**ProVu®**

COMMUNICATIONS
INNOVATIVE VOIP DISTRIBUTION

**SARK**500

UNIFIED COMMUNICATIONS SERVER

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# SARK500 Embedded VoIP/TDM PBX

Quick-start Installation Guide V3.1

**SARK Version 3 Release 1**
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# Contents

## Introduction

SARK500 on the WARP appliance provides a solid-state SIP/TDM PBX solution for system integrators and PBX resellers. The appliance is a purpose-designed telephony platform with its own integrated analogue, digital and GSM telephony boards. The system can support up to 8 FXO (CO) lines, 8 Digital (BRI) Channels or 4 GSM channels, depending upon the configuration. It also provides a further 8 SIP or IAX2 trunks for VoIP telephony. The system can be configured with up to 20 IP handsets from any of the leading SIP manufacturers (e.g. snom, Aastra, Cisco, Yealink etc).

The onboard SARK UCS/MVP software provides a feature-rich graphical workbench and decision engine designed to generate and run efficient PBX images.

SARK UCS/MVP has established a reputation for being extremely reliable, highly functional and particularly well equipped for remote support, making it very attractive to resellers. Moreover, it is well able to compete with traditional proprietary PBX platforms while offering a much lower overall cost-of-ownership to the user.
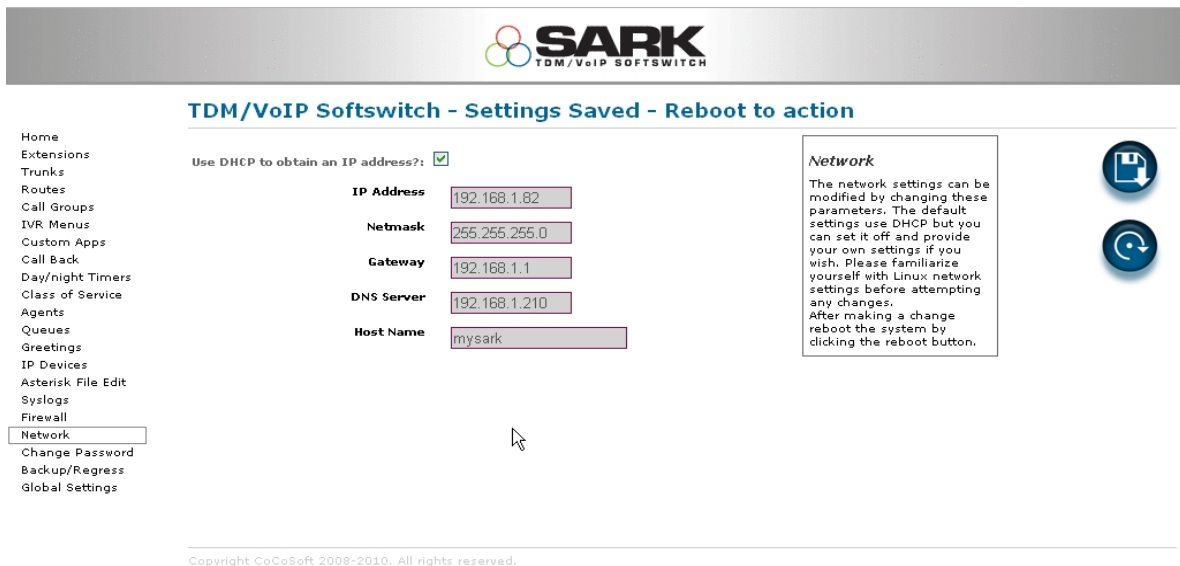
### Platform Options

SARK 500 is available in several different hardware configurations as follows: –

| MODEL | DESCRIPTION | Slot1 | Slot2 |
|-------|-------------|-------|-------|
| 500 | VOIP | - | - |
| 500F4 | VoIP/FXO | 4xFXO | - |
| 500F8 | VoIP/FXO | 4xFXO | 4xFXO |
| 500B2 | VoIP/BRI | 2xBRI | - |
| 500B4 | VoIP/BRI | 2xBRI | 2xBRI |
| 500G2 | VoIP/GSM | 2xGSM | - |
| 500G4 | VoIP/GSM | 2xGSM | 2xGSM |
| 500F4G2 | VoIP/FXO/GSM | 4xFXO | 2xGSM |
| 500B2G2 | VoIP/BRI/GSM | 2xBRI | 2xGSM |

As you will see from the above FXO and BRI channels cannot be mixed in the same frame but both BRI and FXO can be mixed with GSM.

## SARK500 network defaults

SARK500 runs as a discrete network server as part of an existing IP network setup. SARK500 has its own on-board firewall but it will normally sit behind an existing upstream "nat" firewall or router.  Unless you specify otherwise, your system will be set to request DHCP from the network.



DHCP is enabled by default on the appliance. When you connect the appliance to your network, the DHCP server on your network issues a valid IP address to the appliance during the startup sequence.  If your network does not have a DHCP server, the appliance will start with a default IP address in the range 192.168.1.x.

If you want to use a static IP address, you can use the network configuration page to change the network settings.  Click the DHCP on/off checkbox to enable the static settings.

Home
Extensions
Trunks
Routes
Call Groups
IVR Menus
Custom Apps
Call Back
Day/night Timers
Class of Service
Agents
Queues
Greetings
IP Devices
Asterisk File Edit
Syslogs
Firewall
Network
Change Password
Backup/Regress
Global Settings

Use DHCP to obtain an IP address?:

IP Address      192.168.1.82
Netmask         255.255.255.0
Gateway         192.168.1.1
DNS Server      192.168.1.210
Host Name       mysark

*Network*

The network settings can be modified by changing these parameters. The default settings use DHCP but you can set it off and provide your own settings if you wish. Please familiarize yourself with Linux network settings before attempting any changes.
After making a change reboot the system by clicking the reboot button.

## FIREWALL

SARK500 uses the Shorewall firewall to manage access to the PBX.   Shorewall is a very comprehensive and powerful Linux firewall which, like all firewalls, can be complex to set up.  However, SARK completely automates the initial firewall creation. It also makes management relatively straightforward by exposing a set of simple rules for the user to configure.   In its default configuration, the firewall is set up to only allow traffic from the local subnet (the subnet is detected automatically by SARK at system startup). Furthermore, only the following ports are opened:-

SSH (TCP 22)
TFTP (TCP 69)
SIP (UDP 5060)
RTP (UDP 10000:20000)
IAX2 (UDP 4569)

The exception is port 80 (HTTP), which is initially open without restriction.  For further information on firewall set-up see the Administrators Guide chapter 12.

### *Equipment Deployment*

### Unpacking

Your SARK500 platform and ancillary components are carefully packed to your order at the factory. Before doing anything else, check each component to ensure that all components are present and none have been damaged. Whilst every reasonable care is taken to ensure that the system reaches you in the same condition it left the factory, it is an unfortunate fact that occasionally a component may be damaged in transit. If you find a damaged item then you should immediately contact your Distributor/Reseller to obtain an RMA number which will allow you to order a replacement.

### Equipment Placement

Before beginning the installation proper, it is good idea to give some thought as to where you are going to site the system components, in particular, the server itself, the gateways (If any), the network switch and the IP telephones. Generally speaking, the server should be sited in a well ventilated location, away from high traffic areas in the workspace and ideally, above the floor. You should NEVER stack any other items on top of, or around, the casing to avoid overheating. Should the unit overheat as a result of restriction of the vents then this will automatically invalidate your warranty.

### Maximum Cable lengths

- Unless your network switch manufacturer's instructions state otherwise,  the PBX server may be sited up to 100m (328 feet) from the network switch when using CAT5 or CAT5e UTP cabling, or 10m (33 feet) for stranded patch cable.
- When operating in Server/Gateway mode to an upstream router, the PBX server should be no more than 5m (16 feet) from the modem (cable or DSL).

- Analogue Telephone Adapters (ATA's) and SIP/IAX Gateways may be sighted up to a maximum of 100m (328 feet) from the network switch when using CAT5 or CAT5e UTP cabling, or 10m (33 feet) for stranded patch cable. They may be up to 10m (33 feet) from any attached analog telephony equipment or carrier termination points (i.e the telephone company terminators).
- IP telephones can be sited up to 100m from the network switch when using CAT5 or CAT5e UTP cabling, or 10m for stranded patch cable.
- If you have ordered any digital telephony cards as part of your system (ISDN2e or ISDN30e), they will have been predefined to your system with a line build out of up to 40M (133 feet).

**Network Port Assignment**

The Sark500 is fitted with a single RJ45 Ethernet port.

**ISDN Port Assignment**

The SARK500 can be fitted with up to four (4) ISDN2e ports or up to 8 FXO lines.

**Notes**
- All SARK ISDN terminations are to RJ45.
- All SARK FXO terminations are to RJ11.

**Network Switch**

The network switch should have enough ports to handle all of your IP connected telephones plus room for growth. It should be sited away from high traffic areas in the workspace and it should have sufficient front clearance to accommodate the RJ45 connectors from the UTP cables. You should also ensure that there is adequate access to enable easy addition/removal and rerouting of cables from time to time. UTP cables should be uniquely identified and marked at both termination points in order to facilitate easy tracing from device to switch.

If you intend to deploy a POE capable switch then you should ensure that its total power output is adequate for the overall load that the POE phones will impose. This information is available from the phone and POE switch manufacturers.

**Power Up**

Once you have decided upon a satisfactory location, install the network switch. Everything else will connect to this device so it's the best place to start. If your workplace is already cabled for a computer network you may wish to assess whether you have sufficient access points to handle an integrated computer/telephone network. This may necessitate new cable runs and/or switch upgrades and it is best to do these now before any further equipment is positioned. Next, install the SARK500 server platform. Attach the LAN socket on the rear of the SARK500 enclosure to the network switch using a Cat5e (RJ45) UTP or braided patch cable (depending upon distance). Attach the WAN Socket to your upstream network switch or router. Bring up the network switches and the SARK500 server. Your PBX is now ready to be tailored to your requirements. Depending upon the support subscription you have with your reseller/distrubutor this will either be carried out locally by yourself, by your reseller or remotely by ProVu.

**Logging into the system**

The SARK UCS/PBX GUI manager is browser based. You can connect using any of the following browsers; Firefox, MSIE, or Chrome. The URL is;-

**http://*local ip-address***

The user-id is **admin**. The default system password is **sarkadmin**. Entering the user-id and password will display the SARK500 home panel.



Uness you have ordered the SARK UCS/MVP "flatpack" provisioning option from your supplier, your system will initially have no telephony objects defined.  The only exception to this is in the case where you have ordered telephony cards with your system.  These will have been predefined to the PBX at the factory and  the trunk(s) will have been allocated a trunk group



Finally, a general purpose Route will have been created to handle outbound dialling. This will send all dials out over the installed card(s) so you may need to change it if you intend to use other channels (such as SIP or IAX2).

**Adding Extensions**

Provided you run SARK's on-board DHCP server, provisioning of most popular phone types (snom, Linksys, Cisco, Aastra, Polycom) is largely automated. Simply add the extensions using the Extensions panel in the server-manager. Choose the correct phone type and model from the drop down list and ensure that you enter the phone's MAC address (as a contiguous hex string, without colons). SARK will automatically create the provisioning files for the phone and save them to its on-board TFTP server. Thereafter, it should just be a question of unpacking and bringing up the phone. It should retrieve its config information from the SARK TFTP server using DHCP option 66 at boot up time. If you elect NOT to have SARK provide DHCP services for the subnet then some other DHCP servers are capable of providing Option 66 data, e.g. Microsoft Exchange Server, Microsoft SBS or any Linux server are all capable of this. If not, then you will need to manually enter the address of the TFTP server into each phone. Alternatively, you can either provision the phones manually or use a professional provisioning service such as the ProVu communications provisioning platform (www.provu.co.uk).

**Changing the system password**

The factory set system password will be supplied to you as part of the install documentation. However, you should set your own password as soon as possible. You can change the system password for the SARK PBX browser application by logging into the browser and selecting the "change password" option in the left hand menu.

**Further Reading**

Further information about your system can be found on the SARK UCS/MVP Wiki site at http://sarkpbx.com/twiki