Server Build Specification

for telephony servers running

Softdial Contact Center™

Partner Information

Legal Notices:

1. Introduction

This document provides guidance on specifications and advice on building and configuring telephony servers in order to deploy Softdial Contact Center dialer solutions to customers. It provides a template for business partners who choose to assemble this product locally for reasons of cost control and local component supply.

Our experience in this area has shown us that high quality components and reliable spare parts availability are essential for successful long term telephony server deployments.

CompactPCI has been ruled out as a chassis technology on grounds of cost and consistency of supply. By adopting Aculab's PCI form factor cards we are able to provide a specification for servers that can be built using locally-sourced equipment worldwide.

The design goals for the hardware are to provide a scalable platform for delivering a dialing platform to support between 15 and 3000 agents.

The scalability requirements mean that there are two types of telephony chassis required:

1. For smaller installations up to 16 E1/T1 spans on 4 Aculab cards, or to 115 (US) or 150 (EU) users a chassis based on a standard Intel PC motherboard. Such systems are easily assembled by personnel familiar with PC maintenance tasks.
2. For larger installations of 100 agents or more, an active backplane PCI chassis based on best-of-breed componentry is required. Such systems deliver high scalability (40 E1 or T1 spans per chassis). They also require a more rigorous approach to component selection and assembly.

The following sections provide specification and build advice for small and large servers (as defined above) and provide a materials configurator for ordering Aculab Cards from your local supplier.

2. Small System Server

2.1 Hardware Specification

In small installations the dialing engine, campaign management and other management software run on the same server as the telephony boards. The system requirements are as follows:

1. 4U Rackmount chassis of either 20" or 26" depth chassis to accept an ATX motherboard. The chassis must provide for straight-through cooling to allow sufficient airflow over the Aculab cards. The chassis must also have space for full-length cards in all PCI slot positions and must have a card guide rail to keep cards in situ.

2. Power supply. Robust power supply with long MTBF. Regardless of overall power output it needs to be able to deliver at least 30 Amperes of current at +5V.

3. Motherboard. ATX form factor Intel 865 Chipset motherboard with a minimum of 5 PCI slots, Socket 478 processor support, onboard graphics and 10/100Mbit/s network interface. Sytel MANDATES Intel D865GBFL but Intel D865PERLL is an acceptable alternative. Installing the telephony platform on a motherboard that does not comply with these specifications will negate any support rights you have in respect of that system. In the unlikely event that you cannot find local supplies of one of the two boards above, you should contact Sytel for advice. **WARNING:** The Intel 865 Chipset and Socket 478 processors will be replaced at some point in 2006. Sytel is researching alternatives based on the 915P chipset and PCI express bus and will publish new advice in Q3 2005

4. 2.8GHz or faster P4 processor, Socket 478, 800 MHz FSB, hyperthreading support.

5. 1GB of PC3200 (DDR400) memory. 2x512MB dims. E.g. Crucial CT6464Z40B

6. SATA RAID Controller for system drive. E.g. Adaptec 1210SA.

7. Hard drives. 2x80GB serial ATA 150 for system. Single separate serial ATA drive for call recording if required.

8. A DVD re-writer for software installation, system backup and archiving of recordings.

9. Windows XP Professional with service Pack 2. Partition system drive into 3. A 30GB boot drive, a 10GB swapfile drive and the remainder as a drive for log files. The swap file should be a fixed size (say 5GB) and be the only file residing on the swapfile drive. Drives must be formatted with NTFS. No applications (other than system management and antivirus tools) may be installed.

2.2 Build Specification

The build process for the small server is much the same as for a regular PC. Sensible antistatic precautions need to be observed. An antistatic build mat and wrist earthing straps should be used, particularly when handling Aculab boards, processors and memory.

1. Install the motherboard into the chassis ensuring that the board stand-offs are fitted in all legal positions.
2. Install the processor and heatsink being sure to use Arctic Silver or similar heat transfer paste between processor and heatsink.
3. Install the DIMMS in the correct banks. Please refer to the motherboard documentation for details.
4. Install the SATA RAID controller.
5. Install the hard disk drives and DVD rewriter in the cage. Install the cage in the chassis.
6. Install serial ATA cables for the hard drives and an ATA cable for the DVD-RW. Secure the cables with cable ties.
7. Ensure you have a bootable SATA RAID driver install image to hand.
8. Install the SATA RAID controller drivers.
9. Install the OS, ensuring that the drive is partitioned as described.
10. Set up a fixed-size swap file on the swap partition.
11. Install necessary updates from Windows Update, system tools as per customer requirement.
12. Power down and install the Aculab card or cards, and H.100 Bus cable. Install the chassis' card retainer bracket across the top of the cards.
13. Boot up and cancel any plug-and-play device installation prompts.
14. Install Softdial Contact Center™. Installing Softdial Contact Center™ will do a plug-and-play scan for all Aculab cards.
15. Reboot. Ensure that in Device Manager each Aculab card reports as 3 devices, each listed with serial number.
16. At this point you are ready to configure and commission the system.

3. Large System

3.1 Hardware Specification

Large systems may comprise a single large server with up to 299 agents on T1 or 390 agents on E1, or for higher user counts multiple large slave servers with a separate master server controlling the slaves.

The specification for the single large server and the large slave server are identical.

For a single large server specifications are detailed in §3.1.1.

For a master-slave combination, specifications for the slaves are provided in §3.1.1, and the specification for the master is in §3.1.2

3.1.1 Single Large Server / Large Slave Server

System requirements for a standalone large server or a dialer slave are as follows:

- 6U dual layer rackmount chassis of to accept a 14 or 20-slot PICMG backplane with a minimum of 10 PCI slots. The chassis must provide for straight-through cooling to allow sufficient airflow over the Aculab cards, as well as an array of fans across the whole width of the backplane at the top layer to assist with heat dissipation. The chassis must also have space for full-length cards in all PCI slot positions and must have a card guide rail to keep cards in situ.
- Power supply. Robust power supply with long MTBF. Regardless of overall power output it needs to be able to deliver at least 50 Amperes of current at +5V.
- Backplane. Robust PICMG backplane with a minimum of 10 PCI slots. Key factors in backplane selection must be thickness of baseboard and wiring for power delivery to each slot.
- Motherboard. Trenton Intel 845 Chipset Single Board Computer. For installations of more than 250 users where there is lots of media processing requirement, consider Dual Xeon SBC based on Intel E7501 chipset.
- 2 x 100Mbit NICs, or Gigabit NICs if more than 2 slaves.
- For 845-chipset board, fastest 533MHz bus P4 processor available locally.
- Suitable high-dissipation low profile solid copper heatsinks.
- 2GB of PC2100 (DDR266) memory. 2x1GB dims.
- Suitable SCSI RAID controller to implement stripe set over 5 volumes. Minimum capacity of 80GB plus requirement for call recording. Call recording requirement

can be estimated at 50MB per agent day if all calls recorded. (Note, if not doing call recording, a Serial ATA raid controller as per small system specification, may be an option.)

- Hard drives. Array of 10,000 RPM hot-swap SCSI drives in RAID array.
- A DVD re-writer for software installation and system backup.
- Windows XP Professional with service Pack 2.
- If archiving recordings locally, a DAT or DLT drive with suitable capacity. For multiple servers we recommend copying recordings to a SAN device for later archive.

3.1.2 Master Dialer Server for Multiple Slaves

The master dialer server is a single point of failure and so should be specified accordingly. Best practice is to purchase a pre-configured server from a reputable manufacturer.

- A dual Xeon server based on the Intel E7501 chipset.
- 4GB of registered PC2100 memory.
- Either Serial ATA RAID or SCSI RAID configured as a mirror set - 2 drives each 80GB (ATA) or 72GB (SCSI).
- 2 * 100Mbit NICs, or Gigabit NICs if more than 2 slaves.
- OS: Windows 2000 Server or Windows 2003 Server

A system to the above specification will suffice to manage 8 slaves.

3.2 Build Specification for Large Server

The build process for the large server is quite unlike building a regular PC. Antistatic precautions need to be stringent. An antistatic build mat and wrist earthing straps should be used as a minimum precaution. Ideally assembly should be carried out in a room designed for server assembly with good access and ESD protection measures.

1. Open the chassis cage and remove the top layer with the carrier, taking note of how the carrier reassembles, and any points of obstruction or awkward cable connection.
2. Before assembling anything, draw up cable routes on paper with particular reference to the connections between the upper and lower layers. Ensure that suitable cables of sufficient length are used and that cable positioning does not compromise the ability to remove the top layer carrier for maintenance.

3. Install the hard disk drives, DVD writer (and tape unit if specified) into the chassis lower. Attach and secure cabling according to your cabling plan.

4. On the bench, attach the PICMG backplane to the carrier and then check that the carrier can be inserted and removed cleanly, noting any power connection requirements.

5. On the bench, assemble the SBC, attaching memory, processor and heatsink.

6. Insert the SBC into the PICMG slot on the backplane.

7. Insert the SATA or SCSI RAID controller card onto one of the PCI slots on the backplane.

8. Connect the cables to the SBC while the top layer carrier is on the bench next to the chassis. If you cannot do this, consult Sytel immediately for corrective advice.

9. Ensure you have a bootable SATA/SCSI Controller driver install image to hand.

10. Install the controller drivers.

11. Install the OS, ensuring that the drive is either partitioned into 3 for an SATA mirror, or as one partition if using a SCSI RAID strip set.

12. Install necessary updates from Windows Update and any system tools as per customer requirement.

13. Power down and install the Aculab card or cards, and H.100 Bus cable. Install the chassis' card retainer bracket across the top of the cards.

14. Install Softdial Contact Center™. Installing Softdial Contact Center™ will do a plug-and-play scan for all Aculab cards.

15. Reboot. Ensure that in Device Manager each Aculab card reports as 3 devices, each listed with serial number.

16. At this point you are ready to configure and commission the system.

4. Aculab Card Configurations

The matrix below provides a set of part numbers to use when ordering Aculab telephony cards. Use of media processing affects the requirement for DSP capability. When selecting card configurations you should ascertain the level of media processing requirement to determine which column in the matrix to use:

Level of media processing	**Select Column**
No media processing (Use only ISDN call progress	A
Simple media analysis (SIT tones, ring, busy)	B
Complex media analysis (Answering machine detection)	C
Support for Call recording + any form of media processing	D

The configurator on the next page assumes a trunk/agent ratio of 2:1 to support predictive dialing. N.B. For campaigns where the answered call rate is very low, for example 15-25% of all calls, consult Sytel to check if more trunk capacity is required to the network. Also for systems with significant inbound and preview agent activity, again contact Sytel for guidance on configuration. Aculab configurator for different levels of users is as follows:-

Users	A	B	C	D
15	AC6102 ACS2420	AC6102 GACS2450	AC6102 GACS2450	AC6102 GACS2450
30	AC6102 ACS2410	AC6102 ACS2440	AC6102 ACS2470	AC6102 ACS2470
60	AC6102 ACS2420 ACS2410	AC6102 ACS2420 ACS2470	AC6102 ACS2410 ACS2470	AC6102 ACS2470 ACS2480
90	AC6102 2 x ACS2410	AC6102 ACS2410 ACS2470	AC6102 ACS2440 ACS2470	AC6102 2 x ACS2470 AC6120
120	AC6102 3 x ACS2410	AC6102 ACS2410 ACS2440 ACS2470	AC6102 ACS2410 2 x ACS2470	AC6102 3 x ACS2470
150	AC6102 4 x ACS2410	AC6102 2 x ACS2410 2 x ACS2470	AC6102 ACS2410 ACS2440 2xACS2470	AC6102 4xACS2470
180	AC6102 ACS2420 4 x ACS2410	AC6102 ACS2420 2 x ACS2410 2 x ACS2470	AC6102 ACS2420 ACS2410 3 x ACS2470	AC6102 4 x ACS2470 ACS2480
210	AC6102 5xACS2410	AC6102 2xACS2410 ACS2440 2xACS2470	AC6102 ACS2410 ACS2440 3xACS2470	AC6102 5 x ACS2470