digital Hardware		
TYPE	PORT	OPTIONS
▼ T1	1	 
Group Name	Channel	Options
DefaultGroup1	1-23	 

**Figure 4: Configure Digital Hardware Span Type 1**

2. Select Span Type “T1”. And click on “Save”.



### Edit Digital Ports

**Basic Settings**    Advanced Settings

Span Type: T1

Clock: Slave

\* Signaling: PRI\_NET

Data channel: 24

LBO: 0 db (CSU) / 0-133 feet (DSX-1)

Coding: B8ZS

RX Gain: 0

TX Gain: 0

Codec: Default

Play Local RBT:

Framing: esf

**Figure 5: Configure Digital Hardware Span Type 2**



- Go to **UCM6510 web UI** → **PBX Settings** → **Interface Settings** → **Digital Hardware** page. Click on  to edit the default group.

Interface Settings		
Digital Hardware		
TYPE	PORT	OPTIONS
▼ T1	1	 
Group Name	Channel	Options
DefaultGroup1	1-22,24	 

**Figure 6: Configure Default Group 1**

This is necessary because the default setting in default group has all the channels included. We need modify default group to make sure the number of used channels is within the max number of channels allowed for T1, E1 or J1.

For D channel, channel 16 is always used in E1 and channel 24 is always used in T1/J1.

In this example, we configured channel 1-10 in default group (for voice).

**Edit Group** ×

\* Group Name:

Used Channels:  From: 1-10 signaling Channel: 24

**Figure 7: Configure Default Group 2**

- Click on “Update” to save the setting.
- In **web UI** → **PBX Settings** → **Interface Settings** → **Digital Hardware** page, click on  to add a new group.



Interface Settings

**Digital Hardware**    Analog Hardware    DAHDI Settings

TYPE	PORT	OPTIONS
▼ T1	1	 
Group Name	Channel	Options
DefaultGroup1	1-10	 

**Figure 8: Add New Group 1**

As long as there are available channels, users will be able to create new group and assign channels.

- Assign channels for the new group. In this example, we assigned channel 11 to 23 in the new group (for data).

**Add Group** ✕

\* Group Name:

Used Channels:  From: 11-23 signaling  
 Channel: 24

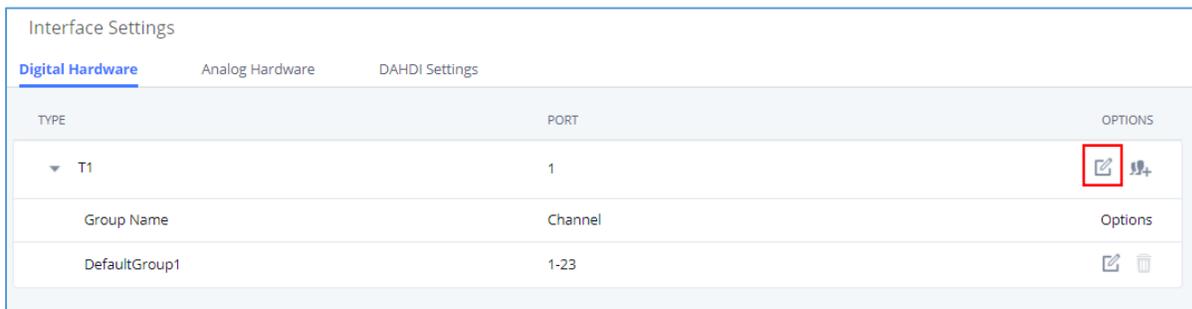
**Figure 9: Add New Group 2**

- Click on “Update” to save the setting and then on “Apply Changes”.



## CONFIGURING DIGITAL PORT

1. Before configuring digital trunk, please check the physical connection of the T1/E1/J1 port as described in section [CONNECTING T1 PORT] to make sure the correct type of cable is used and properly connected.
2. Go to **UCM6510 web UI** → **PBX Settings** → **Interface Settings** → **Digital Hardware** page. Click on  to configure the digital port.



Interface Settings		
Digital Hardware		
TYPE	PORT	OPTIONS
T1	1	 
Group Name	Channel	Options
DefaultGroup1	1-23	 

**Figure 10: Configure Digital Port 1**

3. There are two tabs in the dialog to configure the digital port.
  - **Basic Settings:** this includes span type and signaling configurations.



### Edit Digital Ports

**Basic Settings**      Advanced Settings

Span Type:	T1
Clock:	Slave
* Signaling:	PRI_CPE
Data channel:	24
LBO:	0 db (CSU) / 0-133 feet (DSX-1)
Coding:	B8ZS
RX Gain:	0
TX Gain:	0
Codec:	Default
Play Local RBT:	<input type="checkbox"/>
Framing:	esf

**Figure 11: Configure Digital Port – Basic Settings**

- **Advanced Settings:** this includes switch type and dial plan configurations.



### Edit Digital Ports

Basic Settings      **Advanced Settings**

Switchtype:	EuroISDN
PRI Dial Plan:	Unknown
PRI Local Dial Plan:	National
International Prefix:	
National Prefix:	
Local Prefix:	
Private Prefix:	
Unknown Prefix:	
* PRI T310:	10
PRI Indication:	inband
Reset Interval:	Never
PRI Exclusive:	<input checked="" type="checkbox"/>
Facility Enable:	<input checked="" type="checkbox"/>
SETUP ACK:	<input checked="" type="checkbox"/>
Overlap Dial:	Incoming
NSF:	none

**Figure 12: Configure Digital Port – Advanced Settings**

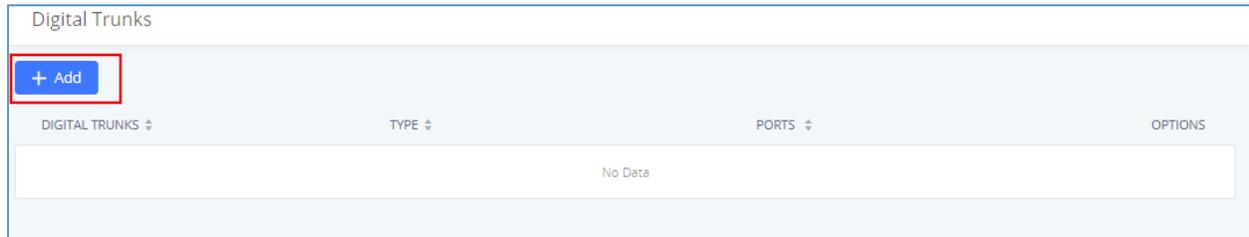
- Click on “Save” and then on apply changes.



## CONFIGURING DIGITAL TRUNK

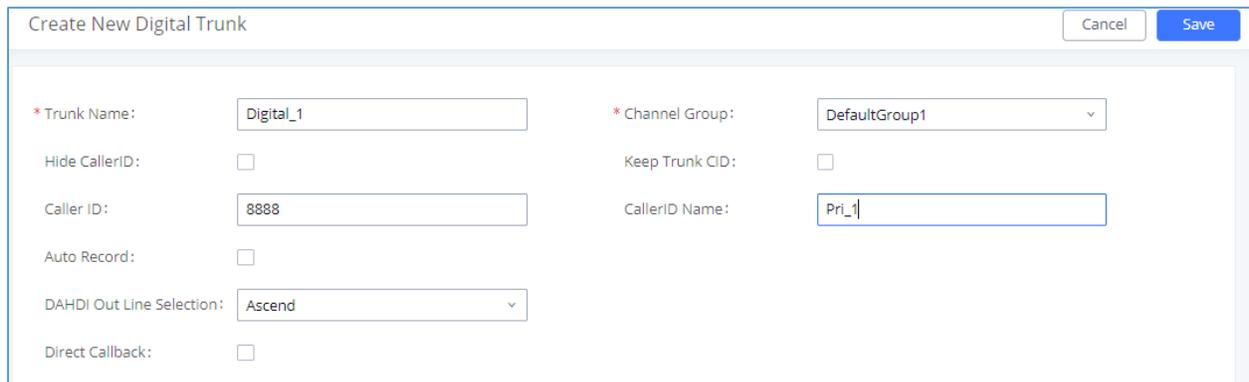
To set up digital trunk on the UCM6510:

1. Go to UCM6510 **web UI** → **Extension / Trunk** → **Digital Trunks** page. Click on “Add”.



**Figure 13: Create New Digital Trunk**

2. Configure trunk name to identify this digital trunk. Select “Channel Group” to the default group for this trunk, configure CallerID, Auto Record and other options as needed.



**Figure 14: Configure Digital Trunk**

3. Click on “Save” on the bottom of the dialog.
4. Click on “Apply Changes” on the upper right of the web page.
5. Go to **web UI** → **System Status** → **Dashboard** → **Trunk’s** page to check trunk status.

If the status shows “Available”, the digital trunk is successfully configured and should work as expected now. If it shows “Abnormal”, please check digital port configuration as described in section [CONFIGURING DIGITAL PORT] reconfigure, save and apply the changes again.



6. Configure inbound routes for this digital trunk under **web UI → Extension / Trunk → Inbound Routes**.
  
7. Configure outbound routes for this digital trunk under **web UI → Extension/Trunk → Outbound Routes**.

Until now the digital trunk has been completely configured and users should be able to make inbound and outbound calls.



## CONFIGURING DATA TRUNK

The UCM6510 E1/T1/J1 interface also supports data trunk function that allows users to access Internet. Users can select HDLC, HDLC-ETH, Cisco and PPP protocol for the data trunk.

To use data trunk,

1. Go to Web GUI→**PBX Settings**→**Interface Settings**→**Digital Hardware** page and click  to create a new group. Designate a channel for data trunk usage in the group setting.
2. Go to Web GUI→**Extension/Trunk**→**Data Trunks** page, click on  to edit the data trunk.
3. Save the configuration and click on “Apply Changes” for the change to take effect.
4. Once connected, the data trunk will periodically ping and check the status, with status indicator shown for the data trunk on the web page. The status indicator shows  if connected successfully.
5. If the user happens to lose connection or experience unstable connection, click on  to reconnect to help resolve the problem.

Configure digital channels for data communication. If the line happens to have synchronization problems, please try reconnecting.				
Status	Enabled	Port	Encapsulation	Options
	Turn Off	1	HDLC	 

Figure 15 : Data Trunk Web Page

### Data Trunk

Data Enable:

\* Channel Group:

Encapsulation:

\* Local IP:

\* Subnet Mask:

\* Remote IP:

\* DNS Server 1:

DNS Server 2:

Default Interface:

Figure 16: Data Trunk Configuration



## DIGITAL TRUNK TROUBLESHOOTING

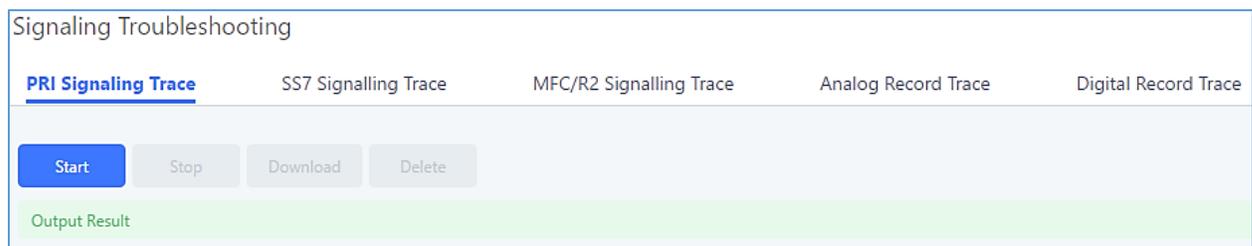
After configuring the digital trunk on the UCM6510 as described above, and it does not work as expected, users can start and download a signaling capture from the **Maintenance**→**Signaling Troubleshooting** page for analysis.

Depending on the signaling selected for the digital trunk, users can go to following pages to capture trace:

- PRI Signaling Trace: Web GUI→**Maintenance**→**Signaling Troubleshooting**→**PRI Signaling Trace**
- SS7 Signaling Trace: Web GUI→**Maintenance**→**Signaling Troubleshooting**→**SS7 Signaling Trace**
- MFC/R2 Signaling Trace: Web GUI→**Maintenance**→**Signaling Troubleshooting**→**MFC/R2 Signaling Trace**
- E&M Trace: Web GUI→**Maintenance**→**Signaling Troubleshooting**→**E&M Immediate Record Trace**

Here is the step to capture trace:

1. Click on "Start" to start capturing trace. The output result shows "Capturing..."
2. Once the test is done, click on "Stop" to stop the trace.
3. Click on "Download" to download the trace.



**Figure 17: Troubleshooting Digital Trunks**

For E&M Immediate Signaling, user could configure "Record Direction" and "Record File Mode".

After capturing a signaling trace, users can download it for analysis. Additionally, they can contact Grandstream Technical Support from the following link for further assistance:

<https://www.grandstream.com/support>

