



AltiWare™ OE

Release 4.0

Getting Started Manual

Revised 09/2000 4403-0003-4.0

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Liability & Warranty

Limitation of Liability

Except for personal injury, direct damages to tangible personal property proximately caused by AltiGen products and liability otherwise expressly assumed in a written agreement signed by AltiGen, the liability of AltiGen, its affiliates, suppliers, and authorized resellers for any claims, losses, damages, or expenses from any cause whatsoever (including acts of omission of third parties), regardless of the form of action, whether in contract, tort or otherwise, shall not exceed an amount equal to the lesser of the direct damages proven or the purchase price of the product. In no event shall AltiGen or its affiliates, suppliers, or authorized resellers be liable for incidental, consequential or any other indirect loss or damage (including lost profits or revenues) incurred in connection with the product. This limitation of liability shall survive failure of the exclusive remedy set forth in the limited warranty referred to in this book under “Warranty”.

FCC and Industry Canada Compliance

This section describes the requirements for compliance with Federal Communications (FCC) Rules and Industry Canada CS-03 standard.

Statement

This equipment has been tested and found to be in compliance with the limits for a Class B digital device pursuant to Part 15 and Part 68 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

This Class B digital apparatus meets all requirements of the Canadian interference-causing Equipment Regulations. Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

FCC Requirements

1. The Federal Communications Commission (FCC) has established Rules which permit this device to be directly connected to the telephone network. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin phones.
2. If this device is malfunctioning, it may also be causing harm to the telephone network; this device should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.
3. The telephone company may make changes in its technical operations and procedures; if such changes affect the compatibility or use of this device, the telephone company is required to give adequate notice of the changes. You will be advised of your rights to file a complaint with the FCC.
4. If the telephone company requests information on what equipment is connected to their lines, inform them of:
 - a. The telephone number to which this unit is connected.
 - b. The ringer equivalence number. [0.0B]
 - c. The USOC jack required. [RJ11C]
 - d. The FCC Registration Number. [see label on board]
 - e. Industry Canada (Industrie Canada) Certification Number. [see label on board]

Items (b) and (d) are indicated on the label. The Ringer Equivalence Number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

Service Requirements

In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of users requiring service to report the need for service to Altigen or to one of our authorized agents. Service can be obtained at your Authorized Altigen Dealer.

Equipment Attachment Limitations - Industry Canada

NOTICE: The Canadian Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with the single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to the certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution! Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denote the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Number of all the devices does not exceed 100.

WARNING! Changes or modifications to this unit not expressly approved in writing by AltiGen Communications, Inc. could void the user's authority to operate this equipment.

Port Identification, Facility Interface and Service Order Codes

The following tables list the manufacturer's network interface port designations, Facility Interface Codes (FIC), Ringer Equivalence Number (REN) or Service Codes and the network jacks for the required facilities. The facility interface and service order codes are with reference to the codes specified in Table 5 of Appendix D of FCC Form 730 Application Guide of January 1998.

1. Quantum Network Trunk Interfaces for Loop Start, Ground Start and DID Services

Registration Status	Manufacturer Port Identifier	Facility Interface Code (FIC)	REN	Network Jack
0	ALTI-CD0408UD	02LS2	0.0B	RJ-11 C
0	ALTI-CD0804UD	02LS2	0.0B	RJ-11 C
0	ALTI-CD0408UD	02GS2	0.0B	RJ-11 C
0	ALTI-CD0804UD	02GS2	0.0B	RJ-11 C
0	ALTI-DID0408UD	02RV2-T	0.0B	RJ-11 C

2. Network Digital Trunk Interfaces for Digital Services

Triton T1/PRI

Registration Status	Manufacturer Port Identifier	Facility Interface Code (FIC)	Service Order Code (SOC)	Network Jack
M	ALTI-TTT1 - 1	04DU9-BN	6.0P/AS.2	RJ-48C*
M	ALTI-TTT1 - 1	04DU9-DN	6.0P/AS.2	RJ-48C*
M	ALTI-TTT1 - 1	04DU9-1 KN	6.0P/AS.2	RJ-48C*
M	ALTI-TTT1 - 1	04DU9-1 SN	6.0P/AS.2	RJ-48C*

**The Triton T1/PRI interface connects to the Public Switched Telephone Network through an FCC registered NCTE which specifies the type of network jack to be used.*

Disruption of Network

If the Triton T1/PRI disrupts the telephone network, the telephone company can discontinue your service temporarily. If possible, the telephone company will notify you in advance. If advance notice is not practical, they will notify you as soon as possible. You are also informed of your right to file a complaint with the FCC.

Direct Inward Dialing (DID) Answering Supervision

Customers allowing Triton T1/PRI, Quantum or Triton Analog Station Analog DID to be operated in such a manner as to not provide for proper answer supervision is a violation of Part 68 of the FCC rules.

Proper answer supervision is when:

- a. The AltiServ system returns answer supervision to the PSTN when DID calls are:
 - Answered by the called station.
 - Answered by the attendant.
 - Routed to a recorded announcement that can be administered by the customer.
- b. The AltiServ system returns answering supervision on all DID calls forwarded to the PSTN.

Safety

The following information is included in this publication for the use and safety of installation and maintenance personnel.

Important Safety Instructions

- Read all of the instructions before attempting to operate the equipment and before connecting the power supply.
- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water. Never spill liquid of any kind on this product.
- Never push objects of any kind into this product through module openings or expansion slots, as they may touch dangerous voltage points or short out parts, which could result in the risk of fire or electrical shock.
- Refrain from opening the cabinet as there are high voltage components inside. Refer servicing to qualified service personnel. If you are a qualified service personnel, power down everything before opening.
- Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord or allow the cord to be abused by persons walking on it.
- To protect this equipment from overheating, do not block the slots and openings in the module housings that are provided for ventilation.

Safety with Electricity



DANGER

Do not take chances with your life. Follow these safety guidelines carefully.

High Voltages

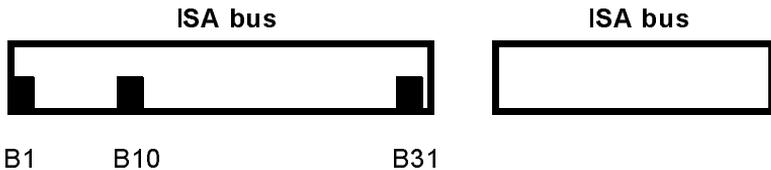
- Observe all safety regulations and read the warnings, cautions, and notes posted on the equipment.

- Find the switch to power off the cabinet. Read the posted instructions.
- Ensure that equipment can not be powered from another source or controlled from a different circuit breaker or disconnecting switch.
- When a procedure requires that you power off the system:
 - Lock the wall box-switch in the off position.
 - Attach a DO NOT OPERATE tag to the wall box-switch.
- ***Never assume*** that the power is turned off. Always check to ensure that a circuit does not have power.
 - Note:** Unit must have ground wire attached if trunks are attached and system is unplugged.
- Do not work alone. Work with another person who knows the locations of the power-off switches, especially if you are working with *exposed* electrical circuits. (See note above.)
- Follow the instructions in the manual carefully, especially when working with circuits that are powered. Disconnect power when instructed to do so in the procedures.
- Disconnect all power before working near power supplies unless otherwise instructed by a maintenance procedure.
- Disconnect all power before installing changes in machine circuits unless otherwise instructed by a maintenance procedure.
- High voltages capable of causing shock are used in this equipment. Be extremely careful when measuring high voltages and when servicing cards, panels, and boards while the system is powered on.
- Do not wear jewelry or other metal objects when working on the equipment.
- When possible, work with one hand so that a circuit is not created.
- Use caution when installing or modifying telephone lines. Never install telephone wiring during an electrical storm.
- Never install a telephone jack where it can get wet unless the jack is specifically designed for wet conditions.
- Never touch un-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

UL Regulatory Safety Requirements

Host Computer

1. Model AltiGen/AltiServ apparatus is approved for connection to Telecommunications Systems specified in these instructions for use subject to the conditions set out in them. Any other usage will INVALIDATE this approval.
2. The host machine shall be “CE” marked, with the internal ISA and PCI slots operating at SELV in accordance with EN60950, 1992, issue 2, +A4.
3. This apparatus MUST be professionally installed.
4. The host machine MUST be hardwired earthed in accordance with EN60950, 1992, issue 2, +A4, 1997, cl. 6.2.1.2 with an earth wire from the host machine earthing terminal to the building earth.
5. The host machine SELV circuit is connected to the protective earthing terminal in accordance with EN60950 cl. 2.5.
6. The host machine ISA bus pins B1, B10 or B31 (edge connectors on CPU mother-board/backplane) MUST be less than 0.1 Ohms to host machine earthing terminal.



7. AltiGen complies with PCI Board specifications Rev. 2.1 (5V 32-bit).
8. The power required by the host machine and the total of all adapter cards installed within the host environment, together with any ancillary apparatus, shall not exceed the power specification of the host machine.
9. It is essential that, when other option cards are introduced which use or generate a hazardous voltage, the minimum creepages and clearances specified in the table below are maintained. A hazardous voltage is one that exceeds 42.4V peak AC or 60V DC. If you have any

doubt, seek advice from a competent engineer before installing other adapters into the host machine.

Clearance (mm)	Creepage (mm)	Voltage used or generated by host or other cards
2.0	2.4 (3.8)	Up to 50 Vrms or Vdc
2.6	3.0 (4.8)	Up to 125 Vrms or Vdc
4.0	5.0 (8.0)	Up to 250 Vrms or Vdc
4.0	6.4 (10.0)	Up to 300 Vrms or Vdc

For a host or other expansion card fitted in the host, using or generating voltages greater than 300V (rms or dc), advice from a competent safety engineer must be obtained before installation of the relevant equipment.

Any other usage will **INVALIDATE** the approval of the apparatus, if as a result, it then ceases to conform to the standards against which approval was granted.

Approved Hardware

1. Host computer, with an earthing terminal, which is “CE” marked to include compliance to LVD and EMC European Directives.
2. Computer chassis will comprise the following as minimum:
 - a. Pentium PC, 5 expansion slots, SVGA, IDE, 1.0 GB, keyboard
 - b. Color monitor, non-interlaced, 1024 x 768
 - c. Mouse, two button
 - d. Memory, at least 128 MB RAM
 - e. CD ROM
 - f. Floppy disk drive
 - g. Modem 28,800 baud, approved by BABT (optional)
3. AltiGen Quantum cards, Rev. D:
 - a. ALTI-CD0804UD
 - b. ALTI-CD0408UD
 - c. ALTI-CD0012UD

- d. ALTI-DID0408UD
- 4. AltiGen Triton cards
 - a. ALTI-TTAS-12
 - b. ALTI-TTIP-4
 - c. ALTI-TTIP-8
 - d. ALTI-TTT1
 - e. ALTI-TTRS-12

Operating Software

Provided by AltiGen: AltiWare OE Rev. 4.0 or above.

Power Fail

In the event of a power fail, the first telephone extension on each card (except for the CD0012UD) is connected directly to the first exchange line, thus permitting access to dial the emergency services. This telephone must be powered from the PSTN or have local battery backup capable of calling the emergency services four hours after the power fail event occurs.

Wiring

All wiring must conform to National Telecommunications Wiring Regulations and the National Electrical Wiring Regulations.

Additional Requirements for Australia

1. **Warning:** For safety reasons, connect only ACA or AUSTEL permitted or certified equipment to the telephone ports (RJ11) of the patch panel or the audio in/out jacks on the AltiServ card.
2. **Warning:** THIS EQUIPMENT MUST ONLY BE INSTALLED AND MAINTAINED BY SERVICE PERSONNEL

Additional Requirements for USA and Canada

1. The interconnecting trunk line cord should be at least size 26AWG.
2. This trunk card must be fitted in host equipment with fire enclosures complying with the flammability requirements of sub-clause UL1950/CSA C22: 1995 4.4.3. In addition, the card must be separated from

internal materials of flammability class or lower by at least 25 mm of air Class V-1 or better. Also, the card must be separated from openings in the top or sides of the enclosure by at least 25 mm of air or by a barrier of flammability Class V-1 or better unless the openings comply with one of the following:

- not exceed 5 mm in any direction, or
 - not exceed 1 mm in width, regardless of length
3. Any holes in the chassis not conforming to the above should be covered with a metal perforated screen, with holes not exceeding 5 mm diameter, fixed internally.

Instructions for Hardwired Earth Connection

1. A supplementary equipment earthing conductor is to be installed between the product or system and earth, that is, in addition to the equipment earthing conductor in the power supply cord.
2. The supplementary equipment earthing conductor may not be smaller in size (8 AWG minimum, recommend 6 AWG) than the unearthed branch-circuit supply conductors. The supplementary equipment earthing conductor is to be connected to the product at the terminal provided, and connected to earth in a manner that will retain the earth connection when the power supply cord is unplugged. The connection to earth of the supplementary earthing conductor shall be in compliance with the appropriate rules for terminating bonding jumpers in Part K of Article 250 the National Electrical Code, ANSI/NFPA 70, and Article 10 of Part I of the Canadian Electrical Code, Part I, C22.1. Termination of the supplementary equipment earthing conductor is permitted to be made to building steel, to a metal electrical raceway system or to any earthed item that is permanently and reliably connected to the electrical service equipment earthed.
3. Bare, covered or insulating earthing conductors are acceptable. A covered or insulating earth conductor must have a continuous outer finish that is either green, or green with one or more yellow stripes.
4. Earthing conductor shall not run through steel conduit.

UL Hardware Preparation

Prepare the hardware as follows ensuring that the relevant manufacturer's installation instructions are complied with. *If you have doubts about any of these, call your supplier.*

1. This apparatus must be professionally installed.
2. Select a "CE" computer chassis according to the Safety Requirements above, ensuring that it has an external marked earth point.
3. The host machine ISA bus pins B1, B10 or B13 MUST be tested to ensure that there is less than 0.1 Ohms to the earthing terminal.
4. The host machine PCI bus pins complies with PCI Board specifications Rev. 2.1 (5V 32-bit).
5. Prepare the chassis, in accordance with the PC manufacturers instructions, to receive the necessary PC cards, ensuring the installation of extension cards does not result in non-conformance to the Safety Requirements above.
6. When installing a system using Altigen's cards, note that the continued compliance to the LVD and EMC EU Directives at the system level is the responsibility of the system supplier.
7. Prepare above cards ensuring all jumpers are set according to the manufacturer's instructions.
8. Attach suitable grounded ESD wrist strap between wrist and earth.
9. Follow the manufacturer's instruction and install above cards into PC.
10. Note: If more than three cards are using the MVIP, ensure that the Quantum or Triton board set as board zero is installed at one end of the MVIP cable and the board at the far end of the MVIP cable has its switch set to terminated (switch closed).
11. Replace PC outer case.
12. Connect a fixed earth from the PC to a suitable premises fixed earthing point. Note that the earth cable must be at least the same gauge as the live wire of the main cord and fixed to the earth terminal and the rear of the PC. (6 AWG recommended, 8 AWG minimum.)
13. Connect cable supplied with Altiserv to the "D-type sub-miniature" (25 pin) connector on the Altiserv card and the connector to the Modular RJ-11 Patch Panel.
14. Connect the building telecommunication wiring to the RJ-11 sockets.
15. Building telecommunication wiring should be installed according to the National Wiring Regulations for Telecommunications.

Warranty

What The Warranty Covers

AltiGen Communications warrants its hardware products to be free from defects in material and workmanship during the warranty period. If a product proves to be defective in material or workmanship during the warranty period, AltiGen Communications will, at its sole option, repair, refund or replace the product with a like product.

How Long is the Warranty Effective

All AltiGen Communications products are warranted for one (1) year for all parts from the date of the first end user purchase.

Who the Warranty Protects

This warranty is valid only for the first end user purchaser.

What the Warranty Does Not Cover

1. Any product on which the serial number has been defaced, modified or removed.
2. Damage, deterioration or malfunction resulting from:
 - a) Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
 - b) Repair or attempted repair by anyone not authorized by AltiGen Communications.
 - c) Any damage of the product due to shipment.
 - d) Removal or installation of the product.
 - e) Causes external to the product, such as electric power fluctuations or failure.
 - f) Use of supplies or parts not meeting AltiGen Communications' specifications.
 - g) Normal wear and tear.
 - h) Any other cause which does not relate to a product defect.

3. Shipping, installation, set-up and removal service charges.

How to Get Service

End user customers should contact your Authorized AltiGen Dealer for service.

Authorized AltiGen Dealers must follow the steps below for service:

1. Take or ship the product (shipment prepaid) to your AltiGen distributor or to AltiGen Communications, Inc.
All materials being returned to AltiGen must have an associated RMA number. RMA numbers are issued by AltiGen Customer Service and can be obtained by calling 1-888-ALTIGEN (258-4436) or faxing an RMA form (See Appendix D in the *System Administration Manual*) to 510-252-9738, attention to Customer Service. AltiGen reserves the right to refuse return of any material that does not have an RMA number. The **RMA number should be clearly marked on the outside of the box** in which the material is being returned. Please see the example below:

Attn.: RMA # 123
AltiGen Communications, Inc.
47427 Fremont Blvd.
Fremont, CA 94538

Upon authorization of return, AltiGen will decide whether the malfunctioning product will be repaired or replaced.

2. To obtain warranty service, you will be required to provide:
 - a) the date and proof of purchase
 - b) serial number of the product
 - c) your name and company name
 - d) your shipping address
 - e) a description of the problem.
3. For additional information contact your AltiGen Dealer or AltiGen Communications, Inc. directly at 1-888-ALTIGEN (258-4436) or via e-mail at service@altigen.com.

Effect of State Law

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on implied warranties and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

Sales Outside the U.S.A.

For AltiGen Communications products sold outside of the U.S.A., contact your AltiGen Communications dealer for warranty information and services.

Liability & Warranty

Preface: About this Manual

This guide describes how to set up and configure the AltiServ system for the first time or for upgrading from a previous version of AltiWare OE.

Target Audience

This guide is designed for the dealers, administrators and technicians that are responsible for installation, configuration, and administration of the AltiServ system.

Using this Manual

This guide contains the following chapters:

- **Chapter 1, “System and Hardware Requirements,”** describes the system and hardware specifications needed, based on the number of trunks and extensions required.
- **Chapter 2, “Software Installation,”** describes software specifications of the AltiServ system.
- **Chapter 3, “Getting Around AltiAdmin,”** describes how to navigate the AltiWare Administrator application used to configure and maintain the AltiServ system.
- **Chapter 4, “Initial Configuration,”** includes short, easy-to-use steps to quickly configure the AltiServ system.
- **Chapter 5, “T1/PRI Configuration,”** describes how to set up the digital T1 or PRI option in AltiWare.
- **Chapter 6, “VoIP Setup,”** describes how to configure and administer the Voice over IP option in AltiWare.

This publication also contains an index and a readers’ comment form.

Related Publications

Related publications include:

- AltiWare OE System Administration Manual
- AltiServ User Guide
- AltiConsole User Guide
- Informal Call Center Manual
- AltiView User Guide
- AltiAgent User Guide
- AltiSupervisor User Guide

CHAPTER 1

System and Hardware Requirements

System Requirements

AltiServ hardware requirements depend on the number of extensions (lines) and trunks your site requires. Refer to Table 2 on page 3 for AltiServ platform selection.

Selecting the AltiServ Platform

In order to maintain your AltiServ system integrity and plan for future site expansion, you should take into consideration the following points before selecting the AltiServ platform:

- Reliability
- Expandability
- System performance

Microsoft Windows 2000 and NT Support

The AltiServ platform can be installed on a Microsoft Windows NT 4.0 (Service Pack 6a or higher) or a Microsoft Windows 2000 operating system. See “AltiWare OE Installation on Windows 2000” on page “Installing AltiWare OE on Windows 2000” on page 14 for more information.

Minimum System Requirements

To accommodate Quantum and Triton telephony boards with AltiWare software, the AltiServ system requires the following minimum system configuration:

- IBM/PC compatible system with adequate number of full-size ISA and PCI slots
- Microsoft Windows NT Server 4.0 with Service Pack 6a (or higher) installed or Microsoft Windows 2000 Server.

You can download Service Pack 6a from the Microsoft web site at <http://www.microsoft.com/ntserver/nts/downloads/recommended/SP6>.

- Microsoft Internet Information Services (ver. 5 or higher for NT, ver. 3 or higher for Windows 2000)—web server software that is supplied with Windows—must be installed prior to installing AltiWare. This is necessary so that AltiReach, the web-based call handling application, can run.
- Channel Service Unit for T1/PRI

Hardware selection may have to be adjusted based on the following variables:

- The number of AltiGen telephony boards required
- The maximum AltiServ extension and trunk traffic anticipated
- The number of simultaneous client software connections.

Table 3, “Individual Board Power Requirements” shows the AltiServ system requirements guidelines depending on the number of AltiGen boards that will be installed.

System Limitations

- A total 10 Triton T1/PRI, VoIP, and Resource boards can be installed in one system.
- Up to 6 Triton VoIP boards can be installed on the same system.
- Up to 4 Triton T1/PRI boards can be installed on the same system. The board ID must be in the range of 0 to 3.
- Up to 2 Triton Resource boards can be used on the same system. The board ID must be in the range of 0 to 15.

Altiserv System Requirement Guidelines

Table 2. System Selection Guidelines

Number of Quantum or Triton Boards per System	CPU Type	Available Memory	Hard Disk Controller	Power Supply	5V Requirement	12V Requirement
1-3	333 MHz	128 MB	IDE/SCSI	Single 300W	15A	6A or better
4-6	333 MHz	256 MB	SCSI	Single 400W or Dual 400W load sharing recommended	20A	16A
7-16	450 MHz	256 MB	SCSI	Dual 400W with load sharing required	25A	20A

Power Requirements

The power requirements are as follows for *each* individual board:

Table 3. Individual Board Power Requirements

Board	5V	12V	Slot Type
Quantum	1.5	1.4A	ISA
Triton Analog Station	0	1A*	PCI
Triton VolP	1.5	0	PCI
Triton T1/PRI	1.5	0	PCI
Triton Resource	1.5	0	PCI

*1A@12V is provided by power connector.

Uninterruptible Power Supply (UPS)

Using a UPS prevents power fluctuations and surges on power sources from utilities. Windows NT files can be corrupted as a result of power failure or improper system shutdown.

Caution! Corrupted files may not be repairable and may require re-installation of Windows NT and AltiWare. To protect your system from surges and power outages, it is strongly recommended that an adequate UPS (providing between 600VA and 1000VA) and power surge protector is used with the system.

Proper Grounding and Loop Current

Proper **grounding** is essential for any PBX system. **This is a simple but very important step and is highly recommended.** Run a wire from the server chassis to earth ground. Don't wait for a problem to arise before taking this step. Make sure this is one of the first things you do before turning the AltiGen system on.

Also, check the **loop current** on incoming trunks before connecting any AltiGen boards. The desired loop current measurement is 25mA-28mA. This is another essential step to ensure proper operation of AltiGen systems. For more information on loop current issues, please refer to the **Tech Support** section of AltiGen's web site at <http://www.altigen.com>.

Operating Environment

Before you set up and use the system, consider the environment in which the system will reside:

- Choose a work surface large enough to accommodate the entire system.
- Use a flat, stable work surface with enough space around it for proper air circulation. For proper heat dissipation, a fan is recommended in front of the AltiGen telephony boards to ensure sufficient air flow. Be sure the fan filter is clean and does not block the air flow.

The following table contains the operating specifications for the AltiGen telephony board.

Table 4. AltiGen Board Operating Environmentals

Description	Specification
Operating Temperature	0° to + 50° C
Storage Temperature	-20° to +70° C
Relative Humidity	10% to 80% non-condensing

Heat Factor

Internal system temperature must not exceed the specified operating temperature. If more than two AltiGen telephony boards are installed in the system, then additional cooling fans are suggested. These fans need to effectively reduce heat and increase air flow to the AltiGen telephony boards to insure system reliability.

Installing a Cooling Fan

If more than two AltiGen telephony boards are installed into the AltiServ system, then an additional cooling fan will be required. This fan needs to effectively reduce heat and increase air flow to the AltiGen telephony boards to insure system dependability and reliability. To install a cooling fan into the AltiServ system, read the instructions included with the fan unit.

AltiGen Board Specifications

AltiGen telephony boards are installed into the AltiServ motherboard expansion slots or can be used individually as a third-party developer application platform. To obtain maximum performance reliability and long-term, fault-free operation, you must maintain power and environmental conditions specified in this section.

Functional Specifications

Quantum Board

The Quantum telephony board has the following functional characteristics:

- MVIP compatible
- 256 Port Non-Blocking Switch Matrix
- Audio Peripheral Input & Output
- Jumper Free Configuration
- On-Board Telephony Power Supply for Quantum D Board
- Automatic Power Failure Transfer
- ISA Bus

Triton Analog Station Board

The Triton Analog Station telephony board has the following functional characteristics:

- MVIP Compatible
- 256 Port Non-Blocking Switch Matrix
- Jumper Free Configuration
- PCI Bus
- 12 analog extensions
- Compliant with ZIAIAIA464

Note: When the board is configured for audio input, the first port cannot be used for an extension.

Triton VoIP Board

The Triton VoIP telephony board has the following functional characteristics:

- MVIP-90 Compatible
- 256 Port Full-Duplex Switch Matrix
- Jumper Free Configuration
- PCI Bus

Triton T1/PRI Board

The Triton T1/PRI telephony board, which supports either T1 or PRI through software configuration, has the following functional characteristics:

- MVIP Compatible
- 256 Port Non-Blocking Switch Matrix
- Jumper Free Configuration
- PCI Bus

Triton Resource Board

The Triton Resource board has the following functional characteristics:

- MVIP Compatible
- Jumper Free Configuration
- 12 ports for silent monitoring and barge-in
- PCI Bus

AltiGen Board Installation

For instructions on how to install Triton and Quantum boards, please refer to the *Quick Installation Guide* which is provided with every AltiGen board package.

AltiGen Board Options

Table 5 lists the available AltiGen telephony board modules. This selection allows you to optimize your system based on the trunk/extension mix required at your site.

Table 5. AltiGen Telephony Board Options

Board	Model Number	Description
Quantum	ALTI-CD0408UD-SPH001	4 trunks and 8 extensions
Quantum	ALTI-CD0804UD-SPH001	8 trunks and 4 extensions
Quantum	ALTI-CD0012UD-SPH001	12 extensions
Quantum	ALTI-DID0408UD-SPH001	4 DID trunks and 8 extensions
Triton	ALTI-TTAS-12	12 extensions (stations)
Triton	ALTI-TTIP-4	4 VoIP trunks or extensions
Triton	ALTI-TTIP-8	8 VoIP trunks or extensions
Triton	ALTI-TTT1	1 T1 or 1 PRI
Triton	ALTI-TTRS	12 ports for supervisor monitoring

Software Licensing

AltiWare OE 4.0 station licenses can be obtained singly or in combination depending on the number of physical extensions or stations. Customers purchase one or more of these packages for the desired capacity of physical extensions.

Table 6. *Software Licensing Options*

Software	Model Number	# of Stations License
OE 4.0	ALTI-OELIC-008	8 stations license
OE 4.0	ALTI-OELIC-016	16 stations license
OE 4.0	ALTI-OELIC-024	24 stations license
OE 4.0	ALTI-OELIC-032	32 stations license
OE 4.0	ALTI-OELIC-064	64 stations license
OE 4.0	ALTI-OELIC-096	96 stations license
OE 4.0	ALTI-OELIC-128	128 stations license

To upgrade the number of station licenses, you must purchase additional licensing from your Authorized AltiGen Dealer. Refer to Chapter 2 - Software Installation for more information on software licensing upgrade installation.

Session Licensing - Client Connections

AltiGen OE 4.0 client software (AltiView 4.0, Center 4.0, WebCall and AltiReach) accesses the AltiWare OE 4.0 server software using IP connections which are counted by the AltiWare server as simultaneous sessions. Even Partner and system integrator applications using AltiGen's ActiveX control take up one session connection for each application connecting to AltiWare via AltiLink+. Consequently, the maximum total number of simultaneous sessions most likely to occur should be accounted for by purchasing this maximum in session licenses. Licenses can be combined to reach the total required; the maximum is 48 sessions.

System and Hardware Requirements

Table 7. Simultaneous Session Licenses

Software	Model Number	# of Stations License
OE 4.0	ALTI-SL004	4 session license
OE 4.0	ALTI-SL008	8 session license
OE 4.0	ALTI-SL016	16 session license
OE 4.0	ALTI-SL024	24 session license
OE 4.0	ALTI-SL032	32 session license
OE 4.0	ALTI-SL048	48 session license

CHAPTER 2

Software Installation

The AltiWare OE software is provided on a CD-ROM and contains the following components or folders:

- **AltiWare OE** - contains the AltiWare Administrator as well as the switching service, SMTP/POP3 server, messaging agent, Exchange integration, AltiBackup that can be installed on any Windows NT Server with Service Pack 6a (or higher) or on Window 2000 Server on the LAN to control the AltiServ system(s).
- **AltiAdmin** - contains the AltiWare Administrator that can be installed on any Windows NT with Service Pack 6a (or higher) or Windows 2000 on the LAN to control the AltiServ system(s).
- **Documentation** - contains the AltiWare OE *Getting Started* and *System Administration Manuals* and the *AltiServ User Guide* in the Adobe Acrobat PDF format.
- **README.TXT** - contains late breaking information about AltiWare OE. **Please be sure to take a moment to read this brief file which contains very important information you need to be aware of before you install AltiWare OE.**

AltiWare as an NT Service

AltiWare components such as the switching, messaging agent, and AltiBackup are NT services that are automatically launched when AltiWare OE is installed and the AltiServ system is restarted. Benefits of AltiWare as an NT service:

- The AltiWare Administrator user interface does not have to be tied to the switching service so that if there is a problem with the user interface, the switching service is not affected.
- **Remote** administration is possible through **AltiAdmin**.



Do not tamper with the startup settings of AltiGen services in the Services applet of the Control Panel. Only the AltiGen Switching Service should be set to Automatic; all other AltiGen services should be set to Manual.

Preparing to Install AltiWare OE

The following is a step-by-step procedure for installing or upgrading the AltiWare OE software from the **AltiWare OE Release 4.0** CD-ROM.

It should take about 15 to 20 minutes to install the AltiWare OE software program. Before you begin installation, however, please note the following:

- **NT Service Pack 6a.** In a Windows NT environment, Service Pack 6a (or higher) is required and must be installed **before** AltiWare OE 4.0 can be installed or upgraded.
- **User Account.** During installation, a user account is created automatically to run AltiWare services. Do **not** delete this account or change its password. The account name is in the form:
(*user name: AltiGen_<servername>*)
- **Third party applications.** AltiWare OE must be installed before any third party applications on a Windows NT with Service Pack 6a (or higher) or Windows 2000 system. Contact your third party application vendor(s) to find out if an upgrade is required for their product to work with the AltiWare OE release you are about to install.
- **Installing over old versions.** If AltiWare 3.5X is installed, there is *no need to uninstall it* before installing AltiWare OE. If, for any reason, you *do* uninstall AltiWare, you must back up and restore all custom prompts. You can do this by copying all files located at `\altiserv\phrases\langcustom\phase0XXX` (where **XXX** is a number from 001 to 999) to your network drive and then copying them back onto the server after installation is complete.

If AltiWare 2.x is installed, first upgrade to 3.5, then upgrade to 4.0.

- **Backup prior to install.** Before upgrading your system from AltiWare Release 2.1, 3.0, or 3.5 you should back up all the configuration information to a floppy or a different location, such as the network drive. (The user can do this by using the backup utility OR copy the contents of `\altiserv\db\` and `\altiserv\Phrases\LangCustom` folders to a backup location.) This backup information is also required when downgrading back to these prior releases.

Firewall Considerations

If you are using a firewall in the AltiWare OE 4.0 environment, here are the network ports used:

Table 3. Network Ports Used by AltiWare OE

Client	Server	TCP	UDP
AltiAdmin ^a	AltiWare DCOM	135	135
AltiConsole	AltiLink	10015	
AltiControl	AltiLink+	10025	
AltiReach	AltiLink	10015	
AltiView/AltiAgent	AltiLink+ VM Service	10025 10028	
Supervisor	AltiLink+ Internal/External CDR Logger	10025 10027	
CDRSearch	AltiLink+ Internal/External CDR Logger	10025 10027	
TAPI Client	TAPI Gateway	10026	
VoIP H.323/H.225 VoIP Message Waiting VoIP H.245 VoIP RTP	VoIP H.323/H.225 VoIP Message Waiting VoIP H.245 VoIP RTP	1720 49151 (Quicknet IP ext only) From 49152 to 49248	 From 49152 to 49248
Web Client	AltiLink+ NetMeeting Chat plus VoIP ports described above	10025 1720	

a. It is recommended that this be run only in an **intranet**.

Installing AltiWare OE on Windows 2000

- AltiWare OE supports the Windows 2000 Server platform. Earlier software releases must be upgraded to OE 3.5A or OE 4.0 to work with the Windows 2000 Server platform.
- If installing AltiWare OE for the first time and wish to use the software with Windows 2000, you must already be running Windows 2000 server prior to the AltiWare software installation.

AltiWare OE - New Installation

Before you begin, have the following information at hand:

- The 20-digit software license key (located on the End User License Agreement).
- The system home area code.
- The extension length.



The extension length, which is from 2 – 7 digits, is the number of digits for all extension numbers. All extensions in the AltiServ configuration must be the same length.

Note that you cannot change the extension length once the first extension is configured, which is something you do later running the AltiWare Setup. To change the extension after extensions are configured requires re-configuring the entire system or deleting all the extensions already configured.

To install AltiWare OE:

1. *Make sure you have prepared for installation as described beginning on page 12.*
2. Login to Windows NT or Windows 2000 as a domain user account which has both local and domain administrator privileges. If your machine is a stand-alone server, you need to login as a local administrator account.
3. Insert the AltiWare OE CD-ROM into the CD-ROM drive.
4. Select and read the Readme.txt file.
5. After reading the Readme.txt file, click on **SETUP.EXE** in the AltiWare OE folder.

6. Follow the instructions on the AltiWare installation wizard to complete the file setup.
7. After installation, you must shut down and reboot the computer in order to activate the installed AltiWare Services.
8. Create the Windows NT or Windows 2000 Emergency Repair Disk. Refer to “Windows Emergency Repair Disk” on page 17.

AltiWare OE - Upgrading

Before you begin, you'll need to have at hand the 20-digit software license key located on the back of the End User License Agreement.

There is no need to uninstall the earlier version of AltiWare software.

However, if you decide to uninstall the previous version, first backup your custom phrases from the `\altiserv\phrases\LangCustom` directory. To uninstall click the **Uninstall** icon in the AltiWare program group. The uninstall does not remove the AltiWare configuration and messages.

Shutting Down the AltiGen Switching Service

Before installing this upgrade on the AltiServ system, please make sure that the AltiAdmin application and the AltiGen Switching Service are not running.

*You can shutdown the AltiGen Switching Service COM Server and the AltiAdmin application at the same time by running AltiAdmin, logging in and selecting **Services** → **Shutdown Switching**.*

Note that stopping the **AltiGen Switching Service COM Server** will automatically stop all the auxiliary services.

These are the Windows 2000 / NT services distributed with AltiWare:

- **AltiGen Switching Service COM Server**
- **AltiGen Messaging Service COM Server**
- **AltiGen SMTP Service COM Server**
- **AltiGen POP3 Service COM Server**
- **AltiGen Exchange Integration Service COM Server**
- **AltiGen Backup/Restore Service**
- **AltiGen Keep Up Service**
- **AltiGen Internal Logger Server**

Option: Shutting Down Switching as a Windows 2000 / NT Service

Optionally, if you're not running AltiAdmin, you can shut down the services using Windows 2000 / NT Services.

1. Do one of the following:
 - On the *Windows 2000* desktop, select **Start** → **Programs** → **Administrative Tools** → **Services**.
 - On the *NT* desktop, Open the **Control Panel** and double-click **Services**.
2. Highlight **AltiGen Switching Service COM Server**.
3. Stop the service.

If the status column is empty, proceed to the next step. If status column says **Started**, double-click the listing to open the Properties dialog box, then click the **Stop** button followed by the **OK** button to close the dialog.

To complete the upgrade

Follow the steps listed under “AltiWare OE - New Installation” on page 14.

Software License Capacity Upgrades

In AltiWare OE, a software license allows you to increase the capacity for the following:

- **Physical and IP extensions** - A Quantum board can provide 4, 8 or 12 extensions (depending on the type of Quantum board) and the Triton Analog Station board provides 12 extensions. You may increase the number of software supported extensions up to the maximum available by entering in the 8, 16, 32, 64, 96 or 128 station licenses. Each license you enter adds to the previous total.

Each IP extension needs a license. For example, if a user has a station in the office, a station at home and a station at the Lake Tahoe Conference House, licenses for three stations are required.

- **Sessions** - AltiWare OE includes a single session license. You may increase the number of concurrent client sessions by 4, 8, 16 or 32 session licenses. Each license you enter adds to the previous total.

In AltiWare OE 4.0, the Center Server license allows you to enable this add-on option for call center features. (For more information on the Informal Call Center Option, refer to the *Informal Call Center Manual* shipped with the option package.)

Capacity Upgrade Procedures

To increase the number of physical extensions, follow these steps:

1. Insert the AltiWare OE CD into the CD drive.
2. Run the **SETUP.EXE** in the AltiWare OE folder to run the setup program.
3. Select the **Upgrade Port License** option and click **OK** to open an AltiWare OE Setup window.
4. Enter the 20-digit software license key located on the **End User License Agreement** shipped with your upgrade package and click **Next**.
5. After the code is validated, the system will confirm that the upgrade was successful and ask if you wish to add additional licenses. You can add other licenses now or by repeating these this set of steps from the beginning at another time.
6. You can verify the new number of extensions when you run AltiAdmin by selecting About **AltiWare...** on the **Help** menu, then clicking the **License Information** button to view a window that displays licenses and session information.

Windows Emergency Repair Disk

After installing AltiWare, you should create the Windows Emergency Repair Disk, even if you have previously created a repair disk. This repair disk is needed to repair any corrupted Windows files.

- To create the disk on the NT, choose **Run** from the Windows NT **Start** button and type **rdisk** at the prompt.
- For Windows 2000, use the **Accessories** → **System Tools** → **Backup** utility program and select **Create an Emergency Repair Disk** from the **Tools** menu.

Installing AltAdmin on Remote Systems

AltAdmin contains the **AltiWare Administrator** application that can be installed on any **Windows NT Server or Workstation 4.0 system with Service Pack 6a** (or higher), or **Windows 2000** and a network connection. *AltAdmin does not support Windows 95 or Windows 98.*



When you install AltAdmin on a machine that is not an Altiserv server, it does not contain the switching, SMTP/POP3 server, messaging agent, AltBackup, Exchange integration services that are included in the full AltWare OE installation described above. Remote AltAdmin *does not utilize* the System Data Management or Shutdown Switching Service functions on the Altiserv system.

AltAdmin provides the ability to manage the Altiserv system from a remote client system on the LAN. If there is no firewall on the LAN where Altiserv resides, AltAdmin can be installed and used to manage Altiserv over the Internet from a remote site as well.

To install AltAdmin on a non-Altiserv PC for the first time,

1. Insert the AltWare CD-ROM into the appropriate drive.
2. Run **SETUP.EXE** from the **AltAdmin** folder.
3. Follow the instructions on the window.
4. To open AltWare Administrator, refer to “Running AltWare Administrator” on page 19.

Running AltiWare Administrator

To run AltiWare Administrator,

1. Choose **Programs** from the Windows NT **Start** button and click on **AltiWare Administrator** in the AltiWare or AltiAdmin folder.
2. If you are opening **AltiAdmin**, enter the server name when prompted. If you are logging into AltiAdmin at a remote site to administer AltiServ over the Internet, enter the **IP address** (e.g. 100.100.100.100) of the AltiServ system when prompted for the server name. Multiple AltiServ systems can be managed at a single location with an AltiAdmin open for each AltiServ system.
3. Login by Selecting the **Services** → **Login** or clicking the **Login** icon—the left-most icon in the Toolbar. The Login Password window prompts you to enter the password and click **OK**. The system default password is “22222”. **You should change the system password as soon as possible to ensure system security**. For more information, refer to “Logging in for the First Time” on page 33.



Once you are logged in, you can configure the AltiServ system. To start system configuration, go to “A Note About Applying Edits to One or Multiple Objects” on page 35.

Shutting Down AltiServ when Changing or Adding Hardware

When you add or change hardware, follow these procedures to back up and shut down the AltiServ system. The best time to do this is during off hours—the system should be idle.

1. Using the AltiAdmin application System Data Management function, backup the AltiServ data, messages, and custom files using the procedures in the *AltiWare System Administration Manual* chapter on “System Data Management.”
2. In AltiAdmin, shutdown the AltiGen Switching Service and exit AltiAdmin, as described in “Shutting Down the AltiGen Switching Service” on page 15.
3. Shut down and power down the Windows 2000 / NT system using the standard Windows shutdown procedure.

Transferring the AltiServ to Another Server Chassis

If you transfer the AltiServ system to another platform—for example, to upgrade or expand your system or for other reasons—you need to backup the database, move the telephony boards, install the AltiWare software, and restore the database to the new platform.

The new platform should have access via a LAN to the system to which you backed up the files from the old platform.

To transfer the system to another platform:

1. Back up the system files, then shut down and unplug the AltiServ system computer, following the “Shutting Down AltiServ when Changing or Adding Hardware” on page 19.
2. Remove the computer cover, following the computer manual instructions.
3. Disconnect the MVIP internal data cable.
4. Label and disconnect the DB-25 to 50 pin Telco cable(s) from the board I/O connectors.
5. Remove the telephony board(s) from the original system.
6. Install the board(s) into the new system.
7. Install the AltiWare OE software as described beginning with “Preparing to Install AltiWare OE” on page 12.
8. Restore the AltiServ system database as follows:
 - a. Run AltiAdmin and select **Services** → **System Data Management** to run the data management utility.
 - b. Click the **Restore** icon to open a dialog that allows you to choose files to restore.
 - c. Make sure all the **Component** check boxes are selected.
 - d. In the **Restore From** drop-down list, select the drive and directory to which you backed up the files in Step 1.
 - e. Click **OK** to start the restore.
 - f. Once the restore is complete, click the **Exit** icon to exit the data manager.
 - g. Shut down and exit the system by selecting **Shutdown Switching** from the **Services** menu.
9. Reboot the system; there may be configuration restores that require reboots to take effect.

AltiWare Uninstall

To back out the upgrade, be sure to stop all AltiWare-related services before uninstallation. To do this, run AltiAdmin, log in, and select **Shutdown Switching** from the **Services** menu.

In the event that the auxiliary services were not stopped, please stop them one at a time using the **Start → Programs → Administrative Tools → Services** applet.

Then launch the Uninstall program by clicking the **Uninstall AltiWare OE** icon in the AltiWare program folder.

Downgrade Procedure

To downgrade, you must have been running the earlier version prior to the 4.0 installation. To download to OE 3.5, you must have been running OE 3.5 prior to the 4.0 installation. You'll also need to remove the new Triton boards and re-install the old ones, since the new boards are designed to run with AltiWare 4.0 or higher.

Downgrading from AltiWare OE 4.0 to OE 3.5 or lower requires that you restore backed up files from the prior release. Before you begin, you should have backed up all the prior release configuration information as described for installation preparation on page 12.

To downgrade, follow these steps.

1. Stop the AltiGen services as described on page 15.
2. Uninstall OE AltiWare 4.0 as described on page 21.
3. If they are installed, uninstall AltiView, AltiConsole, AltiAdmin, and CDR Search, following the manual procedures for those applications.
4. Delete the following components using the **Control Panel → Add/Remove Program**:
 - AltiView VM Service
 - Quantum SP
 - Triton SP
 - Triton Analog SP
 - Triton T1 PRI SP
 - Triton VoIP SP.
5. Remove the “\altiserv” directory and any subdirectories.

Software Installation

6. Shut down Windows NT and power down the computer.
7. Remove Triton Analog Station boards, Triton Resource Boards, and 8-Port Triton IP boards.
8. Put the previously removed older Quantum/Triton boards back into the computer.
9. Reboot the computer.
10. Reinstall Restore OE 3.5A and the 3.5 version of other client/server programs such as AltiView, AltiConsole, AltiAdmin, and CDR Search.
11. Reboot the computer.
12. Login to AltiAdmin to restore AltiWare OE 3.5A database files via *System Data Management*.
13. Reboot the computer to restart and run AltiWare OE 3.5A.

CHAPTER 3

Getting Around AltiAdmin

AltiAdmin: the AltiWare Administrator

This chapter describes how to configure and administer the AltiServ system using the AltiWare Administrator system application software.

AltiWare Administrator, or AltiAdmin, allows you to configure sophisticated switching and messaging functions using windows that guide you through the configuration steps for each feature.

AltiAdmin can be used at the AltiServ system or on any other system on the LAN for remote maintenance. On a remote Windows NT or Windows 2000 client system on the LAN, AltiAdmin allows control of one or more AltiServ systems. System Data Management, and Stop Switching Service cannot be performed over the LAN.

Instructions for installing AltiAdmin are described in “Installing AltiAdmin on Remote Systems” on page 18.

The AltiWare Administrator Main Window

Once you run the AltiWare Administrator, the first window you see is the AltiWare Administrator main window.

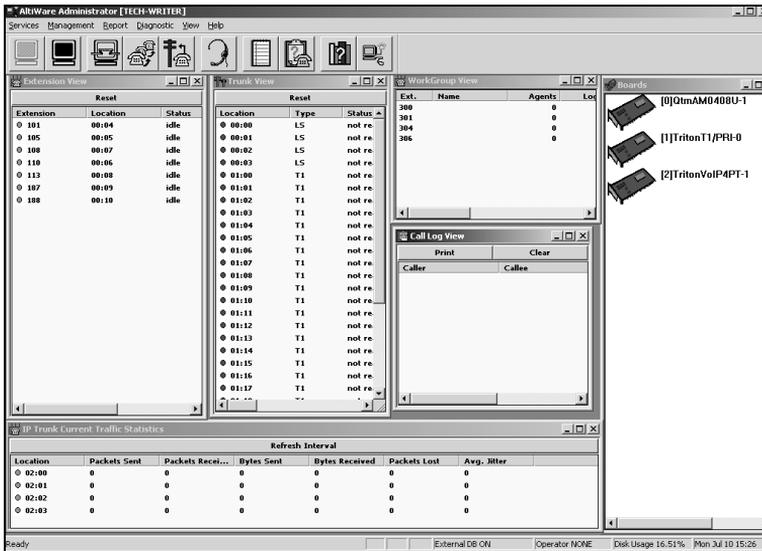


Figure 1. AltiWare Administrator main window

At the top you see the Main Menu bar and below that, the Quick Access Toolbar. At the bottom is a status bar that contains information on the current runtime status.

The main window contains separate child windows, or different views of the system. There are five default views: the boards, extensions, trunks, workgroups and call traffic.

Additionally, if appropriate, you can also run a view of IP Trunk Traffic, which is the 6th window, at the bottom in the above example.

The Main Menu

The Main Menu functions are as follows:

- **Services—application management**
Login and logout, change password, backup and restore functions, and shutdown the switching service.
- **Management—system setup, configuration and maintenance**

Opens windows to work with boards, trunks, extensions, out call routing, Auto Attendant, MVIP clock, audio peripheral, and Quantum Board channels.

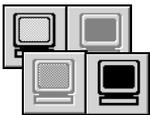
- **Reports—system Status and Traffic Statistics**
System Summary, System Log, and IP Traffic Statistics.
- **Diagnostic—reserved for use by authorized technical personnel**
- **View—show or hide AltAdmin desktop elements**
Show or hide the various windows, the toolbar and status bar.
- **Help—online help and AltWare version and license information**

Quick Access Toolbar



Figure 2. AltAdmin Quick Access Toolbar

The toolbar contains icons representing shortcuts to frequently accessed functions: logging on and off, opening board, trunk, extension, and Auto Attendant configuration windows, displaying the system summary and system log windows, and getting online help. From left to right, the toolbar icons are as follows:



Logout and login. Click the light blue monitor at the left to login. When you do, the monitor grays out and the logout monitor at the right turns black. The monitors provide a clear indication of login status. While you're logged in, anyone at the keyboard can modify system settings.



System Configuration icon: opens the System Configuration window to set system-wide options and parameters, the same function as **Management** → **System Configuration...**



Extension Configuration icon: opens the Extension Configuration window, the same function as **Management** → **Extension Configuration...**



Trunk Configuration icon: opens the Trunk Configuration window, the same function as **Management** → **Trunk Configuration...**



Auto Attendant Select icon: opens the Auto Attendant Select window, the same function as **Management** → **Auto Attendant Select...**



System Summary icon: opens the System Summary window, the same function as **Report** → **System Summary...**



System Log icon: opens the System Log window, the same function as **Report** → **System Log...**



System Help icon: opens the on-line help system main window, the same function as **Help** → **Help...**



About icon: opens the About AltiWare window which displays license and file information as well as version information, the same function as **Help** → **About AltiWare...**

Status Bar

The information at the bottom of the window in the **Status Bar** displays informational and status messages such as name of the operator, disk usage status, status of external logging, current time, and other data.

The View Windows

As noted in the discussion on page 24, the AltiAdmin main window hosts a number of child windows, which are called *view* windows in AltiWare because they provide various views into the internal system setup and active status.

Boards View Window

The graphic below is an example of a **Boards** window. This window displays the AltiServ Quantum or Triton boards hardware status. It displays the card location in the ISA or PCI slots and board model numbers.

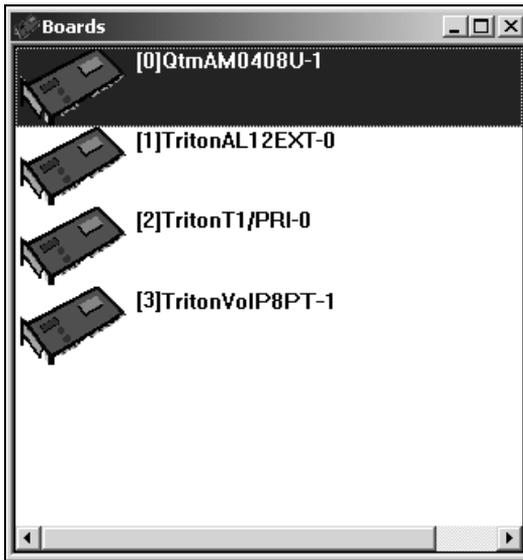
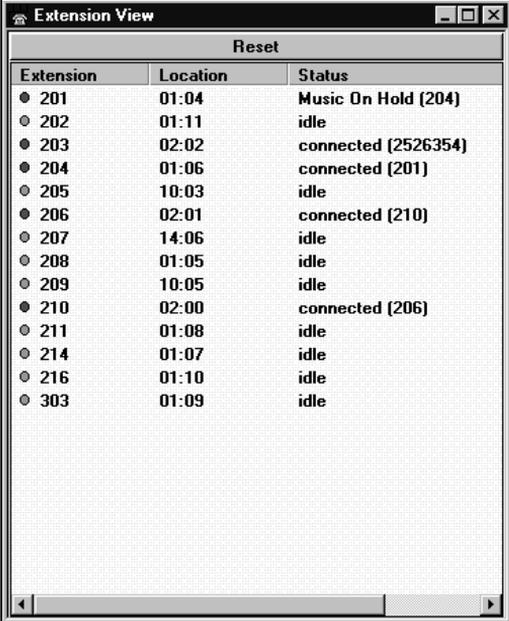


Figure 3. Boards window

Each board is represented by a board icon, followed by the logical ID ([0], the sequential location of the board), card model number (name of the board) and physical ID (the ID set using the dial on the faceplate of the board). For example, QtmAM0408U-1 is a Quantum board with four (4) trunk ports and eight (8) extension ports.

Extension View Window

Here's an example of an **Extension View** window, which displays the status of all assigned extensions.



The screenshot shows a window titled "Extension View" with a "Reset" button at the top. Below the button is a table with three columns: "Extension", "Location", and "Status". Each row in the table starts with a radio button. The status of each extension is indicated by the text in the "Status" column.

Extension	Location	Status
<input type="radio"/> 201	01:04	Music On Hold (204)
<input type="radio"/> 202	01:11	idle
<input type="radio"/> 203	02:02	connected (2526354)
<input type="radio"/> 204	01:06	connected (201)
<input type="radio"/> 205	10:03	idle
<input type="radio"/> 206	02:01	connected (210)
<input type="radio"/> 207	14:06	idle
<input type="radio"/> 208	01:05	idle
<input type="radio"/> 209	10:05	idle
<input type="radio"/> 210	02:00	connected (206)
<input type="radio"/> 211	01:08	idle
<input type="radio"/> 214	01:07	idle
<input type="radio"/> 216	01:10	idle
<input type="radio"/> 303	01:09	idle

Figure 4. Extension View window

The radio button to the left of each extension number is green when the extension is idle, and red when the extension is *not ready* or *in use*. The location number (i.e. 01:04) identifies the card ID and port (channel) number on the board. For example, in location 01:04, the card ID is 1 and the port number is 4.

You can double click any extension number to open the Extension Configuration window for the selected extension.

The **Reset** button resets the selected extension to the idle status. When you click the **Reset** button, a small dialog box opens, asking if you want to continue with the reset and displaying the selected extension number and the name of the person assigned to the extension.

You can click the Reset button without selecting an extension, and then type in the extension number for the extension to reset.

Trunk View Window

Here's an example of the **Trunk View** window, which displays the status of all assigned trunks.

Reset		
Location	Type	Status
<input type="radio"/> 08:00	LS	idle
<input type="radio"/> 08:01	LS	not ready
<input type="radio"/> 08:02	LS	not ready
<input type="radio"/> 08:03	LS	not ready
<input type="radio"/> 09:00	DID	connected (1001)
<input type="radio"/> 09:01	DID	connected (1003)
<input type="radio"/> 09:02	DID	connected (1005)
<input type="radio"/> 09:03	DID	connected (1007)
<input type="radio"/> 10:00	T1	idle
<input type="radio"/> 10:01	T1	idle
<input type="radio"/> 10:02	T1	idle
<input type="radio"/> 10:03	T1	idle
<input type="radio"/> 10:04	T1	idle
<input type="radio"/> 10:05	T1	idle
<input type="radio"/> 10:06	T1	idle
<input type="radio"/> 10:07	T1	idle
<input type="radio"/> 10:08	T1	idle
<input type="radio"/> 10:09	T1	idle
<input type="radio"/> 10:10	T1	idle
<input type="radio"/> 10:11	T1	idle
<input type="radio"/> 10:12	T1	idle
<input type="radio"/> 10:13	T1	idle

Figure 5. Trunk View Window

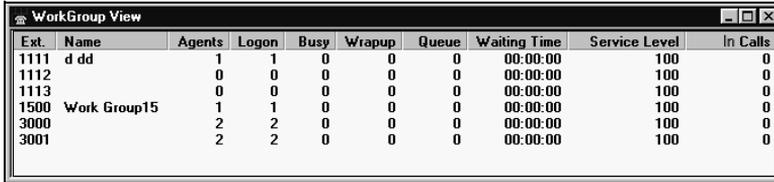
The radio button to the left of each trunk location is green when the trunk is idle, and red when the extension is *not ready* or *in use*. The location format is *slot:channel*—for example, channel 3 on the board in slot 9 is location 09:03.

You can double click any trunk location to open the Trunk Configuration window for the selected trunk.

The **Reset** button resets the selected trunk(s) to the idle status. You'll be asked to confirm the reset and a status message will tell you if the reset was successful. You can select and reset multiple trunks.

WorkGroup View Window

Here's an example of the **WorkGroup View** window, displaying data and statistics for workgroups:



Ext.	Name	Agents	Logon	Busy	Wrapup	Queue	Waiting Time	Service Level	In Calls
1111	d dd	1	1	0	0	0	00:00:00	100	0
1112		0	0	0	0	0	00:00:00	100	0
1113		0	0	0	0	0	00:00:00	100	0
1500	Work Group15	1	1	0	0	0	00:00:00	100	0
3000		2	2	0	0	0	00:00:00	100	0
3001		2	2	0	0	0	00:00:00	100	0

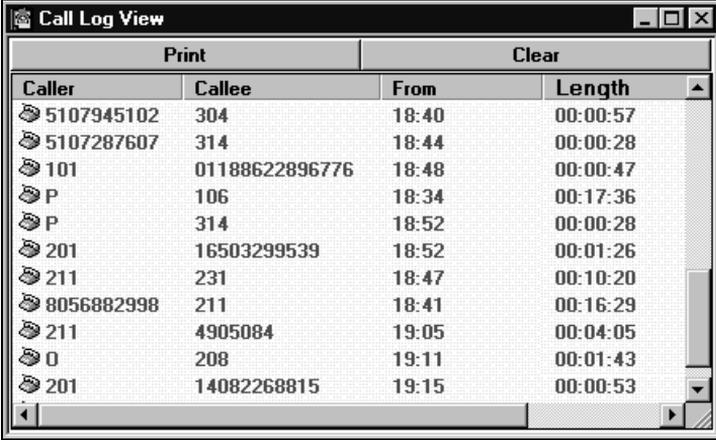
Figure 6. *WorkGroup View window*

This window displays the following data:

- **Extension** - the workgroup pilot extension number
- **Name** - the workgroup name
- **Agents** -the number of agents assigned to the workgroup
- **Logon** - the number of agents logged into the workgroup
- **Busy** - the number of agents who are currently on the phone, or who are unavailable with the Do Not Disturb or other status.
- **Wrapup** - the number of agents who are in wrapup mode
- **Queue** - the number of calls waiting to be answered
- **Waiting Time** - the average waiting period before incoming calls are answered
- **Service Level** - displays the percentage of calls being answered within an acceptable period of time
- **In Calls** - displays the number of incoming calls to each workgroup.

Call Log View Window

Here's an example of the **Call Log View** window, which displays the line and trunk traffic history.



Print		Clear	
Caller	Callee	From	Length
5107945102	304	18:40	00:00:57
5107287607	314	18:44	00:00:28
101	01188622896776	18:48	00:00:47
P	106	18:34	00:17:36
P	314	18:52	00:00:28
201	16503299539	18:52	00:01:26
211	231	18:47	00:10:20
8056882998	211	18:41	00:16:29
211	4905084	19:05	00:04:05
0	208	19:11	00:01:43
201	14082268815	19:15	00:00:53

Figure 7. Call Log View window

The window displays, for the last 30 calls, the caller line or number, the callee, the starting time in 24 hour format and the length of the call.

You can select calls and click the **Print button** to print the selected log entries for the call.

You can click the **Clear** button to clear the window of all data.

IP Trunk Current Traffic Statistics Window

Here's an example of the **IP Trunk Current Traffic Statistics** window.

Refresh Interval						
Location	Packets Sent	Packets Re...	Bytes Sent	Bytes Recei...	Packets Lost	Avg. Jitter
⊙ 12:00	0	0	0	0	0	0
⊙ 12:01	0	0	0	0	0	0

Figure 8. *IP Trunk Current Traffic Statistics window*

The information you see, which is for currently active calls, is as follows. The packet and byte data that follows is for *data sent or received from other AltiServ systems over the public or private IP network*:

- **Location** - the Triton VoIP *board ID:channel ID*
- **Packets Sent** - the number of voice packets sent
- **Packets Received** - the number of voice packets received
- **Bytes Sent** - the total size (in bytes) of all voice packets sent
- **Bytes Received** - the total size (in bytes) of all voice packets received
- **Packets Lost** - the number of voice packets that have been lost due to prolonged delays, network congestion or routing failure.
- **Average Jitter** - displays the average length of delay per voice packet in milliseconds. This number can be used to measure the quality of service on the network that connects the source and destination sites. Under 100 milliseconds is good, while a higher figure indicates a longer than average delay.

Setting the Refresh Interval

The **IP Trunk Current Traffic Statistics** window is updated according to the **Refresh Interval** configuration. By default, the **Refresh Interval** is set at refresh the data in the window every 5 seconds. To change the refresh interval, click the **Refresh Interval** button and use the slide rule to set the time to an interval to a number of seconds up to one minute. Each tick on the rule represents 5 seconds. To set the time to 0 is to *turn off refreshing the data*.

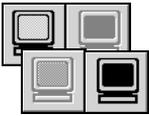
Logging in for the First Time

To access AltiWare functions to configure and administer the AltiServ system, you must first log in as an administrator. The first time you log in, use the system default password, “22222”.



To ensure system security, change the system password as soon as possible. See “Changing the Password” below.

Logging In and Out



To log in and use the AltiAdmin functions, click the **Login** icon (the left-most icon in the toolbar) or select **Login...** on the **Services** menu. You’ll be prompted to enter the password and click **OK**.

To log out, click the **Logout** icon (second icon from the left of the toolbar), or select **Logout** from the **Services** menu.

Logout option in the **Services** menu allows the system administrator to logout of the system. You should always log out after you have completed the administrative or configuration tasks. This will prevent unauthorized persons from accessing the AltiWare configuration functions. AltiWare telephony functions continue to run in the background on the AltiServ.

Changing the Password

Change the password frequently to prevent unauthorized access to the system. You can change the password only if you’re already logged in. Select **Change Password** from the **Services** menu to open a Change Password dialog box. You’ll be prompted type in and verify the new password and then click **OK**.

Stop the AltiGen Switching Service

Normally, when you exit AltiAdmin, the AltiGen services that provide the various telephony and data services remain active—they are needed to run the system, of course. If you need to shut the entire system down, select the **Stop Switching Service** option from the **Services** menu. This stops the AltiWare system services, including the AltiAdmin application itself. When you re-open AltiAdmin, the switches services are reactivated.

This option is available when you are logged in at the AltiServ system computer; it is *not* available from a remote AltiAdmin client.

Initial Configuration

After installing AltiServ and AltiAdmin, the next step in getting started, is to set up an initial configuration for the system—a minimum configuration needed to run the system. You need to configure certain parameters for the System, Trunks, Extensions, and Auto Attendant to bring the AltiServ to a fully functional level of operation.



The detailed AltiWare configuration is the subject of the *AltiWare System Administration Guide*. This manual covers initial configuration and tips for quick configuration tips.

A Note About Applying Edits to One or Multiple Objects

Many AltiAdmin configuration windows—especially extension and trunk—allow you apply changes to a particular object (trunk, extension, workgroup, etc.) (**Apply**), or to select many objects to which to apply the changes (**Apply To...**).

Generally, the way you work with extensions or trunks is to select the trunk or extension in the General tab window, then click the other tabs to open the other windows to configure other options for the selected trunk or extension. The selected trunk or extension number appears in the title bar for each window.

When you click the **Apply To...** button, you pop up a list of all extensions or trunk to which the change could apply. By default, all the extensions or trunks are selected. You then de-select the ones you don't want, or de-select all and select the ones you want.

The **Apply To...** button is disabled unless there is a change that can be applied to multiple extensions or trunks, and when you use it to apply changes to multiple objects, it works on only those changed attributes that can be applied.

For example, if you use **Apply To...** on the Extension General window after you changed the person's name, you do not re-assign the same name to others, because the name is not an attribute on which you can use **Apply to...** multiple extensions.

Extension and Workgroup Configuration

While there is no required order for initial setup, the order presented here is recommended for efficiency. For example, if you set up extensions and workgroups first, you'll already have these settings available to use in subsequent setup such as assigning the operator extension in System Configuration or making in-call assignments for trunks.

1. Note the discussion about editing extension options on page 35. Then, in the AltiWare Administrator, select **Management** → **Extension Configuration**... and follow these steps: Add the extension and set the following extension attributes on the **General** tab window:
 - **Type** (physical, virtual or workgroup)
 - **First Name** and **Last Name** for the extension user
 - **Enable Dial-By-Name** - this field is used to include the extension in the Dial-By-Name or Directory Service. If you select this option, instruct users to record their name in the Personal Options of AltiMail to be included in these services.
2. If needed, assign extensions to workgroups in the **Workgroup** window.
Also, if you want to set up custom audio prompts workgroups, use this page to do that, after you have set up the Auto Attendant and/or audio peripherals.
3. Configure the **Outcall Restrictions** and **Other Call Restrictions** on the **Restriction** tab window.
4. In the **Mailbox Setting** window, set the user's mailbox **Capacity**.
5. Set the **No Answer** and **Busy Call Handling** options in the **Answering** tab window.
6. Click **OK**.

See the Extension Configuration chapter of the *System Administration Manual* for more detailed explanation.

System Configuration

In the AltiWare Administrator, select **Management** → **System Configuration...** and follow these steps:

1. In the **General** tab window, set the **Manager extension, Operator extension or workgroup, System Home Area Code, and Country.**
2. Assign First Digit functions on the **Number Plan** tab window. If you're using an out call routing scheme, assign at least one digit—normally 8—to **Route Access.**
3. Indicate your hours of business on the **Business Hours** tab window.
4. Set system-wide call restrictions in the **Call Restriction** tab window.
5. Click **OK** when you're done

See the System Configuration chapter of the *System Administration Manual* for a more detailed explanation of the functions described here.

Auto Attendant Configuration

Plan the basics of the Auto Attendant structure—what options should be made available to the caller at each menu level, what types of prompts are needed and their prompt numbers, and so forth.

In the AltiWare Administrator, select **Management** → **Auto Attendant Select...** and follow these steps for each prompt:

1. Select the menu item ID and click **Edit.** Choose an action and prompt for the item. The default prompt, **0001,** is a generic greeting that can be used. If you wish to record a customized greeting, refer to the *Phrase Management* chapter of the *System Administration Manual.*
2. Indicate the **Action** that the Auto Attendant should take when the caller selects the particular digit on the keypad.
3. Click **OK.**

If you want to use professionally recorded announcements, see the discussion on page 40. For a more detailed explanation of the Auto Attendant, see chapter on that topic in the *System Administration Manual.*

Audio Peripheral Configuration

While the Auto Attendant provides the menus, the audio Peripheral can provide music-on-hold, starting prompts and update prompts for callers who are on hold. In order to use music-on-hold, a Quantum or Triton Analog Station board must have the audio Peripheral equipment attached.

In the AltiWare Administrator, select **Management** → **Auto Peripheral...** Select the board to which the audio peripheral equipment is attached, and select the initial and update prompts the users will hear when on hold.

Trunk Configuration

Note the discussion about editing trunk options on page 35. Then, in the AltiWare Administrator, select **Management** → **Trunk Configuration....** and follow these steps:

1. Set up trunk attributes on the **General** tab window.
2. Indicate incoming call routing options on the **In Call Route** tab window.
3. Click OK.

See the Trunk Configuration chapter of the *System Administration Manual* for a more detailed explanation.

Out Call Routing

To define and set out call routes assign trunks to those routes for local routes, long distance, international, and 911 calls: in the AltiWare Administrator, select **Management** → **Out Call Routing Configuration....** and follow these steps:

1. Create the route definitions and make trunk assignments to each definition in the **Route Definition** window.
2. Assign the routes you have defined to use for local, long distance, international, and 911 calls in the **Default Routes** window.
If you use out call routing for 911, make sure that the default 911 route is configured to the route that can accept 911 calling capability.
3. If you need to set up or restrict routes to specific prefixes or dialing patterns, use the Dialing Pattern window to create the setup.

To use out call routing, you must set up an access digit in the System Configuration Numbering Plan, as noted under “System Configuration” on page 37.

See the Out Call Routing chapter of the *System Administration Manual* for a more detailed explanation.

Setting Up DID/DNIS

To setup DNIS (Dialed Number Identification Service) or DID (Direct Inward Dialing), follow the steps below:

1. Subscribe to DNIS/DID service and obtain the DNIS/DID telephone numbers for each DNIS/DID user from your local telephone company. Find out how many digits the telephone company will pass through (usually 3 or 4 digits).
2. Install the DNIS/DID Quantum telephony board(s) or the Triton T1/PRI board(s) with E&M wink start signaling. Follow the step-by-step instructions in the **Quick Installation Guide** that is provided with the Altigen board.
3. Assign a DID number to each DID user and enter it into the **DID Number** field in the Personal Information group box on the General tab window of Extension Configuration. **It is not necessary to match the DID number with the extension number. It is highly recommended that the user enter the full 10 digit DNIS/DID number into this field.** This number should correspond to the information provided to the 911 service provider. This will guarantee that the system will send the correct number as the Caller ID on PRI lines. If fewer than 10 digits are entered, the system will send the trunk’s *configured phone number* as the Caller ID. (If the trunk number is not configured, the system main number is sent as the Caller ID.) Refer to the Extension Configuration chapter of the *System Administration Manual* for more information.
4. Configure the **Incoming Call Routing** tab window of **Trunk Configuration** for each DNIS/DID trunk. Normally, the call goes directly to the matching extension number. The system carries out what is configured here only when it is unable to match a DNIS/DID number to an extension. Refer to the Extension Configuration chapter of the *System Administration Manual* for more information.
5. Have the DNIS/DID service activated by the local exchange carrier. If your local carrier provides ANI/DNIS caller ID, this information will also be displayed.

See the System Configuration chapter of the *System Administration Manual* for a more detailed explanation of DNIS setup.

Using Professionally Recorded Greetings

Professionally recorded greetings can be used with the Altiserv. Altigen highly recommends using the Worldly Voices (800-2VOICES) recording studio.

1. Submit your prompt script and prompt number(s) between 0299 to 0999 to the recording studio. Remember that prompts numbered 0001 and 0291 through 0297 are provided by Altigen for your convenience. For a script of these phrases, refer to the Phrase Management section in the Auto Attendant chapter of the *System Administration Manual*.
2. Once you receive the prompts in the Altiserv format, place them in the **altiserv\phrases\LangCustom** directory on the Altiserv.

Your prompts are ready to be used in Auto Attendant or Workgroup setup.

CHAPTER 5

T1/PRI Configuration

This chapter defines the following:

- T1 and PRI option for AltiWare OE
- the Triton T1/PRI board
- T1 service parameters
- CSU/DSU requirements
- PRI service parameters
- Troubleshooting

For information on how to configure the Triton T1/PRI board and trunks, please refer to Board Configuration and Trunk Configuration chapters of the *System Administration Manual*.

T1/PRI for AltiWare OE

AltiWare OE 3.5 and higher includes the option for digital T1 or PRI (Primary Rate Interface) functionality. Through AltiAdmin, the Triton T1/PRI board can be configured for either T1 or PRI.

Both T1 and PRI carry 24 pulse code modulation (PCM) signals using time-division multiplexing (TDM) at an overall rate of 1.544 Mbps. Voice T1 provides twenty-four 64K channels with robbed bit signaling. PRI provides twenty-three 64K channels, using one 64K channel for D channel messaging.

Triton T1/PRI Board

The Triton T1/PRI board is used to provide voice processing resources for AltiWare OE, similar to the way Quantum telephony boards are used for analog trunks and extension lines. AltiWare OE uses DSP engines residing on the Triton T1/PRI board to perform the voice processing functions needed for either T1 or PRI service. Quantum and Triton boards are connected via MVIP connectors.

For information on how to install Triton T1/PRI boards, please refer to the *Triton Board Quick Installation Guide*, which is provided with every board package.

Service Parameters for T1

To subscribe to T1 service, certain parameters are required to establish service. The information provided below identifies the recommended and supported parameters for T1 service.

T1 Service Request Information

When ordering T1 service, provide the following service request information:

Equipment Information

Product Manufacturer - AltiGen Communications, Inc.

Product Name - AltiServ PBX Phone System

CSU/DSU - ADTRAN T1 ACE (recommended) or other CSU/DSU

Technical Information for T1 with Voice

Signaling Protocol:

- E&M Wink Start (recommended)
- E&M Immediate Start
- Ground Start
- Loop Start (not recommended)

Trunk Type:

- DID
- 2-Way DID (recommended)
- DOD

Framing:

- Super Frame (SF)/D4
- Extended Super Frame (ESF) (recommended)

Line Coding:

- Alternate Mark Inversion (AMI)
- B8ZS (recommended)

DNIS, Caller ID - DTMF (Dual Tone Multi-Frequency)

Physical Termination - RJ-48X or RJ-48C

Wire: 4 wires

800 Service: you decide

Termination Impedance - 100 ohms

Type of Registered Services Provided

BN 1.544 Mbps SF without power

DN 1.544 Mbps SF B8ZS without power

1KN 1.544 Mbps ANSI ESF without power

1SN 1.544 Mbps ANSI ESK, B8ZS without power (recommended)

Service Order Code

SOC 6.0P AS.2

T1 Channel Assignment

Trunk Type: In, Out, or 2-Way (recommended)

Channels Assigned: 24 (Enter partial channels if you wish to subscribe to both voice and data service.)

Hunting: Most Idle, Least Idle, Ascend, Descend

DNIS Digits/Signal: 3/DTMF (can be 3 to 10 digits)

Caller ID Signal: DTMF, if available (Not every service provider provides Caller ID over T1 lines.)

CSU/DSU Requirements

The CSU (channel service unit) is a device used to connect a digital trunk line coming in from the phone company to the PBX. A CSU can terminate signals, repeat signals and respond to loopback commands sent from the central office.

Service Parameters for PRI

To subscribe to PRI service, certain parameters are required to establish service. The information provided below identifies the recommended and supported parameters for PRI service.

PRI Service Request Information

When ordering PRI service, provide the following service request information:

Equipment Information

Product Manufacturer - AltiGen Communications, Inc.

Product Name - AltiServ PBX Phone System

CSU/DSU - ADTRAN T1 ACE (recommended) or other CSU/DSU

Technical Information for PRI with Voice

Switch Type:

- 5ESS (recommended)
- DMS (recommended)
- NI2 (recommended)
- 4ESS
- MEGACOMM

Framing:

- Super Frame (SF)/D4
- Extended Super Frame (ESF) (recommended)

Line Coding:

- Alternate Mark Inversion (AMI)
- B8ZS (recommended)

Physical Termination - RJ-48X or RJ-48C

Wire: 4 wires

PRI Channel Assignment

D Channels Assignment: 24th channel (channel ID 23)

Note: Altiserv can configure any channel in a PRI span to be the D channel. The default setting is the last channel. Every span should select a D channel within the span. OE 3.5A (and higher) does not support shared D channel (NFAS) or back up D channel.

Hunting: Most Idle, Least Idle, Ascend, Descend

DNIS Digits: can be 3 to 10 digits

CSU/DSU Requirements

The CSU (channel service unit) is a device used to connect a digital trunk line coming in from the phone company to the PBX. A CSU can terminate signals, repeat signals and respond to loopback commands sent from the central office.

Troubleshooting - Common Symptoms

The most common problems when installing T1 or PRI services:

1. The service provider mis-configures your T1/PRI service or terminates your service improperly.
2. T1 is installed but not turned on because there is no termination device for a period of time.
3. T1 is turned on but channel is not in service.

AltAdmin provides basic troubleshooting information in the T1 Span Configuration window, as shown in Figure 9. (For a detailed explanation of this window, refer to “Board Configuration” in Chapter 3 of the *System Administration Manual*.)

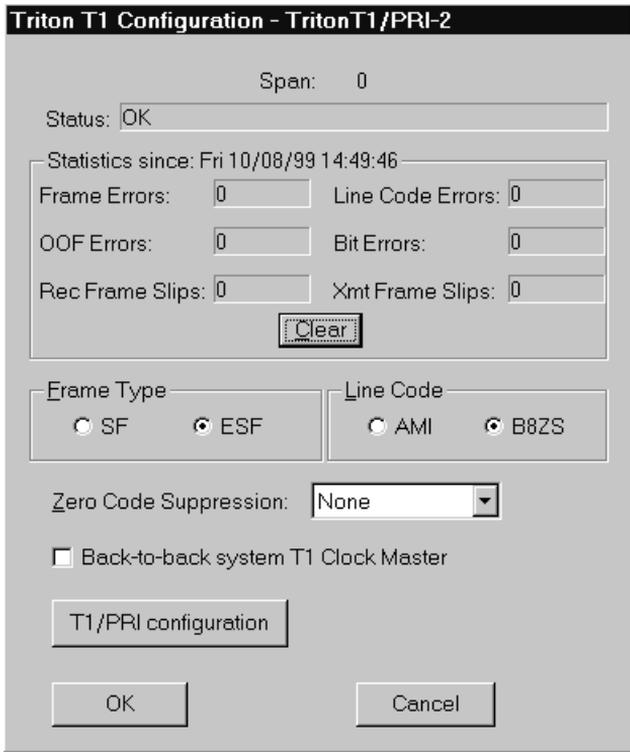


Figure 9. Triton T1 Configuration window

Several diagnostic tools are available that can help troubleshoot these situations, such as a T1 watcher (“T-Berd”) or a multimeter. For more information, check the Communication Technology Corp. web site at www.commtech.com.

CHAPTER 6

VoIP Setup

If you want to include Voice over IP in your initial configuration, the information in this chapter provides the information you need:

- Voice over IP option for OE
- the Triton VoIP board
- Configuration guidelines
- Initial setup
- Troubleshooting

For information on how to configure the Triton VoIP board and trunks, please refer to Board Configuration and Trunk Configuration chapters of the *System Administration Manual*.

Voice over IP for AltiWare OE

AltiWare OE includes the option for Voice over IP (VoIP) functionality, which in previous releases required the installation of AltiWare IP software.

VoIP for AltiWare OE runs on an H.323 platform that allows voice calls to be made through an IP network. It includes an integrated VoIP gateway to convert voice calls into IP packets and transmit them through the IP network. It also has the capability of networking multiple AltiServes into a virtual PBX network. This enables calls to be made through the IP network which allows for significant savings in toll charges.

Triton VoIP Board

The Triton VoIP board is used to provide voice processing resources for AltiWare OE, similar to the way Quantum telephony boards are used for analog trunks and extension lines. Unlike the Quantum telephony boards, however, only IP trunks are provided on the Triton VoIP board. AltiWare VoIP uses DSP engines residing on the Triton VoIP board to perform the voice processing functions needed for H.323 devices. Quantum and Triton boards are connected via MVIP connectors.

Features

The following features are automatically enabled during AltiWare OE installation.

PCI Plug and Play

Triton VoIP boards fit into standard PCI slots. Once installed, it is recognized by AltiWare OE and appears on the **Boards** window of AltiWare Administrator.

Device Driver

A kernel mode device driver is implemented for the Triton VoIP board. The device driver provides access to resources on the Triton VoIP board to applications.

Port Specifications

The Triton VoIP board provides four (4) IP trunks, up to six (6) boards per system (48 ports maximum).

Network Configuration Guidelines for VoIP

Real-time applications such as voice communications require a networking environment that meets certain requirements to deliver and maintain good voice quality. The following network configuration guidelines are highly recommended when using AltiWare's VoIP features.

ISP/Intranet Quality of Service (QoS)

- If you subscribe to the public IP network or use your own Intranet, make sure the maximum network delay is less than 150 milliseconds.
- Also, the typical packet loss rate should be less than 5%.

WAN Bandwidth

- If you are running G.723.1 compression, you should reserve 17 kbps WAN link bandwidth for each channel.
- You should reserve a minimum of 75 kbps WAN link bandwidth for each IP G.711 channel.

- When a small data application (e.g. one FTP transfer session) is running across the same WAN as AltiWare IP, make sure bandwidth is reserved for data traffic. An example would be, if you have 64 kbps WAN link, you can run one G.723.1 session concurrently with one FTP file transfer session, provided that the router fragments each TCP packet to 500 bytes.
- The Jitter Buffer should be adjusted according to the bandwidth allocated to data traffic. For example, a long Ethernet packet (approximately 1500 bytes) traversing through a WAN which is allocated with 256 kbps of data traffic bandwidth will take about 50 milliseconds. The Jitter Buffer value should be set to this WAN link transmission delay plus the typical network jitter delay. Refer to VoIP Trunk Configuration section in Chapter 4 of the *System Administration Manual* for more information on how to configure the Jitter Buffer.
- If you have heavier data applications running concurrently, the bandwidth reserved for data traffic should be increased.
- If your router supports multilink or TCP fragmentation, configure your WAN router to use smaller packet sizes, e.g. 500 bytes.

WAN Router Configuration

The router which connects your LAN and the WAN should support priority queuing.

- Configure the router so that the IP/UDP packets being sent to and from an IP station have higher priority than the packets generated by other stations on the same network. Please consult your router manufacturer for more information on setting up this configuration.

Firewall Configuration

Please note the following, very **important** guidelines when working with a firewall on your network:

- If a firewall is used to protect your network access security, reconfigure the firewall to open up the following TCP and UDP ports to the IP system's IP address:
 1. - 49152-49159 (1 board)
- 49152 - (49151 + # of board + *8) (more than 1 board)
 2. TCP Port 1720

This allows IP's voice and H.323 packets to pass through the firewall freely. If the firewall supports H.323 protocol, configure the firewall using H.323 instead of opening up the specific ports.

- Ensure that the rules to permit IP's H.323 traffic are at the beginning of your access filter list. This will minimize the delay of latency-sensitive voice packets. This is **ESPECIALLY** important with long access lists and/or slow routers.

Network Using NAT

- If you plan to connect to your AltiServ system via the Internet and your router or Internet access provider is using Network Address Translation (NAT), please note that most NAT implementations **DO NOT** support H.323.
 - You are probably using NAT if **both** of the following conditions apply:
 - a) Your AltiServ server's IP address matches any of the following numbers (where x is any number from 0-255):
 - 10.x.x.x
 - 172.16.x.x to 172.32.x.x
 - 192.168.x.x
 - b) You are able to connect to the Internet directly **WITHOUT** using a proxy or socks server.
 - Contact your router/firewall vendor to obtain a software update for your networking equipment, or obtain routable address space from your Internet provider. If you are unsure whether or not you are using NAT, contact your router/firewall vendor or Internet provider.

Setting Up AltiServ-to-AltiServ IP Network

Two or more AltiServ systems can be networked together to provide extension to extension connections via IP trunk calls. Users may dial a remote AltiServ's auto attendant or direct dial to an extension, without having to dial out through the PSTN. A diagram illustrating a multiple AltiServ-to-AltiServ connection is provided in Figure 10 and is referred to as an example throughout the configuration instructions below.

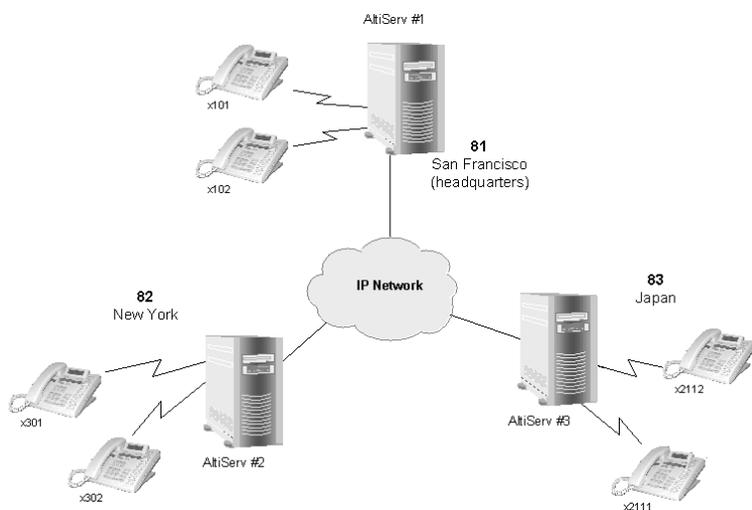


Figure 10. AltiServ to AltiServ Connection

Follow the steps below to configure IP trunks for AltiServ-to-AltiServ tie-trunk line connection:

1. Confirm that the correct number of Triton VoIP boards are installed and connected by checking the **Boards** window on the Main Window of AltiWare Administrator. Refer to the section “Boards View Window” on page 27 for more details about this window.
2. Assign the IP trunk access code on the **Number Plan** tab window of **System Configuration**. See “Assigning the IP Trunk Access Code” in Chapter 2 of the *System Administration Manual*.
3. Configure general trunk parameters on the **General** tab window of **Trunk Configuration**. Refer to “Triton IP Trunk Configuration” in Chapter 4 of the *System Administration Manual*.
4. Configure the dialing plan for connection to remote AltiServ systems on the **IP Dialing Table** tab window of **System Configuration**. Set the **Number of Dialed Digits** to ‘None.’ Refer to “IP Dialing Table” in Chapter 2 of the *System Administration Manual*.
5. Repeat steps 1 through 5 for all local and remote AltiServ systems that are to be networked via tie-trunk line connection.

This completes the AltiServ-to-AltiServ network connection. Your organization is now ready to make and receive IP trunk calls through public or private IP networks. Refer to “Dialing a Remote AltiServ” in Appendix A of the *System Administration Manual* for instructions on how to dial a remote AltiServ. For IP monitoring and maintenance procedures, also refer to the *System Administration Manual*.

Note: Be sure to distribute the *Remote Locations Dialing Chart* with your organization’s unique dialing plan. This information is available in Appendix A of the *System Administration Manual*.

Troubleshooting - Common Symptoms and Solutions

The following are some of the most common problems you may encounter and a list of steps to troubleshoot and resolve these problems.

Poor Voice Quality

When voice quality is poor, try the following:

1. **Perform a Loop-Back Test** - Call yourself by dialing out and dialing back into yourself. If you don’t have any problems performing this test, the problem is most likely in the network or at the remote site.
2. **Check Traffic Between AltiWare IP Stations** - Open the **IP Trunk Current Traffic Statistics** window and the **AltiWare IP Cumulative Traffic Statistics** window in AltiWare Administrator or AltiAdmin to view network traffic.
3. **Check the RTP and RTCP Settings** - Make sure UDP port numbers 49152-49199 are not assigned to other applications. RTP/RTCP is the acronym for Real-time Transport (Control) Protocol, a transport protocol for real-time applications used to transport packetized voice packets over the IP network.
4. **Check Network Configurations** - Follow all network configuration guidelines provided under “Network Configuration Guidelines for VoIP” on page 48. Make sure the router, WAN bandwidth and Jitter Buffer are configured properly.

Cannot Make a Connection

1. **Check Network Connectivity Using “ping”**
2. **Check Network Firewall Settings** - See “Network Configuration Guidelines for VoIP” on page 48 for more details.
3. **Check IP Address of Destination System**
4. **Check the RTP and RTCP Settings** - Make sure UDP port numbers 49152-49199 are not assigned to other applications. RTP/RTCP is the acronym for Real-time Transport (Control) Protocol, a transport protocol for real-time applications used to transport packetized voice packets over the IP network.
5. **Check the AltiWare IP Dialing Table for Dialed Digits Length** - Refer to “IP Dialing Table” in Chapter 2 of the *System Administration Manual*.
6. **Check if Called Extension is a Workgroup or has Multiple Call Waiting Enabled** - when the called party is a workgroup pilot number or has Multiple Call Waiting enabled, the caller is placed on hold and hears ringback or music.

IP Trunk Does Not Appear in Trunk View

When an IP trunk doesn't appear in the Trunk View, there are two possible causes:

1. **Device Driver is Not Running** - check the device driver. Make sure it's installed and working properly.
Windows NT 4.0 does not support Plug and Play. Therefore, the PnP ISA Enable Driver (PNPISA.SYS) must be installed if it is not installed already. Refer to the Microsoft Web site for installation instructions.
2. **Triton VoIP Board is Not Installed Properly** - Refer to the *Triton Board Quick Installation Guide* for more details on proper installation of the Triton VoIP board.

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