



AltiWare™ OE

Release 3.5

Getting Started Manual

WARNING!

Toll fraud is committed when individuals unlawfully gain access to customer telecommunication systems. This is a criminal offense. Currently, we do not know of any telecommunications system that is immune to this type of criminal activity. AltiGen Communications, Inc. will not accept liability for any damages, including long distance charges, which result from unauthorized and/or unlawful use.

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Liability

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.

FCC and Industry Canada Compliance

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

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.

Triton T1 Facility Interface Information

In order to connect registered terminal equipment to the telephone company lines, the terminal equipment must utilize FCC registered jacks. Standardized jacks are used for this equipment. The following table contains Facility Interface Code (FIC), Ringer Equivalence Number (REN), Service Order Code (SOC) and network jack information for the equipment.

Port Identifier	FIC	SOC/ASC	Network Jack
Triton ALTI-TTT1-1	04DU9-BN	6.0p / AS.2	RJ-48C
Triton ALTI-TTT1-1	04DU9-BN	6.0p / AS.2	RJ-48C
Triton ALTI-TTT1-1	04DU9-BN	6.0p / AS.2	RJ-48C
Triton ALTI-TTT1-1	04DU9-BN	6.0p / AS.2	RJ-48C

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

Disruption of Network

If the Triton T1 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 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 Triton T1 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 Triton T1 returns answering supervision on all DID calls forwarded to the PSTN.

Permissible exceptions are:

- A call is unanswered.
- A busy tone is received.
- A reorder tone is received.

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.

Safety

- ***Never assume*** that the power is turned off. Always check to ensure that a circuit does not have power.
- 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.
- 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.
- If this system is being installed in an area where lightning occurs, it is strongly recommended that lightning protection devices be installed between the system and the trunk services from the local exchange carrier.
- 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.
- Avoid using a telephone (other than the cordless type) during an electrical storm due to the remote risk of shock from lightning.

Triton T1 Electrical Safety Advisory

While the Triton T1 is fully compliant with FCC rules and regulations, it is recommended that an alternating current (ac) surge arrestor of the form and capability suitable for the model purchased be installed in the ac outlet to which Altigen Communications products are connected. Consult with your distributor as to the surge protector requirements for your equipment.

UL Regulatory Safety Requirements

Host PC

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 PC 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 PC **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 PC earthing terminal to the building earth.
5. The host PC SELV circuit is connected to the protective earthing terminal in accordance with EN60950 cl. 2.5.
6. The host PC ISA bus pins B1, B10 or B31 (edge connectors on CPU motherboard/backplane) **MUST** be less than 0.1 Ohms to host PC earthing terminal.
7. The power required by the host PC 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 PC.
8. 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 PC.

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.

Safety

Approved Hardware

1. Host PC, with an earthing terminal, which is “CE” marked to include compliance to LVD and EMC European Directives.
2. PC 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)
 - h. Microsoft NT software
3. Altigen/Altiserv cards, Rev. D:
 - a. CD0804UD
 - b. CD0408UD
 - c. CD0012UD

Operating Software

Provided by Altigen: Altiserv Rev. 3.5 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 line cord should be at least size 26AWG.
2. This 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 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.

UL Hardware Preparation

Prepare the hardware as follows ensuring that the relevant manufacturer's installation instructions are complied with:

1. This apparatus must be professionally installed.
2. Select "CE" PC chassis according to the Safety Requirements above, ensuring that it has an external marked earth point.

Safety

3. The host PC ISA bus pins B1, B10 or B13 MUST be tested to ensure that there is less than 0.1 Ohms to the host PC earthing terminal.
4. Prepare PC 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.
5. AltiServ cards: CD0804UD, CD0408UD, CD0012UD (Note that the continued compliance to the LVD and EMC EU Directives at the system level is the responsibility of the system supplier.
6. Prepare above cards ensuring all jumpers are set according to the manufacturer's instructions.
7. Attach suitable grounded ESD wrist strap between wrist and earth.
8. Follow the manufacturer's instruction and install above cards into PC.
9. Note: If more than three cards are using the MVIP, ensure that the Quantum 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).
10. Install MVIP cable. Use a suitable length cable to ensure that there is no more than one spare connector.
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.
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 or RJ-45 Patch Panel.
14. Connect the building telecommunication wiring to the RJ-11 or RJ-45 sockets with the center pair connected to tip and ring.
15. Building telecommunication wiring should be installed according to the National Wiring Regulations for Telecommunications.
16. IF IN DOUBT ABOUT ANY OF THESE ISSUES, CONTACT YOUR SUPPLIER BEFORE PROCEEDING.

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:

Warranty

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 C 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.

Preface

About This Guide

This guide describes how to set up and configure the Altiserv system for the first time or for upgrading from AltWare CE or a previous version of AltWare 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 Guide

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, “AltWare Administrator Overview” describes how to configure and administer the Altiserv system.
- Chapter 4, “Initial Configuration” includes short, easy-to-use steps to quickly configure the Altiserv system.
- Chapter 5, “VoIP for AltWare OE” describes how to configure and administer the Voice over IP option in AltWare.
- Chapter 6, “T1/PRI for AltWare OE” describes how to set up the digital T1 or PRI option in AltWare.

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

Preface

Related Publications

Related publications include:

- AltiWare OE System Administration Manual
- AltiServ User Guide
- AltiConsole User Guide
- AltiView 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 1-1 on page 1-2 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

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 5 (or higher) installed**
- Web Server for AltiReach (Microsoft's Internet Information Server is included in Windows NT Server 4.0.)
- 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

System Requirements

Table 1-2, “Individual Board Power Requirements” shows the AltiServ system requirements guidelines depending on the number of AltiGen boards that will be installed.

AltiServ System Requirement Guidelines

Table 1-1. System Selection Guidelines

Number of Quantum or Triton Boards per Sytem	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
7-15	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 1-2. Individual Board Power Requirements

Board	5V	12V	Slot Type
Quantum	1.6A	1.4A	ISA
Triton VoIP	1.6A	0	PCI
Triton T1/PRI	1.6A	0	PCI

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.

System Requirements

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

Table 1-3. 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 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

AltiGen Board Specifications

- Jumper Free Configuration
- PCI Bus

AltiGen Board Installation

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

AltiGen Board Specifications

AltiGen Board Options

Table 1-4 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 1-4. AltiGen Telephony Board Options

Board	Model Number	Description
Quantum	ALTI-CD0408UD	4 trunks and 8 extensions
Quantum	ALTI-CD0804UD	8 trunks and 4 extensions
Quantum	ALTI-CD0012UD	12 extensions
Quantum	ALTI-DID0408UD	4 DID trunks and 8 extensions
Triton	ALTI-TTIP-4	4 VoIP trunks
Triton	ALTI-TTT1-1	1 T1 or 1 PRI

Software Licensing

AltWare OE 3.5 software is packaged in different station licenses (see Table 1-5, “Software Licensing Options). Each package consists of the OE 3.5 installation CD, manuals and licensing for a particular number of physical extensions. Customers purchase one or more of these packages for the desired capacity of physical extensions.

Table 1-5. Software Licensing Options

Software	Model Number	# of Stations License
OE 3.5	ALTI-OED300E-008	8 stations license
OE 3.5	ALTI-OED300E-016	16 stations license
OE 3.5	ALTI-OED300E-024	24 stations license
OE 3.5	ALTI-OED300E-032	32 stations license
OE 3.5	ALTI-OED300E-064	64 stations license
OE 3.5	ALTI-OED300E-096	96 stations license
OE 3.5	ALTI-OED300E-128	128 stations license

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

Chapter 2 Software Installation

AltiWare OE Software Components

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 4 (or higher) on the LAN to control the AltiServ system(s).
- **ALTIADMIN** - contains the AltiWare Administrator that can be installed on any Windows NT Server or Workstation 4.0 with Service Pack 4 (or higher) 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.**

It should take about 15 to 20 minutes to install the AltiWare OE software program.

AltiWare as 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:

- A higher level of **security** is possible because you are not required to be logged into Windows NT to run AltiWare services.
- The AltiWare Administrator **GUI** application does not have to be tied to the switching service so that if there is a problem with the GUI, the switching service is not affected.
- **Remote** administration is possible through **AltiAdmin**.

Because AltiWare switching is an NT service, shutting down the switching service is separate from exiting the AltiWare Administrator. To completely shutdown the AltiServ, refer to “AltiServ Shutdown Procedures” on page 2-14.

CAUTION!

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*.

AltiWare OE Installation

The following is a step-by-step procedure for installing or upgrading the AltiWare OE software from the **AltiWare OE Release 3.5** CD-ROM. Before you begin installation, however, please note the following:

- **IMPORTANT! AltiWare OE Release 3.0 or higher does not support Quantum Rev. C/C+ boards. Upgrade Quantum boards to Rev. D prior to installing OE 3.0 software or higher.**
- **Service Pack 5 (or higher)** is required and must be installed **before** AltiWare OE 3.0 or higher can be installed or upgraded.
- During installation, a user account (user name: **AltiGen_<servername>**) is created automatically to run AltiWare services. **Do not delete this account or change its password.**
- **If your system is a Backup Domain Controller, TAPI will NOT work properly! If you wish to use TAPI applications, make appropriate configuration changes or use another NT server machine that is NOT configured as Backup Domain Controller.**
- AltiWare OE must be installed **before** any third party applications AND on a **Windows NT Server or Workstation 4.0 system with Service Pack 5 (or higher)** installed and network connection. 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 AltiWare OE Release 3.5 on a drive other than the system drive (usually, the c: drive) may cause problems with TAPI. Whenever possible, you should refrain from installing on any other drive other than the system drive.**
- Please note that AltiWare OE Release 3.0 and higher supports:
 - 10 digit dialing
 - 1 + 7 digit dialing
 - 1 + 10 digit dialing in the same area code.

If you have such a dialing plan in your area, be sure to configure the system appropriately from the **Area Codes 1** and **Area Codes 2** pages of **System Configuration**. Refer to the System Administration Manual for more information.

- **BEFORE** upgrading your system from AltiWare Release 2.1 or 3.0, you should back up all the OE/CE 2.1 or 3.0 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 OE or CE 2.1 or 3.0.

AltiWare OE - New Installation

To install AltiWare OE, follow the instructions below:

1. Login to Windows NT 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.
2. Insert the AltiWare OE CD-ROM into the CD-ROM drive.
3. Select and read the Readme.txt file.
4. After reading the Readme.txt file, click on **SETUP.EXE** in the AltiWare OE folder.
5. Follow the instructions on the AltiWare installation wizard setup screens.
6. When prompted, enter the 20-digit software license key (located on the End User License Agreement). Your Authorized AltiGen Dealer will need this CD key when contacting AltiGen for technical support.
7. **AltiWare Setup Screen** - description of contents on the **AltiWare Setup Screen**:
 - **Country:**
 - Specifies the country where AltiServ system is located.
Select:
 - U.S.A. & Canada

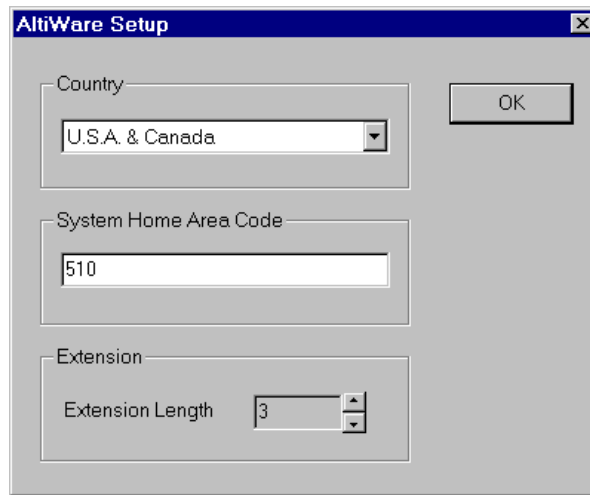


Figure 2-1. AltiWare Setup Screen

- **System Home Area Code:**

- Specifies the area code where the AltiServ system is located. An entry in this field is required.

- **Extension:**

- **Extension Length** - specifies the number of digits for all extension numbers. All extensions in the AltiServ configuration must be the same length. The range is from 2 to 7 digits in length.

IMPORTANT!

The length of the extension numbers is not changeable once the first extension is configured. The length is determined in the **AltiWare Setup** screen and cannot be changed without totally re-configuring the system or deleting all the extensions already configured. It is recommended that you assign 3 digit extensions or longer as problems may be experienced with 2 digit extensions.

8. After installation, you must shut down and reboot Windows NT in order to activate the installed AltiWare Services.
9. Create the Windows NT Emergency Repair Disk. Refer to “Windows NT Emergency Repair Disk” on page 2-11.

AltiWare OE - Upgrade from an Earlier Version

Before installing this upgrade on the AltiServ system, please make sure that the AltiWare Administrator and the AltiGen Switching Service are not running by following these steps:

1. Exit AltiWare Administrator.
2. Double-click **Services** in the Control Panel.
3. Highlight **AltiGen Switching Service COM Server**.
4. If the status column is empty, proceed to **Step 6**. If status column says '**Started**,' then click the '**Stop**' button.
5. If a dialog box pops up with the confirmation box, choose '**Yes**.'
6. You are now ready to upgrade your system.

To begin upgrading:

1. Follow steps 1 through 5 under AltiWare New Installation procedures.
2. From OE 3.0 (or higher):

When prompted, enter the 20-digit software license key (located on the back of the End User License Agreement). Your Authorized AltiGen Dealer will need this software license key when contacting AltiGen for technical support.

From OE/CE 2.1:

When prompted, enter the 20-digit CD key (located on the back of the CD cover). Your Authorized AltiGen Dealer will need this software license key when contacting AltiGen for technical support.

3. As part of the OE 3.5 software installation, your configuration data will be upgraded automatically.

Note: Note: There is no need to uninstall the earlier version of AltiWare software. However, if you decide to uninstall the AltiWare program, simply click on the 'Uninstall' icon in the AltiWare program group. Please note that uninstalling AltiWare does not remove the configuration and messages. However, be sure to backup custom phrases from \altiserv\phrases\LangCustom directory before you uninstall OE 3.0 or earlier version of AltiWare.

Software License Capacity Upgrades

In AltiWare OE 3.5, a software license allows you to increase the capacity for the following:

- Physical extensions - A Quantum board can provide 4, 8 or 12 extensions (depending on the type of Quantum board). You may increase the number of physical extensions by 8, 16, 32, 64, 96 or 128 station licenses. Each license you enter adds to the previous total.
- AltiView sessions - AltiWare OE 3.5 includes a single license for AltiView 2.0. You may increase the number of concurrent AltiView users by 4, 8, 16 or 32 session licenses. Each license you enter adds to the previous total.

Capacity Upgrade Procedures

To increase the number of physical extensions or AltiView sessions, follow the steps below:

1. Insert the AltiWare OE 3.5 CD into the CD drive.
2. Run the **SETUP.EXE** in the AltiWare OE folder.
3. The system prompts you with the following Installation Option screen (Figure 2-2). Select the **Upgrade Port License** option and click '**OK**'.

AltWare OE Installation

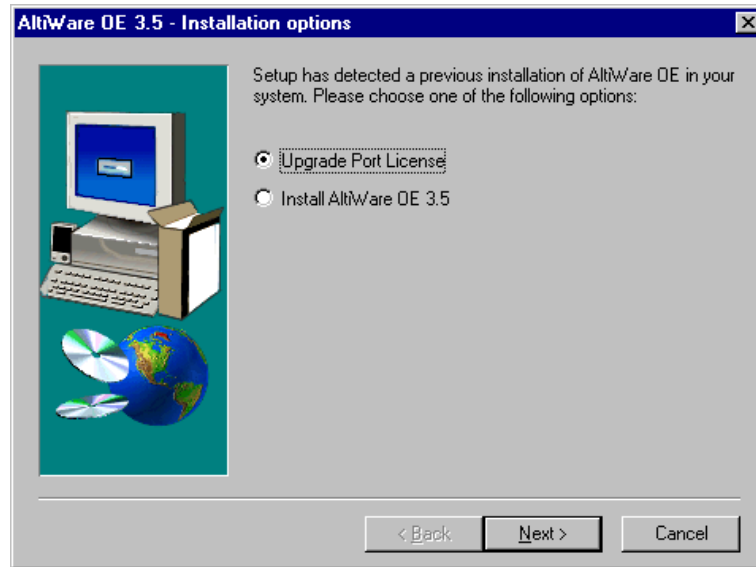


Figure 2-2. Installation Options screen

4. The system then prompts you with an **AltWare OE Setup** screen (Figure 2-3). Enter the 20-digit software license key located on the **End User License Agreement** (shipped with your upgrade package).



2. Software Installation

Figure 2-3. AltWare OE Setup

5. After the code is validated, the system will confirm that the upgrade was successful and ask if you wish to add additional licenses. If **YES**, then enter the next software license key assigned to the additional software license package. The license can be for more physical extensions or more AltView sessions. Click **NO** if you are finished upgrading.
6. After successful upgrade, you can verify the new number of additional extensions in two locations:
 - **License Information** display window - Click on the **About AltWare** icon in the Main Menu or through the Help Menu. Click on the **License Information** button to view the **License Information** display window (Figure 2-4). The license limits for physical extensions and AltView sessions are displayed, as well as the installed licenses.

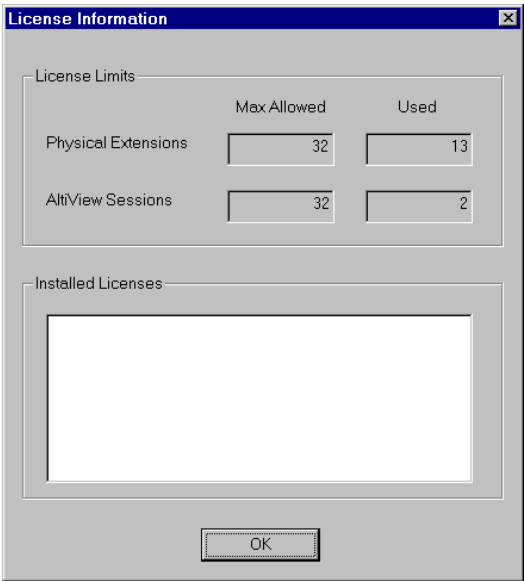


Figure 2-4. License Information display window

- **Physical Extension License** group box - Open the **Add New Extension** option in the **General** page of the **Extension Configuration** screen. In the **Physical Extension License** group box (Figure 2-5), the maximum number of installed physical extensions for the system is displayed in the **Max Allowed** box; the total number of assigned physical extensions are displayed in the **Used** box.

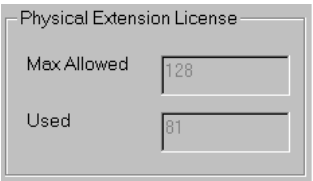


Figure 2-5. Physical Extension License group box

AltiWare Uninstallation Procedure

Be sure to stop all AltiWare-related services before uninstallation. You can do this by clicking on '**Shutdown Switching**' from the **Services** menu of AltiAdmin. Alternatively, you can stop the services from the **Services** applet in the Control Panel.

The following is the list of 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**

Note that stopping the **AltiGen Switching Service COM Server** will automatically stop all the auxiliary services. In the event that the auxiliary services were not stopped, please stop them one at a time from the **Services** applet in the Control Panel. Then launch the Uninstall program by clicking the '**Uninstall AltiWare OE**' icon in the AltiWare program folder and select '**YES**' to uninstall AltiWare.

Installing Client Products

To install a client product, run the **SETUP.EXE** program in the appropriate folder in the CD. For example, to install AltiAdmin on a client system, run **SETUP.EXE** from the 'AltiAdmin' folder. Follow the instructions provided by the setup program to complete installation.

Note: Please be sure to install any AltiWare server software before installing any client applications.

Windows NT Emergency Repair Disk

After installing AltiWare, you should create the Windows NT Emergency Repair Disk. This repair disk is needed to repair any corrupted Windows NT files. Even if the Emergency Repair Disk was created during the installation of Windows NT, it must be created again after installing AltiWare. To create the disk, choose **Run** from the Windows NT **Start** button and type "**rdisk**" at the prompt.

AltiAdmin Installation

AltiAdmin contains the **AltiWare Administrator** GUI application that can be installed on any **Windows NT Server or Workstation 4.0 system with Service Pack 4** (or higher) installed and network connection. AltiAdmin does not support Windows 95.

Note: AltiAdmin does not contain the switching, SMTP/POP3 server, messaging agent, AltiBackup, Exchange integration services that are included in the full AltiWare OE installation described above. **Remote AltiAdmin cannot utilize Call Detail Reporting, System Traffic, System Data Management, or the Start/Shutdown Switching Service functions which can be done only at the AltiServ system.**

AltiAdmin is designed to allow control of the AltiServ system from a remote client system on the LAN. If there is no firewall on the LAN where AltiServ resides, AltiAdmin can be installed and used to manage AltiServ over the Internet from a remote site as well. Although it is possible to install AltiAdmin on the AltiServ system, it provides no added value since the AltiWare Administrator is already installed on the AltiServ.

To install AltiAdmin for the first time,

1. Insert the AltiWare OE CD-ROM into the appropriate drive.
2. Run **SETUP.EXE** from the **AltiAdmin** folder.
3. Follow the instructions on the screen.
4. To open AltiWare Administrator, refer to “Starting AltiWare Administrator” on page 2-13.

Starting AltiWare Administrator

To open 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, be sure to enter the **fully qualified domain name** (e.g. altiserv.xyzcompany.com) or **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 - click on **Services** menu or the **Login** icon (computer monitor with light-blue screen) in the upper left-hand corner of the Quick Access Toolbar. The Login Password screen appears requesting to enter the password. The system default password is “22222”. **The system password should be changed as soon as possible to ensure system security.** Enter the default password “22222” and click on **OK**. For more information, refer to “System Access” on page 3-15.

Now that you are logged in, you are ready to configure the AltiServ system. To start system configuration, go to “Initial Configuration” on page 4-1.

AltiServ Shutdown Procedures

It is required to shut down the AltiServ to add other hardware components.

To shut down the AltiServ,

1. Backup the AltiServ database by copying the following directories/files to your network drive:
 - **\altiserv\db** - contains system extensions and trunks configuration. (subdirectories are not needed)
 - **\postoffice** - contains user messages, greetings, and directory names.
 - **\altiserv\phrases\langcustom\phase0XXX** - contains custom phrases (where XXX is a number from 300 to 999)
2. Make sure that the AltiServ system is idle (no traffic). The best time to perform the transfer is during off hours.
3. Exit the AltiWare Administrator. Be sure to select **Shutdown Switching** under the **Services** menu before selecting **Exit**.
4. Shut down the NT system by using the standard Windows NT shutdown procedure.
5. Turn off the platform power.

This completes the shutdown of the AltiServ system.

Restarting AltiWare OE

If TAPI is installed, restarting AltiWare OE may cause TAPI to become out of sync with AltiServ. If you experience any problems, restart **Telephony Service** (from the **Services** applet in **Control Panel**) and all TAPI client applications **after** AltiWare is restarted.

Transferring the Altiserv to Another Server Chassis

To transfer the Altiserv system to another platform, you must backup the database, move the telephony boards, install the AltWare software, and restore the database to the new platform. A typical reason for moving to a different platform would be to expand the system port capacity beyond the capacity of the current platform.

To transfer the system to another platform:

1. Follow the “Altiserv Shutdown Procedures” on page 2-14 to shut the system down.
2. Remove the cover. To remove the cover, consult the installation manual included with your computer equipment for the existing Altiserv platform.
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. Restore the Altiserv system database by copying the files previously backed up from the original system in step 1 of the “Altiserv Shutdown Procedures” on page 2-14 to the new system.
8. Install the AltWare OE software as described in “AltWare OE Installation” on page 2-3. The installation screen shown in Figure 2-1, “AltWare Setup Screen,” on page 2-5 will not appear during installation since the system database has been restored in step 7.
9. Reboot the system. AltWare OE will automatically start.

This completes the steps for transferring the Altiserv system.

Downgrade Procedures

In the event that you need to downgrade back to OE/CE 2.1 or OE 3.0, follow the steps below:

IMPORTANT!

Downgrading from AltiWare OE 3.5 back to OE/CE 2.1 or OE 3.0 requires that you restore backed up files from OE/CE 2.1 or OE 3.0. Before beginning the downgrade procedures, you should already have backed up all the OE/CE 2.1 or OE 3.0 configuration information prior to your initial OE 3.5 installation.

To downgrade back to OE/CE 2.1 or OE 3.0, follow the instructions below.

1. Stop OE 3.5 AltiGen Switching Service and the Telephony Service from Control Panel/Services.
2. Uninstall OE 3.5 and remove \altiserv\ directory.
3. Reboot the system.
4. Install OE/CE 2.1 or OE 3.0, but do not reboot the system after installation is finished.
5. Remove \altiserv\db\ directory.
6. Restore the **OE/CE 2.1 or OE 3.0 database** by restoring the **backup OE/CE 2.1 or OE 3.0\db** and **\LangCustom** directories back to \altiserv\db\ and \altiserv\Phrases\LangCustom directories.
7. Reboot the system.

Chapter 3 AltiWare Administrator Overview

AltiWare Administrator

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

AltiWare Administrator allows you to configure sophisticated switching and messaging functions by providing easy-to-use graphical screens that guide you through the configuration steps for each feature.

AltiAdmin

The AltiWare Administrator can be installed and used at the AltiServ system or on any other system on the LAN for remote maintenance.

AltiAdmin is the AltiWare Administrator that allows complete control of one or more AltiServ systems from a **Windows NT** client system on the LAN with the following exceptions:

Call Detail Reporting, System Traffic Report, System Data Management, and Start/Stop Switching Service functions are available only at the AltiServ system.

AltiAdmin should be installed on a **Windows NT Workstation or Server 4.0 client system (with Service Pack 4 or higher) installed** and not on the AltiServ. It is designed to allow control of one or more AltiServ systems from a remote client system on the LAN or over the Internet. Although it is possible to install AltiAdmin on the AltiServ system, it provides no added value since the AltiWare Administrator is already installed on the AltiServ.

See “AltiAdmin Installation” on page 2-10 for instructions on how to install AltiAdmin.

The AltWare Administrator Main Screen

Once AltWare Administrator is opened, the first screen displayed to the system administrator is the **AltWare Administrator Main Screen**.

Figure 3-1, “AltWare Administrator Main Screen” shows the Main Menu bar, Quick Access Toolbar, and five separate “view” windows. These windows show the Quantum or Triton boards installed, trunk status, extension status, and call traffic.

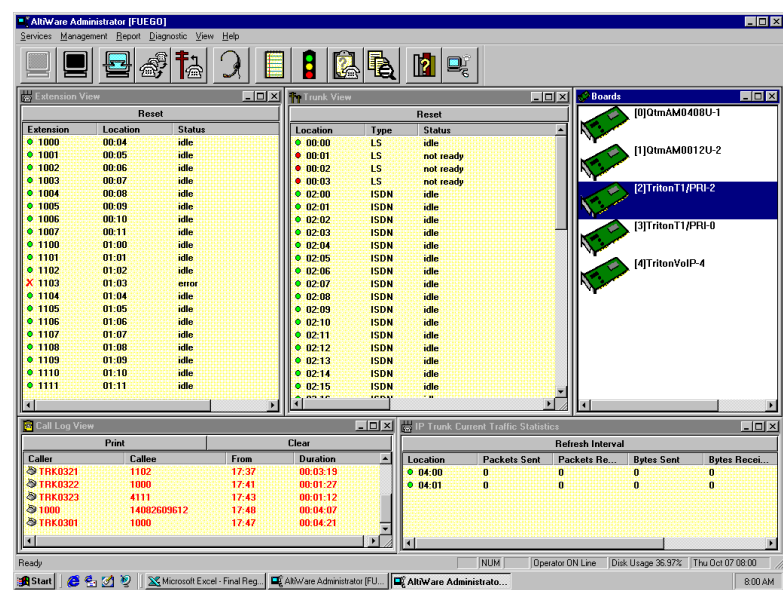


Figure 3-1. AltWare Administrator Main Screen

Usually when the AltServ system is first installed and initially configured, the AltWare Administrator Main Screen does not show any information in the Call Log View and Maintenance Log windows. This is because there has not been any telephone traffic over the configured extensions and trunks, and probably no system maintenance was required.

Figure 3-2 identifies the AltWare Main Menu bar, the Quick Access Toolbar, the hardware status window (Boards), the Status bar, and five icons that represent the minimized Extension, Trunk, Call Log and Maintenance screens.

The AltiWare Administrator Main Screen

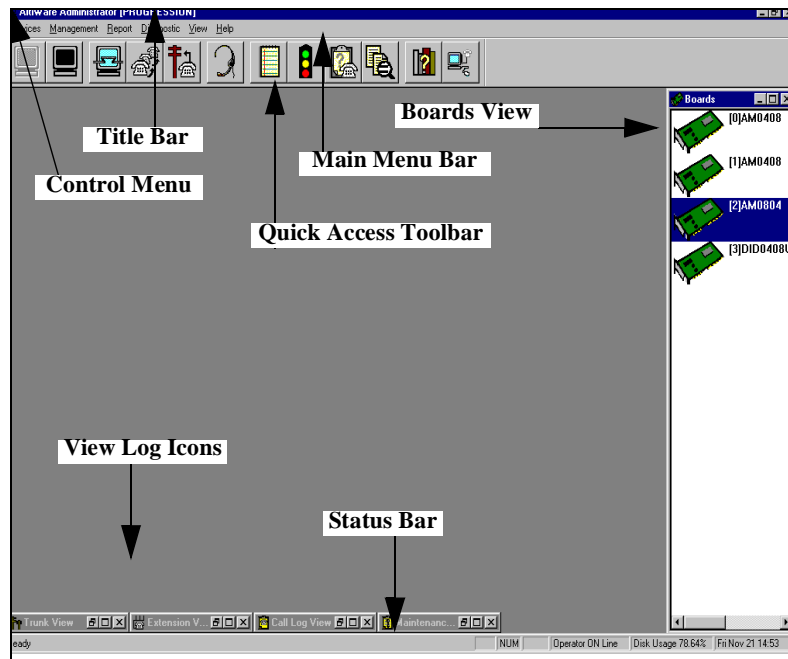


Figure 3-2. AltiWare Administrator Main Screen

Components of the Main Screen are:

- AltiWare Main Menu bar and the Quick Access Toolbar
- The hardware status window called Boards
- Extension View window
- Trunk View window
- Call Log View window
- IP Trunk Current Traffic Statistics

Main Menu and Toolbar

Figure 3-3 illustrates the Main Menu functions and the Quick Access Toolbar. To display and access a function in the Main Menu, you have to click on the menu title, for example **Services**, to display all options under the **Services** menu.

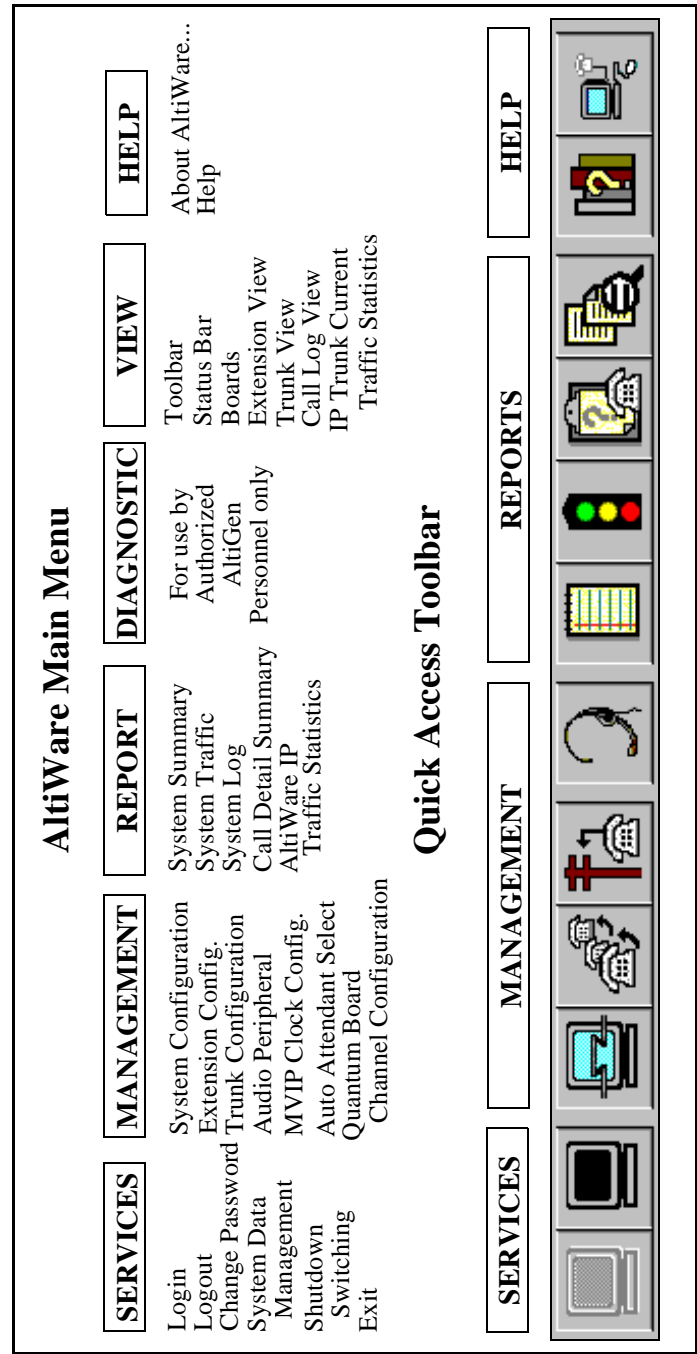


Figure 3-3. AltWare Main Menu and Quick Access Toolbar

The AltWare Administrator Main Screen

By clicking on **Services** you can access six different menu options, however, the Quick Access Toolbar allows you to access only Login and Logout options from the Services menu.

Functions supported by the Quick Access Toolbar are shown in Figure 3-3 under each Quick Access Toolbar icon.

Main Menu Functions

Table 3-1 lists Main Menu functions in the Menu column, menu options for each menu function in the Options column, and description of each option in the Option Description column.

Table 3-1. AltWare Main Menu selections

Menu	Option	Option Description
Services	Login	Allows the system administrator to login to AltWare.
	Logout	Allows the system administrator to logout of AltWare.
	Change Password	Allows the system administrator to change the password to the system.
	System Data Management	Allows the system administrator to backup and restore system files.
	Shutdown Switching	Allows the system administrator to shutdown switching service.
	Exit	Allows the system administrator to exit AltWare.
Management	System Configuration	Allows the system administrator to set up system-wide configuration data.
	Extension Configuration	Allows the administrator to configure extensions.
	Trunk Configuration	Allows the administrator to configure trunks.
	Audio Peripheral	Allows the administrator to configure AltWare to work with an (input) audio source and to configure overhead paging.

3. AltWare Administrator Overview

The AltWare Administrator Main Screen

Table 3-1. AltWare Main Menu selections

Menu	Option	Option Description
Report	MVIP Clock Configuration	Allows the administrator to set or change the MVIP clock.
	Auto Attendant Select	Allows the administrator to configure any of the 16 Auto Attendants.
	Quantum Board Channel Configuration	Allows the administrator to adjust the configuration parameters for each Quantum channel.
	System Summary	Allows the administrator to view the System Summary screen. This screen contains summary information on extensions, trunks and workgroups.
	System Traffic	Allows the administrator to view the traffic and statistic screen. This screen contains information on the system usage, trunk usage, and message usage.
	System Log	Allows the administrator to view the system log. This log contains any errors encountered by the system.
	Call Detail Summary	Allows the administrator to view, search and print the call detail records for client billing purposes.
Diagnostic	AltWare IP Cumulative Traffic Statistics	Allows the administrator to view a report of all cumulative IP traffic.
View	Toolbar	For use by Authorized Personnel only. Allows the system administrator to view the Quick Access Toolbar at the top of the AltWare Administrator Main Screen.

The AltWare Administrator Main Screen

Table 3-1. AltWare Main Menu selections

Menu	Option	Option Description
Help	Status Bar	Allows the system administrator to view the Status Bar at the bottom of the AltWare Administrator Main Screen.
	Boards	Allows the system administrator to view the boards installed in the system on the Hardware Status window.
	Extension View	Allows the system administrator to view the Extension status window.
	Trunk View	Allows the system administrator to view the Trunk status window.
	Call Log View	Allows the system administrator to view the log window.
	IP Trunk Current Traffic Statistics	Allows the system administrator to view IP trunk traffic information for an active call.
	About AltWare...	Displays a window with AltWare software information including current release version and date as well as the name, size, date and time of all program files in AltWare. Also displays licensing information, including license limits and installed licenses.
	Help	Allows the system administrator to search for help by topic selected from a scroll list. Includes the Back and Print options.

3. AltWare Administrator Overview

Quick Access Toolbar

Table 3-2 lists the **Quick Access Toolbar** options and their description. Located just under the Main Menu on the AltWare Administrator Main Screen is the **Quick Access Toolbar**. This toolbar allows direct access (or shortcuts) to several of the Main Menu options.

Table 3-2. *Quick Access Toolbar*

Icon	Option Description
Login	Allows the system administrator to login to the system.
Logout	Allows the system administrator to logout of the system.
System Configuration	Allows the system administrator to access the System Configuration screen.
Extension Configuration	Allows the system administrator to access the Extension Configuration screen.
Trunk Configuration	Allows the system administrator to access the Trunk Configuration screen.
Auto Attendant Select	Allows the system administrator to configure Auto Attendants.
System Summary	Allows the system administrator to view the System Summary screen.
System Traffic	Allows the system administrator to view the traffic and statistic screen.
System Log	Allows the system administrator to view the system log screen that contains a list of errors encountered by the system.
Call Detail Summary	Allows the system administrator to view, search and print the call detail records for client billing purposes.
Help	Allows the system administrator to search for help by topic selected from a scroll list.

Table 3-2. Quick Access Toolbar

Icon	Option Description
About AltWare	Displays a window with AltWare software information.

Boards Window

Figure 3-4 illustrates the Boards window. This window displays the AltServ Quantum or Triton boards hardware status. It displays the card location in the ISA or PCI slots and board model numbers.

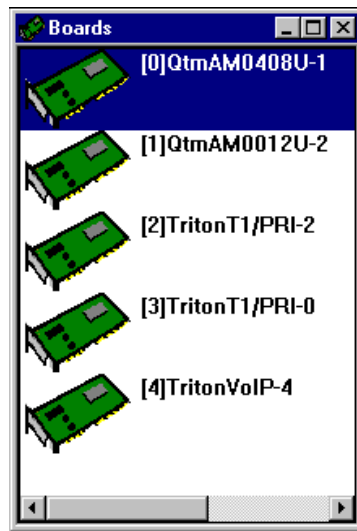
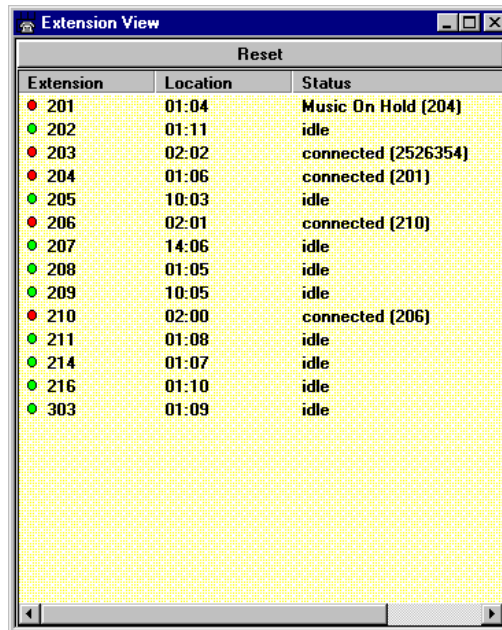


Figure 3-4. Boards View

The slot location is also the card ID ([0]) and card model number indicates the type of board installed in the system. For example, QtmAM0408U-1 is a Quantum board with four (4) trunk ports and eight (8) extension ports.

Extension View Window

Figure 3-5 illustrates the Extension View window. This window 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". The table contains 15 rows of data, each with a colored dot (red for not ready/in use, green for idle) next to the extension number. The status column shows various states like "Music On Hold", "idle", and "connected" with associated numbers in parentheses.

Extension	Location	Status
201	01:04	Music On Hold (204)
202	01:11	idle
203	02:02	connected {2526354}
204	01:06	connected {201}
205	10:03	idle
206	02:01	connected {210}
207	14:06	idle
208	01:05	idle
209	10:05	idle
210	02:00	connected {206}
211	01:08	idle
214	01:07	idle
216	01:10	idle
303	01:09	idle

Figure 3-5. Extension View Window

It displays extension number, location and operating status such as idle, off-hook, busy, or waiting for activation. The red or green light to the left of each extension also indicates the status of the extension (red light for *not ready* or *in use* and green light for *idle*). 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.

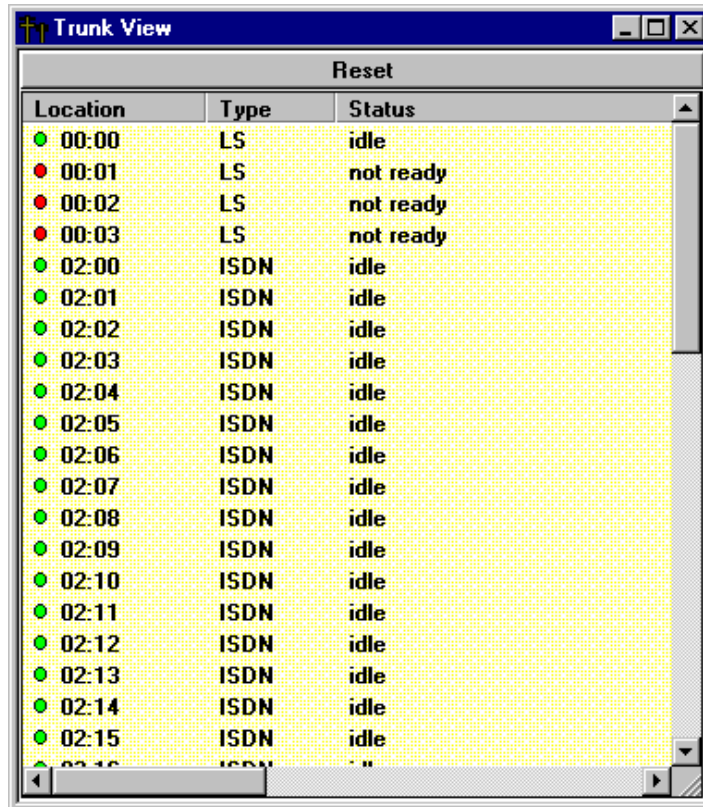
The only option button available in this window is **Reset**.

Reset - resets the selected extension to the idle status. To reset an extension to idle, highlight the extension and click on the **Reset** button.

The first data entry field is **Reset Extension**. Enter the Extension number to be reset. The next data entry field is **Name**. This field will display the name of the extension number user. Click on **OK** to confirm resetting the line.

Trunk View Window

Figure 3-6 illustrates the Trunk View window. This window displays the status of all assigned trunks.



Location	Type	Status
00:00	LS	idle
00:01	LS	not ready
00:02	LS	not ready
00:03	LS	not ready
02:00	ISDN	idle
02:01	ISDN	idle
02:02	ISDN	idle
02:03	ISDN	idle
02:04	ISDN	idle
02:05	ISDN	idle
02:06	ISDN	idle
02:07	ISDN	idle
02:08	ISDN	idle
02:09	ISDN	idle
02:10	ISDN	idle
02:11	ISDN	idle
02:12	ISDN	idle
02:13	ISDN	idle
02:14	ISDN	idle
02:15	ISDN	idle

Figure 3-6. Trunk View Window

It displays trunk location, trunk type and operating status such as *idle*, *busy*, *Auto Attendant answering* and so forth. The red or green light to the left of each trunk location also indicates the status of the trunk (red light for *not ready* or *in use* and green light for *idle*).

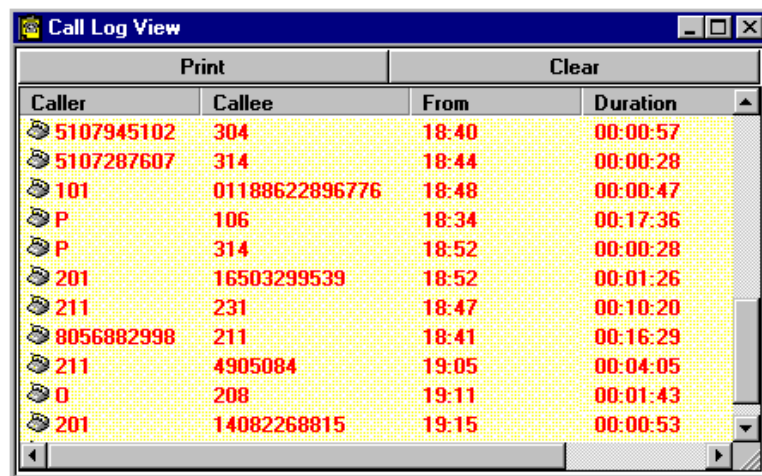
The option button available in this window is **Reset**.

Reset - resets the selected trunk to the idle status. A warning dialog box with question “Reset Trunk?”, followed by **OK** and **Cancel** buttons, is displayed. Select the appropriate button.

Call Log View Window

Figure 3-7 illustrates the Call Log View window. This window displays the line and trunk traffic history.

It displays call information such as the caller, callee, called number and duration of the call for the last 30 calls.



The screenshot shows a window titled "Call Log View" with a blue title bar and standard window controls. Below the title bar is a toolbar with two buttons: "Print" and "Clear". The main area contains a table with four columns: "Caller", "Callee", "From", and "Duration". The table has a yellow background and a scroll bar on the right. The data is as follows:

Caller	Callee	From	Duration
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 3-7. Call Log View Window

The Call Log View window has two option buttons available:

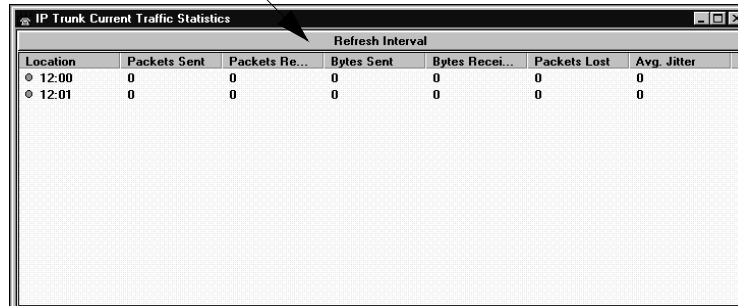
- **Print** - prints the selected log entries. When you select this option, a print window is displayed. Click on **OK** to print the log or **Cancel** to close the print window.
- **Clear** - clears the log data. A warning dialog box with the question "Clear Call Log?", followed by **OK** and **Cancel** buttons, is displayed. Select the appropriate button.

IP Trunk Current Traffic Statistics Window

Figure 3-8 illustrates the IP Trunk Current Traffic Statistics window. This window displays the following IP trunk traffic information for an **active** call:

- **Location** - displays the Triton VoIP board number and channel ID
- **Packets Sent** - displays the number of voice packets sent to other AltiServ systems over the public or private IP network
- **Packets Received** - displays the number of voice packets received from other AltiServ systems over the public or private IP network
- **Bytes Sent** - displays the total size (in bytes) of all voice packets sent to other AltiServ systems over the public or private IP network
- **Bytes Received** - displays the total size (in bytes) of all voice packets received from other AltiServ systems over the public or private IP network
- **Packets Lost** - displays 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 figure should stay under 100 milliseconds. A higher figure indicates a longer average delay. This number can be used to measure the quality of service on the network that connects the source and destination sites.

Refresh Interval bar



IP Trunk Current Traffic Statistics						
	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 3-8. IP Trunk Current Traffic Statistics screen

Refresh Interval

The **IP Trunk Current Traffic Statistics** screen is updated according to the **Refresh Interval** configuration. By default, the **Refresh Interval** is set at five (5) seconds. This means that the **IP Trunk Current Traffic Statistics** is updated every five seconds with the latest figures.

To change or turn off the Refresh Interval, follow the steps below:

1. Click on the **Refresh Interval** bar at the top of the **IP Trunk Current Traffic Statistics** screen (Figure 3-9).

Note: This does **NOT** reset the traffic statistics. The traffic statistics are reset to **0** automatically at the end of each call.

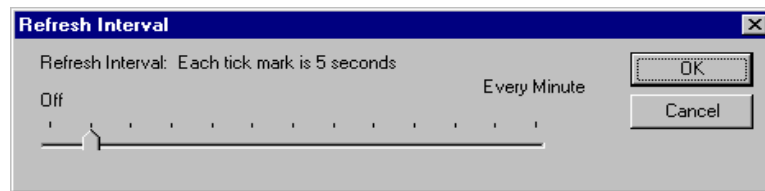


Figure 3-9. Refresh Interval screen

2. When the **Refresh Interval** screen appears (Figure 3-9), adjust the interval marker. Each tick mark represents five (5) seconds, with a maximum interval of one (1) minute. To turn the **Refresh Interval** off, move the marker to **Off**.
3. Click on **OK**.

For information on **IP Cumulative Traffic Statistics** reports, refer to the System Data and Report Management chapter of the *System Administration Manual*.

Status Bar

The information at the bottom of the screen in the **Status Bar** displays messages based on the position of the mouse on the screen, which is called “context sensitive information”. The **Status Bar** also contains information on disk usage, operator status, and current time. To identify the Status Bar, refer to Figure 3-2, “AltWare Administrator Main Screen,” on page 3-3.

System Access

To access AltiWare functions and be able to configure and administer the AltiServ system, you must first log in as an administrator.

Click on the **Services** menu. It is the first menu on the AltiWare Main Menu bar. With **Services** menu options displayed, select **Login** to log into the system. You can also click on the Login icon in the Quick Access Toolbar.

Login

Login allows the system administrator to log into the system. The system default password is “22222”. **The system password should be changed as soon as possible to ensure system security.**

To login:

- Enter the default password **22222** unless the password has already been changed. If the password has been changed, enter the new password. Refer to Figure 3-10, “Login Password Screen”.
- Click on the **OK** button. You are now logged in.

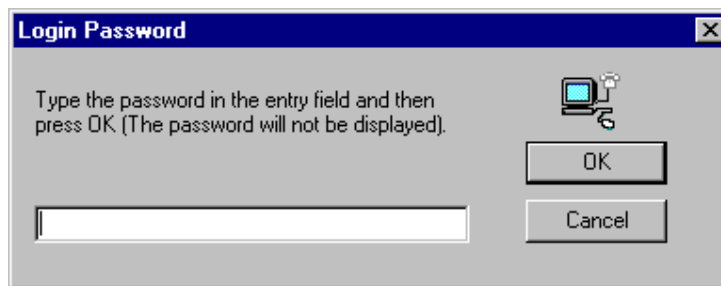


Figure 3-10. Login Password Screen

Logout

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.

Stop/Start Switching Service

The **Stop/Start Switching Service** option in the **Services** menu allows the system administrator to stop or start the AltiWare system services.

Note: This option is **NOT** available from the remote AltiAdmin client. It can only be accessed at the AltiServ system.

Change Password

Security of your system is very important. To prevent unauthorized persons from accessing your system and modifying system configuration, you should change the password from time to time. Figure 3-11 shows the **Change Password** screen.

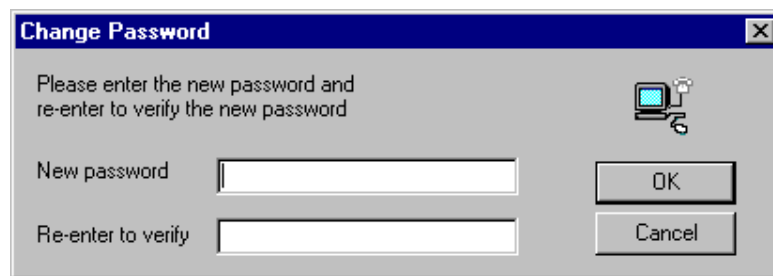


Figure 3-11. Change Password Screen

The **Change Password** option in the **Services** menu allows the system administrator to change the password, to log in, and access AltiWare simultaneously.

- Enter the new password in the **New password** data entry field.
- Enter the same password again in the **Re-enter to verify** data field to confirm that the system has received the change accurately.
- When the correct password is entered and verified, click on the OK button.

You are now logged in with the new password, which has to be used from now on (until you change it again) to login to AltiWare for system configuration and administration.

Chapter 4 Initial Configuration

This chapter can be used as a “Quick Configuration Guide” after you have familiarized yourself with the AltiWare GUI and configuration screens. (For more comprehensive details on the various screens, refer to the *System Administration Manual*.)

This chapter will cover the following:

- **Initial Configuration** - minimum amount of configuration necessary to get the AltiServ “up and running” quickly.
- **Quick Configuration Tips** - short and easy steps on quickly configuring some of the most popular features such as setting up a Workgroup or Mail Forwarding.

Initial Configuration

You must configure certain parameters in the System, Trunk, Extension, Auto Attendant Configuration to bring the AltiServ to a fully functional level of operation. More detailed information and instructions are available in the *System Administration Manual*.

Note: An **Apply To** button is available on each screen under Trunk Configuration and Extension Configuration which can be used to apply changes (only the field that is changed) to multiple extensions or trunks instead of having to change them one at a time.

System Configuration

On the **System Configuration** screen, follow the steps below:

1. Establish the following AltiServ ID and Location parameters on the **General** page.
 - Manager Extension
 - System Home Area Code
 - Country
2. Assign First Digit functions on the **Number Plan** page.
3. Indicate your hours of business on the **Business Hours** page.
4. Indicate who has the operator responsibility on the **Operator** page.
5. Click on **OK**.

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

Auto Attendant Configuration

On the **Auto Attendant Configuration** screen, follow the steps below:

1. Plan the dynamics of the Auto Attendant (what options should be made available to the caller at each menu level, what types of prompts are needed and their prompt numbers, etc.)
2. Indicate the **Beginning Prompt**. The default prompt is 0001 which 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*.

3. Indicate the **Action** that the Auto Attendant should take when the caller selects a particular digit on the keypad.
4. Indicate the **Time-out Action** to be taken.
5. Click on **OK**.

See the Auto Attendant chapter of the *System Administration Manual* for more detailed explanation.

Trunk Configuration

On the **Trunk Configuration** screen, follow the steps below for each trunk in the system:

1. Set up trunk attributes on the **General** page.
2. Indicate incoming call routing options on the **Incoming Call Routing** page.
3. Configure outgoing call routing option on the **Outgoing Call Routing** page.
4. Click on **OK**.
5. Set up trunk attributes on the **Configure Hardware** option on the **Trunk View** screen.

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

Extension Configuration

On the **Extension Configuration** screen, follow the steps below for each extension user in the system:

1. Add the extension and set the following extension attributes on the **General** page:
 - **Type** (physical, virtual or workgroup)
 - **First Name** and **Last Name**
 - **Enable Dial-By-Name** - this field is used to include the extension in the Dial-By-Name or Directory Service. Also, instruct users to record their name in the Personal Options of AltMail to be included in these services.

Initial Configuration

2. Configure the **Outcall Restrictions** and **Other Calls Restrictions** on the **Calling** page.
3. Configure the following option on the **Messaging 1** page:
 - Set the **Capacity** of the user's mailbox.
4. Configure the following answering options on the **Answering** page:
 - **Busy Call Handling**
 - **No Answer Handling**
5. Click on **OK**.

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

Incoming/Outgoing Volume Configuration

To quickly adjust the incoming and outgoing volume in decibels (dB) for trunks and extensions on the Quantum board, follow the steps below:

1. From the Management Menu, select **Quantum Board Channel Gain Configuration Dialog**.
2. Select the trunk or extension you wish to adjust.
3. Adjust **Receiver Gain** - default setting is **0 dB** for a trunk and **0 dB** for a line/extension.
4. Adjust Transmission Attenuation - default setting is **0 dB** for a trunk and **0 dB** for a line/extension.

CAUTION!

Setting the Receiver Gain or Transmission Attenuation too high will cause a distortion in the voice quality.

Note: Incoming and outgoing volume can also be adjusted through the Hardware Configuration button on the Board Configuration screen.

Refer to the Trunk Configuration chapter of the *System Administration Manual* for more detail explanation on Receiver Gain or Transmission Attenuation.

Adding a New Extension

1. Clicking on the **Add** button on the **General** page of **Extension Configuration** displays the **Add New Extension** screen (Figure 4-1). This screen contains group boxes that define the parameters of the new extension.

Card	Channel
0	8
0	9
0	10
0	11
1	4
1	11
2	4
2	6

Figure 4-1. Extension Configuration Screen - Add New Extension

2. Enter the information requested in the group boxes listed below:
 - **Extension Number** - enter an extension number that is not currently being used. A valid extension number must begin with the first digits that were set as extensions in the “First Digit Assignment” fields. Refer to the *System Administration Manual* for more information.
 - **Type** - select one of the three types of extensions: physical, virtual, or workgroup pilot number. This option is limited by the installed hardware (available channels). If all channels are already assigned, a physical extension will not be accepted.

Initial Configuration

- **Physical Extension License** group box - displays the maximum number of physical extensions licensed to the user as well as the number of assigned, licensed physical extensions. Refer to Software Licensing on page 1-8 or Software License Upgrade on page 2-7 for additional information.
- **Card/Channel** - displays the card and channel location of the new extension. If no physical locations are available, the selection box is empty.

If TAPI is Installed

After following all the steps for adding an extension, follow the additional steps below if TAPI is installed:

1. Restart TAPI (**Telephony Services** in the **Services** applet of **Control Panel**) on Altiserv.
2. Run **TCMAPP** at the MS DOS prompt to grant telephone line access of the new extension to TAPI client users.
3. Instruct users to restart all TAPI client applications.

Deleting an Extension

1. Select the extension number from the scroll list on the **General** page of **Extension Configuration**.
2. Select the **Delete** button. The screen in Figure 4-2 appears, asking you if you really want to delete the selected extension number.

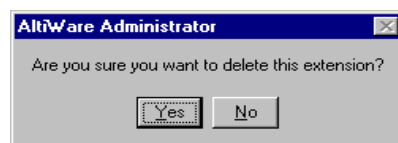


Figure 4-2. Extension Configuration Screen - Delete Extension Warning

3. Select the **Yes** or **No** button.
4. See "If TAPI is Installed" on page 4-6.

Note: Make sure the deletion of the extension includes deleting from all forwarding extensions or anywhere else in the database that it may be programmed.

Setting Up a Virtual Extension

Virtual extensions are not associated with a physical port. It allows for guest access to AltiMail features and telephone sharing. Users of a virtual extension have to login from a physical extension before accessing the system features assigned to the virtual extension. It can also be used as a mailbox to receive voice mail and e-mail messages.

To configure a virtual extension,

1. Access the **General** page of **Extension Configuration**.
2. Press the **Add** button to display the **Add New Extension** screen.
3. In the **Add New Extension** screen, select **Virtual Extension** in the **Type** group box.
4. Press the **OK** button.
5. See the “If TAPI is Installed” section in the Data and Internet Integration chapter of the *System Administration Manual*.

Setting Up the Operator

1. If not already done, add the operator extension on the **General** page of **Extension Configuration**.
2. Indicate the operator’s extension on the **Operator** page of **System Configuration**.
3. If all incoming calls are to be answered by the Operator, select **Route Incoming Calls to Operator** on the **In Call Routing** page of **Trunk Configuration** for each trunk.
4. To setup an **Operator Workgroup**, follow the instructions under “Setting Up a Workgroup” on page 4-7.

Setting Up a Workgroup

1. Create or select an extension on the **General** page of **Extension Configuration** and make it a workgroup pilot number.
2. Select the workgroup extension on the **General** page and
 - Add extensions to the workgroup by selecting and adding extensions to the **Member Extensions** list on the **Workgroup** page.

Initial Configuration

- Configure the workgroup's **Greeting Phrase** and **Update Phrase(s)** on the **Workgroup** page.
- Configure the **Answering** page.

See the ACD and Workgroup Configuration chapter of the *System Administration Manual* for more detailed instructions.

Setting Up DID (Direct Inward Dialing)

To setup DID (Direct Inward Dialing), follow the steps below:

1. Subscribe to DID service and obtain the DID telephone numbers for each 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 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 page 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 DID number into this field.** This will guarantee that the system will send the correct number as the Caller ID on PRI lines. If less 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** page of **Trunk Configuration** for each 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 DID number to an extension. Refer to the Extension Configuration chapter of the *System Administration Manual* for more information.
5. Have the DID service activated by the local exchange carrier. If your local carrier provides ANI/DNIS caller ID, this information will also be displayed.

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 chapter of the *System Administration Manual*.
2. Once you receive the prompts in the AltWare format, place them in the **altiserv\phrases\LangCustom** directory on the Altiserv.

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

Setting Up Mail Forwarding

There are two levels of Mail Forwarding:

- **For All Extensions** - used when an e-mail server (e.g. cc:Mail) is in use before installing Altiserv and users want to retrieve voice mail messages from the AltMail server into the original destination server through their e-mail client.

Note: The two servers will not be synchronized in that if a voice message is deleted from the AltMail server, it will still remain in the destination server until it is deleted there also.
- **For Individual Extensions** - used to forward a specific user's mail to any specified Internet e-mail address. This allows users with multiple e-mail addresses or extensions to receive voice mail, e-mail or both into one mailbox.

To setup system-wide Mail Forwarding for *all* extensions:

1. Select **Enable Mail Forwarding for All Extensions** on the **Messaging** page of **System Configuration**.
2. In the **Destination Forward Server Address** field, enter the IP address or the fully qualified domain name of the destination server.

To setup Mail Forwarding for *individual* extensions,

Initial Configuration

1. Select **Enable Mail Forwarding** on the **General** page of **Extension Configuration**. In the drop-down list next to this option, indicate how the mail should be handled after it has been forwarded.
2. Enter the e-mail address where mail should be forwarded to in the **Forward E-mail Address** field.
3. Select **Forward E-mail** or **Forward Voice Mail** *or both* according to the user's preference.

Integrating with Exchange

1. Install Exchange client software (5.0 or higher and the same version as the server) on the Altiserv system. Verify that you can access the Exchange server from the Exchange client.
2. The username that the Altigen services run as (**<domainname>\ALTIGEN_<servername>** by default) must have Exchange administrator privileges.
3. For each extension you want to synchronize with a corresponding Exchange mailbox, ensure that the **First Name** and **Last Name** fields of the extension match the first and last names entered for the corresponding mailbox in the Exchange server.
4. Select **Synchronize with Exchange Server** on the **Messaging** page of **System Configuration**, enter the **Exchange Server Address** (server name, e.g. EXCHANGE) and click **OK**.

Refer to the "Setting Up Exchange Integration" section in the Data and Internet Integration chapter of the *System Administration Manual* for more detailed explanation.

Setting Up the Call View Java Applet

1. Select and install a Web server.
 - Set the **altiserv\webmgmt** directory at the root level (home directory) of the Web server.
 - Create two virtual directories, one for **altiserv\altireach** with an alias **/Altireach** and one for **altiserv/cgi-shl** with an alias **/cgi-shl** with execute permission.
2. Setup Altireach.

Initial Configuration

Refer to the “Setting Up AltiReach Call Management” section of the Data and Internet Integration chapter of the *System Administration Manual* for more detailed explanation.

Initial Configuration

Chapter 5 VoIP for AltiWare OE

This chapter defines the following:

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

Voice over IP for AltiWare OE

AltiWare OE 3.5 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** screen 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 (24 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

Network Configuration Guidelines for VoIP

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 5-1 and is referred to as an example throughout the configuration instructions below.

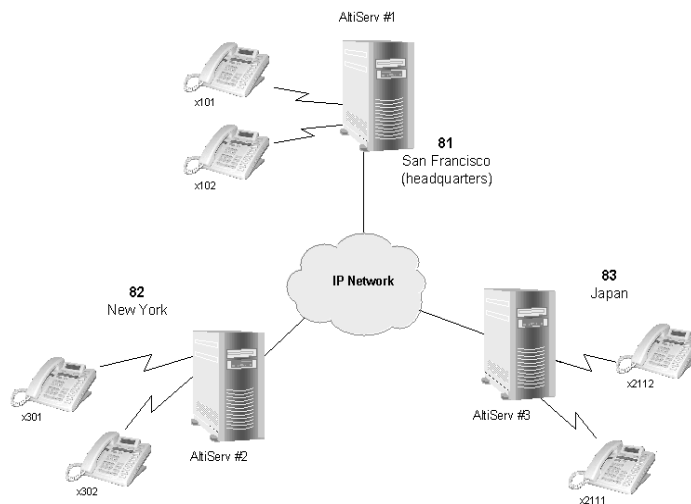


Figure 5-1. Altiserv to Altiserv Connection

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 Screen of Altiserv Administrator. Refer to the section "Boards Window" on page 3-9 for more details about this window.
2. Assign the IP trunk access code on the **Number Plan** page of **System Configuration**. See "Assigning the IP Trunk Access Code" in Chapter 2 of the *System Administration Manual*.

Setting Up Altiserv-to-Altiserv IP Network

3. Configure general trunk parameters on the **General** page 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** page 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 *Altiserv IP User Guide* to all end users, as well as the *Remote Locations Dialing Chart* with your organization’s unique dialing plan. This information is also 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** screen and the **AltiWare IP Cumulative Traffic Statistics** screen 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 5-2. 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 5-2 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 VoIP Board Quick Installation Guide* for more details on proper installation of the Triton VoIP board.

Chapter 6 T1/PRI for AltiWare OE

This chapter defines the following:

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

T1/PRI for AltiWare OE

AltiWare OE 3.5 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.

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

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.

Triton T1/PRI Board

For information on how to install Triton T1/PRI boards, please refer to the ***Triton T1/PRI 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

Service Parameters for T1

Termination Impedance - 100 ohms

Type of Registered Services Provided

BN 1.544 MHz SF without power

DN 1.544 MHz SF B8ZS without power

1KN 1.544 MHz ANSI ESF without power

1SN 1.544 MHz 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 7 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.

You can plug T1 service directly to the Triton T1 board without a front end CSU device. However, the Triton T1 board does not provide echo loopback. If the AltiServ system is down and the T1 line does not have a loopback device, your service will be terminated. You must call the service provider or central office when the equipment is up again to re-establish service.

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

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

800 Service: you decide

Termination Impedance - 100 ohms

Type of Registered Services Provided

BN 1.544 MHz SF without power

DN 1.544 MHz SF B8ZS without power

Service Parameters for PRI

1KN 1.544 MHz ANSI ESF without power

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

Service Order Code

SOC 6.0P AS.2

PRI Channel Assignment

D Channels Assignment: channel 24

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.

Hunting: Most Idle, Least Idle, Ascend, Descend

DNIS Digits: can be 3 to 7 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.

You can plug PRI service directly to the Triton T1/PRI board without a front end CSU device. However, the Triton T1/PRI board does not provide echo loopback. If the AltiServ system is down and the PRI line does not have a loopback device, your service will be terminated. You must call the service provider or central office when the equipment is up again to re-establish service.

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.

AltiAdmin provides basic troubleshooting information in the T1 Span Configuration screen, as shown in Figure 6-1. (For a detailed explanation of this screen, refer to “Board Configuration” in Chapter 3 of the *System Administration Manual*.)

Triton T1 Configuration - TritonT1/PRI-2

Span: 0

Status: OK

Statistics since: Fri 10/08/99 14:49:46

Frame Errors: 0	Line Code Errors: 0
OOF Errors: 0	Bit Errors: 0
Rec Frame Slips: 0	Xmt Frame Slips: 0

Clear

Frame Type: ☐ SF ☒ ESF

Line Code: ☐ AMI ☒ B8ZS

Zero Code Suppression: None

☐ Back-to-back system T1 Clock Master

T1/PRI configuration

OK Cancel

Figure 6-1. Triton T1 Configuration screen

Troubleshooting - Common Symptoms

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.

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Getting Started Manual

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