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The SL2100 **Quick Install Guide: UNIVERGE ST500 Mobile Client**

Out of the box installations for resellers













www.nec-enterprise.com

This guide explains the installation, configuration and operation of the UNIVERGE ST500 Mobile Client for the SL2100 Telephone System.

Further information is available on BusinessNet.

Please keep all information supplied for future reference.

Regulatory Notice.

Refer to the Declaration of Conformity, Regulatory and Safety Considerations shown in the SL2100 Hardware Manual.

Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Other Documentation available:

- UNIVERGE ST500 for iOS Configuration Manual
- UNIVERGE ST500 for iOS Operation Manual
- UNIVERGE ST500 for iOS Quick Reference Guide
- UNIVERGE ST500 for Android Configuration Manual
- UNIVERGE ST500 for Android Operation Manual
- UNIVERGE ST500 for Android Quick Reference Guide

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1- ST500 Overview

This Quick Install guide describes how to install and configure the UNIVERGE ST500, a smart device client app that allows you to make and receive calls from anywhere, as if you were at your desk.

While in the office, connect to Wi-Fi and you are ready to handle your calls. While outside the office you can use Wi-Fi Hotspots or your mobile data (3G / 4G¹) to handle your calls without incurring further mobile call costs².

UNIVERGE ST500 can also offer video calling using the H.264 codec for video calls, so UNIVERGE ST500 supports video calling with other standard SIP phones who also support the H.264 codec.

UNIVERGE ST500 Mobile Client is supported on both Apple iOS and Google Android OS.

¹ Due to the characteristics between 3G and 4G services, and also variable factors such as signal strength and antenna congestion, voice calls over 3G connections may suffer voice quality issues and 4G connections are preferred although may still suffer. When using mobile data connections, the G.729 audio CODEC is recommended to be used for minimal bandwidth usage.

² Fees for data usage may apply. Check with your service provider when using UNIVERGE ST500 over data plans.



Network Configuration Example

NOTE1: Remote video calling for UNIVERGE ST500 Mobile Clients is only supported over a VPN connection.

<u>2- System Requirements</u>

ltem	System Requirements				
Supported OS	Android 8.0 or later. (See NOTE1 below).				
	iOS Supports only the latest version released by Apple Inc.				
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NOTE1: Android notification dots and multi-window function are not supported.

"UNIVERGE ST500" Application is available on Google Play and iOS app stores

Device Support

- Android Smartphones and Tablets (Tablet devices only operate in Portrait mode)
- iOS Devices:
- •



Communication Server Support

• SL2100 v2.3 Main Software or later

Licenses

- SL2100
 - o EU909388 (SL2100 NEC SIP License) per UNIVERGE ST500 Client

3- SL2100 Configuration for UNIVERGE ST500 Mobile Clients

This Quick Install Guide will cover the UNIVERGE ST500 configuration. For other system configurations please refer to the relevant SL2100 Quick Install Guide.

You must have SL2100 PCPro installed to your laptop/PC, this can be downloaded from BusinessNet, refer to the Quick Install Guide – SL2100 PCPro.

Before you configure your system it is important that you:

- Plan your requirements before you start.
- Have sufficient EU909388 SL2100 NEC SIP Licenses installed for the required number of UNIVERGE ST500 Mobile Clients.

While you configure your system it is advised that you:

- Make a record of your configuration as you make each change.
- Make small changes, upload to the SL2100 and test the changes. Avoid making all your changes at once as this can make testing more difficult.

With the default/factory settings:

UNIVERGE ST500 Mobile Clients are not configured

UNIVERGE ST500 Mobile Client configuration is not included within the Initial Setup Wizard, use Easy Edit to configure UNIVERGE ST500 Mobile Clients.

From Mandatory level view select Applications + ST500

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ST500 IP Configuration

ST500 ST500 IP Configuration ST500 VoIP Resource IP Addressing ST500 Basic Settings

- ST500 Extension Settings
- ST500 Audio CODEC Settings
- ST500 DTMF RFC2833 Settings
- 🛨 ST500 COS



ST500 VoIP Resource IP Addressing



ST500 Basic Settings



ST500 Extension Settings



Note: Peer to Peer Mode is required to be enabled for video calling.

ST500 Audio CODEC Settings

	500
···· 🖸	ST500 IP Configuration
···· 🖸	ST500 VoIP Resource IP Addressing
···· 🖸	ST500 Basic Settings
···· 🖸	ST500 Extension Settings
···· •	ST500 Audio CODEC Settings
···· 🖸	ST500 DTMF RFC2833 Settings
· +	ST500 COS

	Select the preferred G.711_ G.729_ G.725	d CODEC type: PT PT 2
⊧	Audio Capability Priority	G.711_PT 🗸
	G.711 Maximum Audio Frame Size	20ms
	G.711 Voice Activity Detection	
	G.711 Type	A-law
	G.711 Minimum Jitter Buffer Size	20
	G.711 Average Jitter Buffer Size	40
	G.711 Maximum Jitter Buffer Size	80
	G.729 Maximum Audio Frame Size	20ms
	G.729 Voice Activity Detection	
	G.729 Minimum Jitter Buffer Size	20
	G.729 Average Jitter Buffer Size	40
	G.729 Maximum Jitter Buffer Size	80
	Jitter Buffer Mode	Self adjusting
	VAD threshold	20
	G.722 Maximum Audio Frame Size	30ms
	G.722 Minimum Jitter Buffer Size	30
	G.722 Average Jitter Buffer Size	60
	G.722 Maximum Jitter Buffer Size	120
	G.726 Maximum Audio Frame Size	30ms
	G.726 Voice Activity Detection	
	G.726 Minimum Jitter Buffer Size	30
	G.726 Average Jitter Buffer Size	60
	G.726 Maximum Jitter Buffer Size	120
	RTP Filter	Enable

NOTE: The Maximum Audio Frame Size supported by the UNIVERGE ST500 Mobile Client is either 20ms or 40ms, so depending on the above Audio Capability Priority selection the correct codecs Maximum Audio Frame Size should also be either 20ms or 40ms (Default is normally 20ms)

ST500 DTMF RFC2833 Settings

Use Profile 1 to assign the operation of DTMF digit sending for UNIVERGE ST500 calls.



ST500 COS Assignment Per Mode



ST500 COS Options



4- SL2100 Advanced Configuration Items for ST500 Mobile Clients

After the basic steps in section **3- SL2100 Configuration for ST500 Mobile Clients** have been completed, these additional steps can be configured for:

- Using UNIVERGE ST500 Mobile Clients remotely from Wi-Fi hotspots/Cellular Networks using NAPT connections to the communications server.
- Alarm Reporting

From Advanced level view select Applications + ST500

File Home View Reports Filter options Tools Grid style Actions P Robbon Apply Copy Paste Fill Default Group Column Filler Default D		2 * 1 🗟	1	0 Ø							E	asy e	dit		
Apply Copy Paste Fill Default Group Column Fill Panda Companion columns Main Edit Advanced view Grouping Companion columns SayEdit R X Search IP Advanced view 0.0.0 Subnet Mask 255.255.0.0 Output VOIP Paddress 192.168.0.10 Subnet Mask 255.255.0.0 Output VOIP Paddress 10.0.0 VOIP VOIP Paddress Programming Level Im Im Im Im Im Im Im Output Mask 255.255.0.0 Output VOIP Paddress 192.168.0.10 Im Programming Level Im Im Im Im Im Im Im Im Output Advanced items Im	File	Home	Vie	w	Reports	Filt	er opti	ons	Too	ls	Grid style	:	Actions	0	Ribbon
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🕆 EasyEdit 🕥 System Data 🔃 Properties	Course C	reg Level re Messag email t Service Mode ute tional Devi anced tem cations MyCalls Co ST500 ST5	ices is nsole IP Confi VoIP Re Basic S Extensic Audio C DTMF F NAPT S COS Alarms	guration isource on Settings ODEC : RFC283 Settings ence	IP Address ngs Settings 3 Settings d All C	ting Collapse /									
Done	Done														

ST500 NAPT Setup



Note1: If NAT is enabled, then SIP signalling port (Default 5070) assigned in *Easy Edit > Applications > ST500 > ST500 Basic Settings > Registrar/Proxy Port* ("PRG 84-20-01") MUST be forwarded from the router to VOIP IP Address assigned in *Easy Edit > Applications > ST500 > ST500 IP Configuration* ("PRG 10-12-09").

Note2: If NAT is enabled, then RTP/RTCP port(s) assigned in *Easy Edit* > *Applications* > *ST500* > *ST500* VoIP Resource IP Addressing must be forwarded from the router to the VOIPDB DSP IP Address assigned in *Easy Edit* > *Applications* > *ST500* > *ST500* VoIP Resource IP Addressing ("PRG 84-26-01").

Note3: Video calling is not supported for remotely connected UNIVERGE ST500 Mobile Clients using NAT mode.

ST500 NAPT Exempt Networks

For locally connected IP terminals not connecting to the communication server using NAPT Mode, enter the network address ranges of those devices in this table. This includes any network devices connecting over VPN connections.



ST500 Extension Settings



ST500 Alarms

Alarms can be configured to give information on errors with UNIVERGE ST500 Mobile Clients, and the SL2100. Please refer to the below table for further details on the alarms and their information reported.



NEC SL2100 Communication System

Alarm No.	Alarm Type	Report	Name	Content of Alarm	Possible Cause(s)
61	Not Enabled	Disabled	SIP extension trouble information.	Failed in the registration of a SIP extension terminal.	The registered port is used by other extension.
				The SIP extension terminal was not able to acquire a DSP.	The number of licenses is insufficient.
				 At Registration to SL2100 of the SIP extension terminal. 	DSP of CPU/VoIPDB was not able to be acquired.
				• When you cannot acquire the DSP resource when it sends it.	
64	Major	Disabled	VoIPDB LAN Link Error.	The link of LAN of VoIPDB disconnected.	LAN cable is defective.
					Connected network device not working.
					Defect in CPU/VoIPDB.
65	Not Enabled	Disabled	VoIPDB trouble information.	When DSP of VoIPDB notifies Error.	Defect of VoIPDB.
66	Minor	Disabled	SIP extension License Error.	More than the number of licenses to which the SIP extension terminal was turned on at REGISTER.	Lack of number of licenses.
68	Minor	Disabled	VolP DSP All Busy Alarm	Provides alert when all DSP resources are being used.	Not enough DSP resources in system.
				 Used to troubleshoot or alerting when upgrade is needed. 	

ST500 Push Notification Service

The Push Notification Service can be enabled for reliably notifying the ST500 user of incoming calls and MWI at the client.

 Applications MyCalls Console ST500 ST500 IP Configuration ST500 VoIP Resource IP ST500 Basic Settings ST500 Extension Settings ST500 Audio CODEC Sett ST500 DTMF RFC2833 S ST500 COS ST500 iOS Features iOS Push Notification S 	Addressing If the SL2100 using WebPro If the SL2100 and ST500 clients are used behind a Web Proxy server enter the IP address of the Web Proxy server in this field. If a Web Proxy server is entered above then of also enter the Web Proxy server access port in this field.
Domain Name Access Key	nld()_nec-pushry.com A2/j1123s>Y=_ox4u5Dlt7y70M<2@JMsCD8QErEX:N96GvDBLsK6NsJZ:P2V63
Server Certificate	
HTTPS proxy server address HTTPS proxy server port DNS Primary Address DNS Secondary Address	0.0.0.0If not using a Web Proxy Service then enter a valid DNS server address for the SL2100 to resolve the Domain Name to the Push Proxy server.

5- ST500 Installation and Configuration on Android Devices

Installation from Google Play

Follow the steps – 1 below to get the UNIVERGE ST500 Mobile Client installed on your Android device.



Starting the ST500 Mobile Client for the first time

Follow the steps –1) below to start using the UNIVERGE ST500 Mobile Client on your Android device.



Quick Install Guide - UNIVERGE ST500 Mobile Client v1.8









Configure the ST500 Mobile Client

Follow the steps — 1 — below to configure the UNIVERGE ST500 Mobile Client on your Android device to connect to the SL2100 telephone system.







Profile Settings



Telephone System Settings

 ► ▲ ★ ▲ # 89% @ 20.03 (3) Telephone system 	1 Set the SIP server type to Aspire UX/SV9100/SL2100
SIP server type Aspire UX/SV9100/SL2100	2 Set the IP address type to IPv4
IP address type	³ Enter the SIP server address as either the IP address or FQDN of the SL2100
SIP server address sl2100.nec.com	4 Enter the Register server address as either the IP address or FQDN of the SL2100
Register server address sl2100.nec.com	5 Enter the Domain name as either the IP address or FQDN of the SL2100 (Optional)
bomain name sl2100.nec.com	6 Set the SIP server port of the SL2100 for SIP extensions
SIP server port	7 Set the SIP protocol to either UDP or TCP. SL2100 does not support TLS connections
SIP protocol	8 Set to Disabled as normally used with TLS connection
Disabled	9 Set the Tone location to the country or region whose tones should be used
Tone location GB (United Kinadom) Connection	10 Set the Connection to be used by ST500. Options available are WI-FI, Mobile, Any
Any SSID Only works with connection type set to WI-FI.	11 Enter a WLAN SSID so that when Connection is set to WI-FI the ST500 will use this profile when connected on that WLAN SSID (Optional)

Note1: A Connection type set to Any is recommended if the UNIVERGE ST500 is to be used over Wi-Fi networks as well as remotely over 3G/4G mobile data.

Note2: Enter a Wireless LAN SSID and set the connection type to Wi-Fi and when the device connects to that SSID the configured profile will automatically be used.

Telephone Service Settings

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Contact settings	
Call history setting	s
Prefix settings	
Dial plan	ľ
Call forward setting	js
Call pick up access	code
Voice mail access	code
Call quality	
Volume	

Call Quality Settings



Android PUSH Notification can be enable as below:

12 If the SV9100 is configured to use it. Enal iOS Push Notification Service for the ST500 of	ble the client <u>h</u> e
	12 If the SV9100 is configured to use it. Enal iOS Push Notification Service for the ST500 of

Exit the Profile configuration settings and the UNIVERGE ST500 Mobile Client will attempt to register to the SL2100. If the client fails to connect re-check your configuration settings and try again.



You should now be ready to use your UNIVERGE ST500 mobile client.

Please refer to the UNIVERGE ST500 for Android – Operation Manual or UNIVERGE ST500 for Android – Quick Reference Guide for further information on how to operate your client.

6- ST500 Installation and Configuration on iOS Devices

Installation from iOS App Store

Follow the steps – 1 below to get the UNIVERGE ST500 Mobile Client installed on your iOS device.



Starting the ST500 Mobile Client for the first time







Configure the ST500 Mobile Client

Follow the steps – 1 below to configure the UNIVERGE ST500 Mobile Client on your Android device to connect to the SL2100 telephone system.





Quick Install Guide - UNIVERGE ST500 Mobile Client v1.8

Profile Settings



Telephone System Settings

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Kerk Back Telephone system	1 Set the SIP server type to Aspire UX/SV9100/SL2100
SIP server type — Aspire UX/SV9100/SL2100	2 Set the IP address type to IPv4
IP address type	3 Enter the SIP server address as either the IP address or FQDN of the SV9100
sv9100.nec.co.uk	4 Enter the Register server address as either the IP address or FQDN of the SV9100
sv9100.nec.co.uk	5 Enter the Domain name as either the IP address or FQDN of the SV9100 (Optional)
sv9100.nec.co.uk	6 Set the SIP server port of the SV9100 for SIP extensions
5070	7 Set the SIP protocol to either UDP or TCP. TLS is not currently fully supported
UDP Secure PTP	8 Set to Disabled as normally used with TLS connection
Disabled Tone location	9 Set the Tone location to the country or region whose tones should be used
GB (United Kingdom) Connection	10 Set the Connection type to be used by ST500. Options available are Wi-Fi, Mobile, Any
Any SSID Only works with connection type set to Wi-Ei	11 Enter a WLAN SSID so that when Connection is set to WI-FI the ST500 will use this profile when connected on that WLAN SSID
Push notification	12 If the SL2100 is configured to use it. Enable the iOS Push Notification Service for the ST500 client here

NOTE1: Push notification is a newer notification feature from Apple and available to iOS 11 or higher supported devices. This is also supported by the SL2100 when using R1.7 or higher main software.

Telephone Service Settings



Call Quality Settings



Exit the Profile configuration settings and the UNIVERGE ST500 Mobile Client will attempt to register to the SL2100. If the client fails to connect re-check your configuration settings and try again.



You should now be ready to use your UNIVERGE ST500 mobile client.

Please refer to the UNIVERGE ST500 for iOS – Operation Manual or UNIVERGE ST500 for iOS – Quick Reference Guide for further information on how to operate your client.