SARK UCS/MVP TDM/IP PBX
Quick-start Installation Guide

SARK UCS/MVP Version 3 Release 1
SME Server 8.0 Platform
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Table of Contents

Introduction

SARK UCS/MVP is a hybrid TDM/IP PBX softswitch for the SMB/SME market segment. It is based upon Digium's *Asterisk* soft-switch running on SME Server Linux, a hardened variant of CentOS. 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 UCS/MVP is available in several different hardware models as follows: –

MODEL	DESCRIPTION	PCI Slots	MEMORY	Storage
650	Entry Level desk top	1	512Mb	4Gb Flash
850	1U rack mount	1	1Gb	80Gb SATA
1000	1U rack mount	1	1Gb	80Gb SATA
1200	2U rack mount	3	2Gb	160Gb SATA
1500	2U rack mount	3	2Gb	160Gb SATA

All units are capable of running their own inboard telephony gear. The 650 is restricted to 4xFXO ports or 4 ISDN2e ports. All other models can be fitted with either analog or digital cards, giving the larger systems the ability to manage up to 120 TDM voice channels (lines) per module.

SARK UCS/MVP modes of operation and system defaults

SARK can run in one of two modes; either as a discrete network server as part of an existing network setup or as a server/gateway.

All models except the 650 (which has only one NIC), are delivered with twin Ethernet circuitry terminating at RJ45 sockets to the rear of the enclosure. These sockets are marked "WAN" and "LAN". The WAN socket connects upstream to one of the following

- Customer LAN
- cable or ADSL router

The LAN socket connects downstream to the phones. Unless you specify otherwise, your system will be delivered preconfigured to run in Server/Gateway mode and set to request DHCP from the upstream network. The downstream LAN will be set to 192.168.2.0/255.255.255.0 with your SARK unit running at 192.168.2.1.
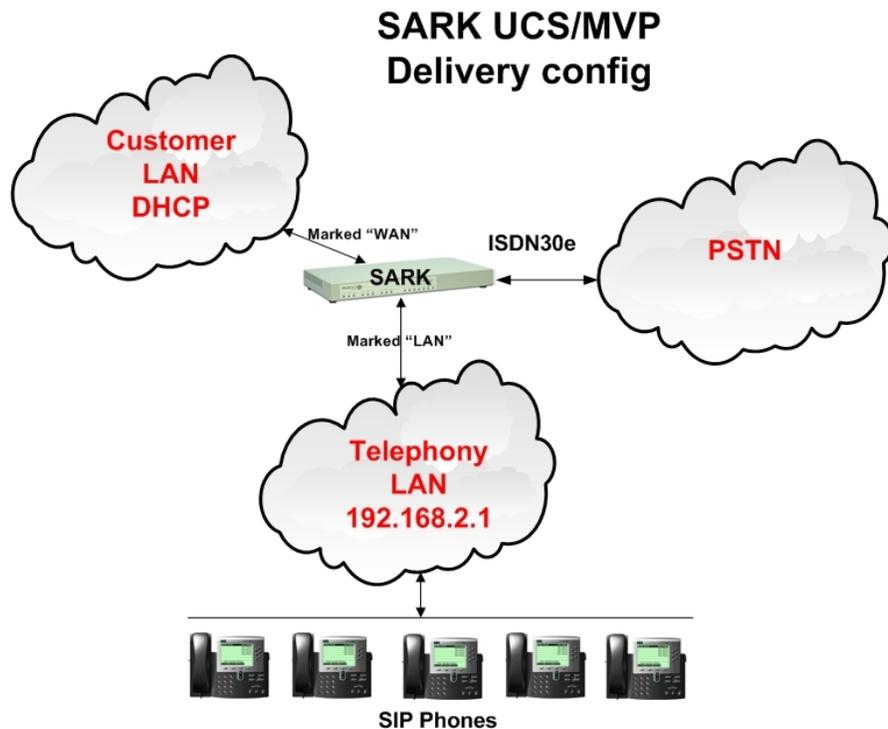
Changing the low-level system defaults

If you wish to change the factory default settings you can attach a screen and keyboard directly to the PBX server and log in as admin (with the Aelintra supplied password). This will run a wizard type application which you can use to change underlying settings such as the system mode, domain information and IP addresses.

Server Only

In server only mode, SARK is attached to an existing network and provides PBX, services to the network. Perimeter protection, internet sharing, caching, port forwarding and other services will be provided from an existing firewall/perimeter protection device or server. To run in this mode, the RJ45 socket marked LAN, should be connected to an available socket on your network LAN hub/switch using a standard RJ45 Cat5 cable. The RJ45 socket marked WLAN should not be connected. You should also forward the following ports to SARK from your firewall

PORT	NAME	TYPE
5060	SIP	UDP
10000->20000	RTP	UDP
4569	IAX2	UDP
443	HTTPS	TCP
45678	SSH	TCP

Server/Gateway

In server/gateway mode SARK UCS/MVP provides full perimeter protection (firewall) to the downstream network and manages all interactions to and from the upstream network. To run in this mode you should connect the WAN socket to your upstream network or Internet modem (either cable or ADSL). You should connect your LAN socket to an available socket on a network switch using a standard RJ45 Cat5 cable. If the upstream network has its own router then you should forward the following ports to SARK

PORT	NAME	TYPE
5060	SIP	UDP
10000->20000	RTP	UDP
4569	IAX2	UDP
443	HTTPS	TCP
45678	SSH	TCP

You can run your upstream router either in bridged or "no NAT" mode. In Bridged mode you will need a single public IP Address whereas in "no NAT" mode, you will need at least two public IP Addresses; one for the router and one for SARK.

Equipment Deployment

Unpacking

Your SARK UCS/MVP platform and ancillary components are carefully packed to your order at the factory. Enclosed with your shipment is a bill–of–material detailing each component in the shipment. Before doing anything else, check each component against the bill 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 avoid stacking 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.

WARNING! *NONE of the rack capable units may be mounted solely by the rack ears. You must also ensure that there is adequate support at the rear of the unit. This can be done either by ordering the optional rack-mount rail kit from your supplier or by using a suitable rack tray. .*

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 Sark650 is fitted with a single RJ45 Ethernet port.

SME 7.x (CentOS 4) units of the Sark650xp SARK850 and SARK1000 each have four (4) RJ45 Ethernet ports assigned as follows (when viewed, left to right, from the rear of the enclosure);

       Port1 – unused
       Port2 – LAN
       Port3 – WAN
       Port4 – unused

SME 8.x (CentOS 5) units Sark650xp SARK850 and SARK1000 each have four (4) RJ45 Ethernet port appertures assigned as follows (when viewed, left to right, from the rear of the enclosure);

       Port1 – LAN
       Port2 – unused
       Port3 – WAN
       Port4 – unused

The SARK1200 has two (2) RJ45 Ethernet ports assigned as follows (when viewed, left to right, from the rear of the enclosure);

       Port1 – LAN
       Port2 – WAN

ISDN Port Assignment

The SARK 650 can be fitted with up to four (4) ISDN2e ports, while the larger machines can be fitted with up to eight (8) ISDN2e ports or up to four (4) ISDN30e ports. Ports are assigned as follows (when viewed, left to right, from the rear of the enclosure);

ISDN2e (S650) – 4,3,2,1
ISDN2e (S850, S1000, S1200) – 1,2,3,4,5,6,7,8
ISDN30e (S850, S1000, S1200) – 1,2,3,4

Notes
- In UK, only ISDN30e (QSIG) is supported. If you have older ISDN30 or DASS equipment then it will need to be upgraded.
- All SARK ISDN terminations are to RJ45.
- Eight-way (16 channel) ISDN2e cards use Siamese ports. They require made-up or pre-ordered split Cat5e patch cables.

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 SARK UCS/MVP server platform. Attach the LAN socket on the rear of the SARK UCS/MVP 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 SARK UCS/MVP server. The server will take about 3 minutes to boot and run through its startup checks. If you have subscribed to the Aelintra "flat-pack" support option, you should now call the technical support number which is printed on your delivery note. Aelintra technical support staff will enable your PBX and perform a final series of checks before bringing it into service. Your SARK UCS/MVP PBX is now ready to be tailored to your requirements. Depending upon the support subscription you have with Aelintra this will either be carried out locally by yourself, by your reseller or remotely by Aelintra Telecom Limited Managed Services (ATMS).

Logging into the system

The SARK UCS/PBX GUI manager is browser based. You can connect using any modern browser (I.E., Firefox, MSIE, or Chrome) with the following URLs

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

The SME Server "server-manager" component is used to manage the underlting linux platform. You can connect to it using

https://*local ip-address***/server-manager**

The user-id is admin. The system password will either be found on a label on the PBX packaging or will be verbally communicated to you by your reseller.

Entering the user-id and password will display the SARK UCS/MVP home panel.

Unless 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. You can check by examining the "PCI Cards" panel. Also, the trunk(s) will have been allocated a trunk group (mISDN, Zap or DAHDI).

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 VoIP SIP or IAX2).

Adding Extensions

Provided you run SARK in its default Server/Gateway mode, 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 where the phones are then some other DHCP servers are capable of providing Option 66 data, e.g. Microsoft Exchange Server, Microsoft SBS and virtually any Linux DHCP server are all capable of this. If not, then you will need to manually enter the address of the TFTP server into each phone.

Further Reading

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