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SuperLine™ Access System

Release Notes
Release 3.0 (R3.0)

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363-225-102
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The AG Communication Systems order number for this IP is SD-100300-SRNP.

The Lucent Technologies order number for this IP is 363-225-102.

Support Telephone Numbers

Information Product Support Number

Refer to **How to comment** in the About this information product section of this IP.

Technical Support Telephone Number

Refer to **Technical support** in the About this information product section of this IP.

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About this information product

Purpose

The *SuperLine Access System Release Notes* document provides Telephone Company (Telco) customers with information on the latest release of hardware, firmware, and software for the *SuperLine*™ Access System. This document is provided every time the customer receives a new software release, hardware release, or both. This document contains:

- Information about the release, new features supported and, if required, any special instructions to install any newly released hardware or software.
- A list of the minimum, latest rework and the latest manufactured issue of hardware, firmware, software, and documentation.
- Any compatibility issues between specific hardware issues and firmware or software loads.
- A description of problems that have been resolved in the release, existing unresolved problems, and workarounds available for open problems.

Reason for reissue

This issue of the *SuperLine Access System Release Notes* document replaces Issue 2. Replace your Issue 2 document with this document.

This document is reissued to reflect the following changes:

- New software releases for the *SuperLine* Access Shelf, and the *SuperLine* Element Manager. Refer to the *SuperLine* parts lists chapter for more information.
- Updated information on the channel assignment options for the DDI and TR-008 Mode 1 telephony modes. Refer to **Channel assignment options for DDI and TR-008 Mode 1** in the New features in this release topic of the *SuperLine* overview chapter.

Intended audience

The audience for this document includes installers and product administrators who are responsible for installing, configuring, and administering the *SuperLine* Access System, as well as AG Communication Systems customer service personnel.

GR-303 vs. TR-303

In this document, the TR-303 interface is referred to as the GR-303 interface. This follows the Telcordia Technologies Inc. naming convention for that telephony protocol.

Systems supported

The information in this information product is valid for Release 3.0 (R3.0) of the *SuperLine* Access System.

Safety labels

Admonishments (DANGER, WARNING, and CAUTION statements) tell customers that the actions they are about to perform may harm them or the equipment. Following are the three types of admonishments in the order of priority.

DANGER
Electric shock

Danger indicates the presence of a hazard that will cause death or severe personal injury if the hazard is not avoided.

WARNING

Warning indicates the presence of a hazard that can cause death or severe personal injury if the hazard is not avoided.

CAUTION

Caution indicates the presence of a hazard that will or can cause minor personal injury or property damage if the hazard is not avoided.

Electrostatic discharge (ESD)

Considerations to avoid ESD damage.

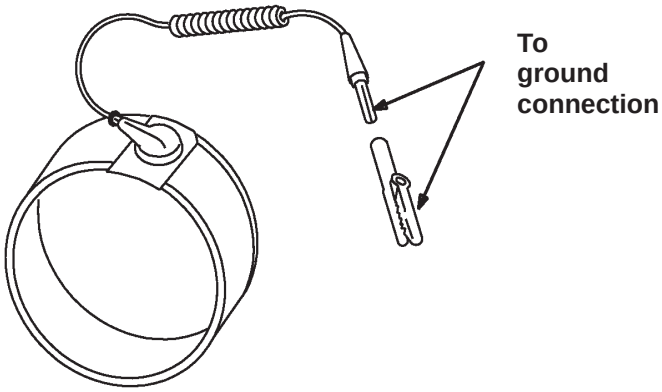
WARNING

Industry experience has shown that all integrated circuit packs can be damaged by static electricity that builds up on work surfaces and personnel. The static charges are produced by various charging effects of movement and contact with other objects. Dry air allows greater static contact charges to accumulate. Higher potentials are measured in areas with low relative humidity, but potentials high enough to cause damage can occur anywhere.

Observe the following list of precautions when handling circuit packs to prevent damage by electrostatic discharge.

- Assume all circuit packs contain solid state electronic components that can be damaged by ESD.
- When handling circuit packs (storing, inserting, removing, etc.) or when working on the backplane, always wear a grounded wrist strap or wear a heel strap and stand on a grounded, static-dissipating floor mat. If a static-dissipating floor mat is used, be sure that it is clean to ensure a good discharge path.
- Handle all circuit packs by the faceplate or latch and by the top and bottom outermost edges. Never touch the components, conductors, or connector pins.
- Observe warning labels on bags and cartons. Whenever possible, do not remove circuit packs from antistatic packaging until ready to insert them into slots.
- Open, if possible, all circuit packs at a static-safe work position, using properly grounded wrist straps and static-dissipating table mats. If a static-dissipating table mat is used be sure that it is clean to ensure a good discharge path.
- Always store and transport circuit packs in static-safe packaging. Shielding is not required unless specified.
- Keep all static-generating materials such as food wrappers, plastics, and foam packaging away from all circuit packs. On removal from the bay, immediately put circuit packs into static-safe packages.
- Whenever possible, maintain relative humidity above 20 percent.

To reduce the possibility of ESD damage, shelves are equipped with grounding jacks to enable personnel to ground themselves using wrist straps with a minimum resistance of 250 k Ω while handling circuit packs or working on a shelf/shelves. Connect the wrist straps to the jacks. When grounding jacks are not available, use an alligator clip adapter to connect to the bay frame ground.



Conventions used

The following typographical conventions help you navigate through the document.

Convention	Description
Bold print, first letter capitalized	Represents a reference to a topic, a menu option you must select, or a button you must select.
Italicized Print	Indicates the title of a published document. Also used for emphasis and for names of screen fields.
ALL CAPITAL LETTERS	Emphasizes the text.
□	Identifies the end of a topic.
Underlined Bold Print	Indicates text that is an HTML hyperlink.

How to use this information product

The locations of figures, tables, and procedures included in these Release Notes appear in the Index under the entries Figures, Tables, and Procedures, respectively.

Related documentation

The complete *SuperLine* Access System documentation set consists of the following information products:

Document Name	Vendor
SuperLine Access System Applications and Engineering, Release 3.0, SD-100300-SAEP	AG Communication Systems
SuperLine Access System Applications and Engineering, Release 3.0, 363-225-101	Lucent Technologies
SuperLine Access System Element Manager User's Guide, Release 3.0, SD-110300-EMUP	AG Communication Systems

SuperLine Access System Element Manager User's Guide, Release 3.0, 363-225-104	Lucent Technologies
SuperLine Access System Release Notes, Release 3.0, SD-100300-SRNP	AG Communication Systems
SuperLine Access System Release Notes, Release 3.0, 363-225-102	Lucent Technologies
SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance, Release 3.0, SD-100300-IOMP	AG Communication Systems
SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance, Release 3.0, 363-225-105	Lucent Technologies
SuperLine Access System Troubleshooting, Release 3.0, SD-100300-TSGP	AG Communication Systems
SuperLine Access System Troubleshooting, Release 3.0, 363-225-103	Lucent Technologies
SuperLine Integrated Access Device Model 6512-A2 Installation Instructions	Paradyne Corporation (This document is provided with each *SuperLine* IAD.)
Model 6035 Phone Filter Installation Instructions	Paradyne Corporation (This document is provided with each *SuperLine* IAD, and is included in the CPE filter package.)

Related training

The following training provides additional information about the *SuperLine* Access System. Contact the appropriate supplier, either AG Communication Systems or Lucent Technologies, as follows:

AG Communication Systems

For information on related training, contact your AG Communication Systems' sales representative.

Lucent Technologies

The National Product Training Center in Altemonte Springs, Florida, provides management courses for planning, engineering, and ordering as well as training for telecommunications technicians in installation, operations, and maintenance. Suitcasing of these courses may be available. Consult your Local Lucent Technologies Account Executive for more information or reservations. Enroll in a course using one of the following methods.

- 1-888-LUCENT8 (1-888-582-3688). Call the training coordinator for your company to get information on these and other training courses available, on schedules, fees, and registration. If your company does not have an assigned training coordinator, call this toll-free number [1-888-LUCENT8 (1-888-582-3688)] Monday through Friday, 7:30 a.m. to 5:30 p.m. EST. Use this number to order a product training catalog, get more information about a course, find out about new courses, or to register for a class. However, in Canada, please call 1-800-221-1647.

  When you call 1-888-LUCENT8, select Option 2 (press 2 one time on a touchtone phone) for Lucent Technologies product training.

- COMCATS. You may also use a computer and modem to log into the online catalog, computerized catalog system (COMCATS). Set your terminal options to the following values.
  - 300/1200/2400 baud rate
  - Full duplex
  - Space parity
  - 7 data bits
  - 1 stop bit

dial:	1-800-662-0662 or 614-764-5566
login:	comcats
password:	at&tcat

If you have trouble accessing COMCATS, call 1-888-LUCENT8 and ask to speak with the COMCATS Administrator.

Technical support

For technical support, contact the appropriate supplier, either AG Communication Systems or Lucent Technologies, as follows:

AG Communication Systems

AG Communication Systems provides customer assistance for the AG Communication Systems *SuperLine* Access System including, but not limited to, troubleshooting assistance, technical consultation, operational problem consultation, procedural advice, and emergency recovery assistance from a qualified system support professional.

If you have technical information questions, contact the Customer Support Center (CSC) by telephone at 1-888-888-AGCS (1-888-888-2427) or by electronic mail at superlinehelp@agcs.com.

If you need help with installing or operating *SuperLine* EM or Multi-EM, contact the Customer Support Center.

If you need help to resolve problems with *SuperLine* IADs, refer to the *SuperLine Access System Troubleshooting* manual or the *SuperLine Integrated Access Device Model 6512-A2 Installation Instructions* document provided by Paradyne Corporation, a partner in *SuperLine* development.

For more information about the *SuperLine* Access System, contact your AG Communication Systems technical sales staff or visit our Web site at www.agcs.com (from outside the United States: www.agcs.com.us).

Lucent Technologies Regional Technical Assistance Center (RTAC)

Lucent Technologies provides customer assistance for the *SuperLine* Access System including, but not limited to, troubleshooting assistance, technical consultation, operational problem consultation, procedural advice, and emergency recovery assistance from a qualified system support professional from the Regional Technical Assistance Center (RTAC).

- 1-800-225-RTAC (1-800-225-7822). Service is provided from the RTAC at 1-800-225-RTAC (1-800-225-7822). This telephone number is monitored 24 hours a day, 7 days a week. During regular business hours, your call will be answered by your local regional RTAC. Outside normal business hours, all calls will be answered at a centralized technical assistance center where service-affecting problems will be dispatched immediately to your local RTAC. All other problems will be referred to your local RTAC on the next regular business day.

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AG Communication Systems

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Lucent Technologies

Please use one of the two feedback forms that are located immediately after the legal page of this document.

Missing feedback forms

If the feedback forms are missing, please send your comments and suggestions to the following location.

- Documentation Services Coordinator
  Lucent Technologies
  240 E. Central Parkway
  Altamonte Springs, FL 32701–9928

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Contact the appropriate supplier, either AG Communication Systems or Lucent Technologies, as follows:

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Mail Order	Telephone Order (Monday through Friday)
AG Communication Systems ATTN: Order Fulfillment P.O. Box 52179 Phoenix, AZ 85027	Within USA: 1-623-581-4263 7:30 a.m. to 4:00 p.m. MST FAX: 1-623-582-7840

Lucent Technologies

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Customer	Mail Order	Telephone Order (Monday through Friday)
Commercial Customers a.	Lucent Technologies Customer Information Center ATTN: Order Entry Center 2855 N. Franklin Road P.O. Box 19901 Indianapolis, IN 46219	Within USA: 1-888-LUCENT8 or 1-888-582-3688 7:30 a.m. to 6:30 p.m. EST From Canada: 1-800-255-1242 Worldwide: 1-317-322-6416 FAX: 1-317-322-6699
RBOC/BOC	Process through your Company documentation coordinator.	
a. For commercial customers, a check, money order, purchase order number, or charge card number is required with all orders. Make checks payable to Lucent Technologies. Lucent Technologies entities should use Form IND 1-80.80 FA, available through the Customer Information Center.		

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1 *SuperLine* overview

Overview

Introduction This chapter provides a brief description of new and existing features of the *SuperLine*™ Access System, and an overview of the network architecture in a typical application.

In this chapter This chapter covers the following topics.

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SuperLine Access System features list

Introduction

The following is a list of *SuperLine* Access System features. Features new to Release 3.0 are highlighted. For more information on the Release 3.0 features, refer to the **New features in this release** topic.

List of *SuperLine* Access System features

- **4TEL and Mechanized Loop Testing (MLT) support** – The SPFM contains maintenance test signatures for management by network maintenance and identification by mechanized loop test systems.
- **Alternate routing for management channel** – Using a PC or Sun workstation with a *Windows NT*® operating system, and running *SuperLine* EM software, craft personnel can manage and communicate with the *SuperLine* Access Shelf three ways: using a Simple Local Area Network (LAN) configuration, Complex LAN configuration, or a Complex data configuration with simple LAN.
- **Channel assignment options for DDI and TR-008 Mode 1** – Using the Element Manager, each derived phone line is mapped to a specific DS0—a channel within a DS1. Derived lines are mapped per a system-wide setting.
- **Data management options** – Using the EM, the *SuperLine* Access System can be configured to support one of four data modes.
- ***DMS* switch support** – In addition to the *GTD-5* EAX and the *5ESS*, the *SuperLine* Access System provides compatibility with the Nortel Networks Corporation *DMS*™ Local Digital Switch (LDS) for the GR-303 and TR-008 Mode 1 telephony protocols.

  Important: In this document, the name *GR-303* is used in place of TR-303 when referring to that telephony protocol.
- **Two versions of Element Manager (EM)** – The *SuperLine* Element Management function is now available in the following two versions:
  - *SuperLine* EM. Customers receive this version when they purchase a *SuperLine* Access System. *SuperLine* EM runs on the PC or Sun workstation that serves as the craft interface terminal for the *SuperLine* Access System.
  - Multi-Element Manager (Multi-EM). For customers who use the Hewlett-Packard *OpenView*® Network Node Manager (NNM) product to manage their data networks, an optional application called Multi-Element Manager (Multi-EM) is provided. Sold separately as an enhancement to *SuperLine* Access Systems, Multi-EM is a version of *SuperLine* EM that runs under *OpenView*, and allows *OpenView* NNM to monitor and manage *SuperLine* Access Shelves as network nodes.
- **NEBS, Level 3 Compliant** – The *SuperLine* Access Shelf and the SPFM are now compliant with the Network Equipment Building Standard (NEBS), Level 3 requirements.

- **Provisionable data ratio** – Allows provisioning of upstream and downstream data percentages. The EM is used to provision the data ratio.

  Important: When no derived lines are active, the data rate is dynamically set on a demand basis up to the maximum rate. When at least one derived line is active, the data ratio for the circuit is used. For this release, it is recommended that the data ratio be kept at the default value of 20/80.

- **QV8 line card** – The QV8 is the new line card in the *SuperLine* Access Shelf. The QV8 multiplexes up to 8 Ethernet ports and 16 derived voice lines.

- **Spectrally comparable to ISDN** – The *SuperLine* Access System is within the ANSI 6.01 Integrated Services Digital Network (ISDN) Power Spectral Density (PSD) mask.

- ***SuperLine* Integrated Access Device (voice/data device), Model A2** – Customer premises equipment that allows subscribers to have up to two derived phone lines and an Ethernet data connection in addition to their existing baseband telephone connection. The Model A2 *SuperLine* Integrated Access Device (IAD) is smaller in size and contains an internal phone filter.

- 10/100Base-T support (half or full duplex) – Using the EM, the FETH port's maximum running speed is provisionable.

  Important: For this release, the half duplex 10Base-T setting is not recommended unless the Ethernet traffic to the *SuperLine* Access Shelf is minimal.

- *SuperLine* Access System alarming – Alarms are provided for system management, and for the GR-303 and TR-008 Mode 1 interfaces. Alarms are reported and viewable at the EM.

- Automatic *SuperLine* IAD downloading – Compatible *SuperLine* IADs are automatically downloaded when new shelf software is installed.

- Choice of telephony switch interfaces – The *SuperLine* Access Shelf can be configured to interwork with different telephony switch interface protocols. The *SuperLine* Element Manager (EM) interface is used to select one of the following telephony protocols:
  - None (system used for data only)
  - Direct Digital Interface (DDI)
  - GR-303 Interface
  - TR-008 Mode 1 Interface

- Daisy-chaining *SuperLine* Access Shelves – Two *SuperLine* Access Shelves may be connected together (daisy-chained) to connect to one network interface. Shelves can be daisy-chained to minimize the number of Wide Area Network (WAN) ports required on a WAN access device.

- Data capability – Data bandwidth is shared between derived telephony and Ethernet data services. Subscribers can access the bandwidth available for data using any compatible device that is connected to the 10Base-T Ethernet port on their *SuperLine* Integrated Access Device. Ethernet data is routed to the WAN over Port A, one of two 10/100Base-T connections on the FETH card.

- Enabling or disabling data support – Using the EM, data support on any *SuperLine* IAD can be enabled or disabled. Enabling or disabling can be done for individual *SuperLine* IADs, or several *SuperLine* IADs at one time.
- Inventory of *SuperLine* Access Shelf cards and *SuperLine* IADs – EM provides the status of shelf equipment and *SuperLine* IAD inventory.
- *SuperLine* POTS Filter Module (SPFM) – The SPFM provides the interface between the Telco CO Local Digital Switch (LDS) and the *SuperLine* subscriber lines (baseband voice lines) connected to the *SuperLine* Access Shelf. Four *SuperLine* POTS Filter Cards (SPFCs) are provided per SPFM. The SPFM is a passive filter splitter with the following functions:
  - Provides the bandsplitting function for the *SuperLine* Access Shelf
  - Supports up to 96 baseband voice lines
  - Provides baseband filtering to protect baseband voice line cards against interference from derived line frequencies
  - Provides a maintenance signature for MLT

  The customer's original baseband voice service is split off before reaching the *SuperLine* Access Shelf using the SPFM and is routed to the analog line card of the LDS.
- *SuperLine* Access Shelf containing the following cards:
  - Up to 12 Quadrature Amplitude Modulation Voice 8 (QV8) line cards per shelf. Eight line interface circuits per QV8 line card.
  - One Voice DS1 (VDS1) card – includes four voice DS1 connections and a 10Base-T craft interface port.
  - One Fast Ethernet (FETH) switch card – provides fast Ethernet switching through two 10/100Base-T connections.
  - One Power Supply (POWR) card – provides regulated power conversion for the shelf and is the primary display panel for the shelf.

  SuperLine Access Shelves can be installed in a central office environment, or in a remote cabinet. Up to five *SuperLine* Access Shelves and five *SuperLine* POTS Filter Modules can be packaged per 8-foot rack frame.
- Direct Digital Interface (DDI) – The *SuperLine* Access System supports DDI for the *GTD-5* EAX switching equipment.
- GR-303 compatibility – The GR-303 interface configures the *SuperLine* Access Shelf to operate with a GR-303-compliant LDS (*5ESS*, *DMS*, or *GTD-5* EAX) using the Telcordia Technologies Inc. GR-303 specification.
- TR-008 Mode 1 compatibility – The TR-008 Mode 1 interface configures the *SuperLine* Access Shelf to operate with a TR-008 Mode 1-compliant LDS (*5ESS* and *DMS*) using the Telcordia Technologies Inc. TR-008 Mode 1 specification.

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New features in this release

Introduction

The *SuperLine Access System Release Notes* document briefly describes the new, key features of the *SuperLine* Access System. For a more detailed explanation of these features, refer to the *SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance* document, *SuperLine Access System Element Manager User's Guide*, and the *SuperLine Access System Applications and Engineering* document.

4TEL and Mechanized Loop Testing (MLT) support

To allow the SPFM to be managed by the network maintenance systems and to be identified by mechanized loop test systems, the SPFM contains maintenance test signatures that are activated only by the metallic test systems (for example, MLT, Teradyne's *4TEL*®). The maintenance test signature is designed to be active only during the maintenance test mode and will not interfere with normal operation of the line.

As required by ANSI T1.413 Annex E, the SPFM has the same maintenance test signature on each tip and ring pair.

Alternate routing for management channel

Craft personnel can manage and communicate with the *SuperLine* Access Shelf three ways using *SuperLine* Element Manager software:

- Simple LAN configuration. The simple LAN management configuration is identical to the configuration used to set up communication between *SuperLine* EM and the *SuperLine* Access Shelf; that is, the PC or workstation running *SuperLine* EM or Multi-EM connects directly to the *SuperLine* Access Shelf through the Craft 10Base-T port on the VDS1 card. This configuration is required to install *SuperLine* Access Shelf firmware for the first time, because the data port on the FETH card initially is disabled.

  This configuration provides direct, out-of-band management. This type of management protects network security, because the channels carrying customer data and network management data are physically separate.

  Important: In this configuration, both Multi-EM and *OpenView* NNM must be installed on the same PC or *Sun*™ workstation.

- Complex LAN configuration. This management configuration resembles the simple LAN configuration, except that:
  - The *SuperLine* Access Shelf is located on a subnetwork and has an *indirect* IP route to the default gateway.
  - The PC or Sun workstation running *SuperLine* EM or Multi-EM is located remotely from the shelf.
  - The PC and shelf are connected through a hub on the LAN that is connected to the Craft 10Base-T port on the VDS1 card.
- Complex data network with simple LAN configuration. In this configuration:
  - A PC or workstation running *SuperLine* EM or Multi-EM is connected remotely to the 10/100Base-T port on the *SuperLine* Access Shelf's FETH card.
  - Another PC or workstation running *SuperLine* EM or Multi-EM uses a local (LAN) connection to the shelf through the VDS1 card. (A third PC or workstation may also be connected through the LAN.)
  - The default gateway is an indirect route through the IP address for the data network.
  - The type of network management is in-band, meaning that data and other traffic use the same network channel.

Refer to the *SuperLine Access System Element Manager User's Guide* for detailed information on setting up these configurations.

Channel assignment options for DDI and TR-008 Mode 1

Important: You can set the telephony type for the *SuperLine* Access Shelf using the Telephony tab screen of the *SuperLine* Element Manager application. Refer to the *SuperLine Access System Element Manager User's Guide* for more information.

In TR-008 Mode 1 and DDI telephony modes, each derived phone line is mapped to a specific DS0—a channel within a DS1. In the TR-008 Mode 1 and DDI modes, the relationship between a derived phone line and a DS0 never varies. In GR-303 telephony mode, however, each derived phone line is mapped dynamically to a DS0 by the Central Office (CO) sending a message over the Timeslot Management Channel (TMC).

Five telephony configurations are supported by the *SuperLine* Element Manager in the TR-008 Mode 1 and DDI telephony modes. They are as follows:

- 2 on Ports 1–4
- 2 on Slots 1–6
- 2, 1, 0 Repeated
- 1 on Slots 1–6, 2 on 9–11
- 1 on all Ports

For detailed information on channel assignment options, refer to the *SuperLine Access System Element Manager User's Guide*, the *SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance* document, or the *SuperLine Access System Applications and Engineering* document.

Data management options

The *SuperLine* Access System can be configured to support one of four data modes and determines if data services are supported. Data modes are provisioned using the *SuperLine* Element Manager. The four data modes are:

- **None**. With this mode enabled, ports do not support data transmission.
- **Point to point**. The point to point data mode provisions ports to support data transmission. This option allows the *SuperLine* Access System's administrators to manage and track the entry of users into the network. This mode allows packet transport only from feeder port to feeder port, or from distribution port to feeder port.
- **Switched**. The switched data mode provisions data support to emulate an Ethernet switch. All ports on a *SuperLine* Access Shelf can send or receive packets from any other port.
- **Directed switched**. The directed switched data mode provisions data support to emulate an Ethernet switch, except that unknown packets are forwarded only to feeder ports and not to distribution ports.

Important: Broadcast packets from the FETH 10/100Base-T port are not forwarded, with the exception of Address Resolution Protocol (ARP) requests, which are forwarded to all subscribers, and Dynamic Host Configuration Protocol (DHCP) responses which are forwarded only to the requesting subscriber.

DMS switch support

The *SuperLine* Access System supports the following telephony protocols for the *DMS* switch:

- **TR-008 Mode 1**. The *DMS* Subscriber Module SLC-96 (SMS) hardware provides RDT interface for Telcordia Technologies Inc. TR-TSY-000008 Specification to the *SuperLine* Access Shelf using four spans. The first span has an SLC-96 format and the remaining three spans have a Superframe Format (SF). The frame datalink in the first DS1 (span) of the *SuperLine* Access Shelf carries alarm information and control commands. The *DMS* TR-008 Mode 1 Remote Terminal database in table RCSINV is needed to support the TR-008 Mode 1 application. In addition, use any other appropriate tables as described in the *DMS* User's Guide for TR-008 Mode 1.

  For maintenance, the *SuperLine* Access Shelf provides derived line status, span status, and alarm capabilities from the *DMS* local digital switch.

- **GR-303**. The *DMS* Subscriber Carrier Module Access (SMA2) hardware provides RDT interface for Telcordia Technologies Inc. TR-TSY-000303 Specification to the *SuperLine* Access Shelf using two to four ESF spans. The first two DS1s of the *SuperLine* Access Shelf are engineered to carry Embedded Operations Channel (EOC) and Timeslot Management Channel (TMC) datalinks over the time slots 12 and 24, respectively. The *DMS* GR-303 Remote Terminal database in table RDTINV is needed to support the GR-303 application. In addition, use any other appropriate tables as described in the *DMS* User's Guide for GR-303.

  For maintenance, the *SuperLine* Access Shelf provides the derived line status, span status, EOC/TMC data links status, and alarm capabilities from the *DMS* local digital switch.

Two versions of Element Manager (EM)

Important: For detailed information about either the *SuperLine* EM or the Multi-EM, refer to the *SuperLine Access System Element Manager User's Guide*.

- ***SuperLine* EM**. Customers receive this version of EM when they purchase a *SuperLine* Access System. *SuperLine* EM uses Simple Network Management Protocol (SNMP) and enterprise Management Information Bases (MIB) to manage the *SuperLine* Access System. *SuperLine* EM runs on the PC or Sun workstation that serves as the craft interface terminal for the *SuperLine* Access System.

  The *SuperLine* EM application enables Telephone company (Telco) craftpersons and technicians to do the following:

  – Configure, manage, and monitor the status of *SuperLine* Access Shelf equipment.

  – View alarms for trouble conditions at the *SuperLine* Access Shelf or on GR-303 message channels.

  – Enable and disable all derived lines and voice Digital Signal 1s (DS1s).

  – View information about the subscriber lines and *SuperLine* IADs associated with the QV8 cards on the shelf.

  – Monitor and manage Internet Protocol (IP) routing for a *SuperLine* Access System's network and local interfaces.

  – Monitor and manage Internet Protocol (IP) routing for *SuperLine* devices' network and local interfaces.

  – Controls and monitors the downloading of *SuperLine* software.

  SuperLine EM is designed for use by:

  – Small Independent Telephone Operating Companies (ITOCs) and other *SuperLine* Access System customers whose communication networks are small, or who want to minimize costs of system management.

  – The craftperson who configures *SuperLine* Access Shelves or maintains shelf equipment (replaces circuit packs, etc.).

  – Craft or other personnel at the CO who do local network administration.

  – The person responsible for provisioning subscriber lines, the *SuperLine* Access Shelf, or both.

- **Multi-Element Manager (Multi-EM)**. Multi-EM is an optional version of *SuperLine* EM that runs under *OpenView*; it allows *OpenView* NNM to monitor and manage *SuperLine* Access Shelves as network nodes. Multi-EM runs as an integrated add-on to *OpenView* NNM. *OpenView* NNM uses Multi-EM as a Simple Network Management Protocol (SNMP) agent for collecting status and alarm information about *SuperLine* Access Shelves and their equipment.

  Important: Users of Multi-EM must purchase *OpenView* NNM separately.

  Multi-EM is designed for use by administrators of large communication networks that include multiple *SuperLine* Access Shelves and other devices. These devices may all be installed at one local facility, or they may be scattered among multiple remote locations. Multi-EM allows network administrators at this level to see what is happening locally at *SuperLine* Access Shelves.

  When a problem occurs on a *SuperLine* Access Shelf at a remote site, the administrator can notify craftpersons at that site that they need to take corrective actions.

NEBS, Level 3 compliant

The *SuperLine* Access Shelf and the SPFM may be used in a CO environment or a remote cabinet. The CO configuration meets Network Equipment Building Standard (NEBS), Level 3 requirements. Remote cabinetized shelves comply with TR-487 specifications.

One-to-five *SuperLine* Access Shelves and their associated SPFMs can be installed in an 8-foot rack by maintaining either a 2U baffle (similar to the one supplied in a *SuperLine* Access Shelf) above each shelf or placing an SPFM 1.5U above the *SuperLine* Access Shelf.

Refer to the *SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance* document for more information.

Provisionable data ratio

Using the *SuperLine* Element Manager, an upstream/downstream data ratio can be set (in ten percent increments). This data ratio specifies the percentage of data bandwidth that should be used to send data upstream, with the remaining bandwidth used for downstream data.

Important: When no derived lines are active, the data rate is dynamically set on a demand basis up to the maximum rate. When at least one derived line is active, the data ratio for the circuit is used. For this release, it is recommended that the data ratio be kept at the default value of 20/80, as this provides optimal throughput for Internet browsing.

Setting the ratio to 20/80 causes 20 percent of the available data bandwidth to be used to send data up from the *SuperLine* IAD, while the other 80 percent of the bandwidth is used to send data down to the *SuperLine* IAD from the *SuperLine* Access Shelf.

QV8 line card

The QV8 is the line card in the *SuperLine* Access Shelf. A maximum of 12 QV8 cards can be installed in one shelf. QV8 cards are the only shelf cards that are hot-swappable; that is, they can be installed or removed without powering down the shelf or disrupting service on other shelf cards.

Each QV8 card provides the following features and functions for the *SuperLine* Access Shelf:

- Multiplexes up to 8 Ethernet ports and 16 derived voice lines.
- Provides dynamic software downloading.

Spectrally comparable to ISDN

SuperLine's impact on all evaluated services is similar to Integrated Services Digital Network (ISDN). No service significantly affects the *SuperLine* Access System. A *SuperLine* subscriber loop is spectrally compatible with ISDN technology, so the impact of *SuperLine* on the network is minimal. The standard 0- to 4-kHz POTS spectrum supports baseband voice services.

The following are *SuperLine* spectrum comparisons:

- The upstream and downstream Near-end Crosstalk (NEXT) is within 1 dB of ISDN
- The upstream and downstream NEXT is 5 dB better than High-bit-rate Digital Subscriber Line (HDSL)
- The upstream NEXT is 5 dB less than HDSL and within 1 dB of ISDN for Asymmetric Digital Subscriber Line (ADSL)
- *SuperLine* has much less NEXT on ADSL downstream than ISDN, HDSL, T1, or ADSL
- *SuperLine* and T1 frequency bands are very far apart

SuperLine IAD, Model A2

The *SuperLine* Integrated Access Device (IAD) is a voice/data device that subscribers plug into a conventional power outlet and any active RJ-11 phone jack in their homes or offices. The *SuperLine* IAD allows subscribers to have up to two derived phone lines and a 10Base-T Ethernet data connection, in addition to their existing baseband telephone connection, all using the same customer premises copper twisted-pair wiring that terminates at the *SuperLine* Access Shelf. Subscribers can make and receive calls on both *SuperLine* Access System derived lines while simultaneously making or receiving baseband phone calls and/or using Ethernet data services depending on loop characteristics.

One CPE filter is built into each *SuperLine* IAD. In addition, a separate CPE filter is provided for an existing baseband voice phone line. One CPE filter is required on all existing baseband voice phone lines to reduce the amount of interference generated during phone conversations.

The *SuperLine* IAD can be connected to any of the following devices:

- standard Dual Tone Multifrequency (DTMF) phones
- fax equipment
- analog modem
- PC with a Network Interface Card (NIC)
- network access equipment, such as a hub switch router

For additional information, refer to the *SuperLine Integrated Access Device Model 6512-A2 Installation Instructions* and the *Model 6035 Phone Filter Installation Instructions* for filter requirements.

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SuperLine Access System architecture

Network architecture

The *SuperLine* Access System provides a flexible framework for multiplexing user traffic from multiple derived phone lines into a network feeder connection to a standard local digital switch. In a typical *SuperLine* network:

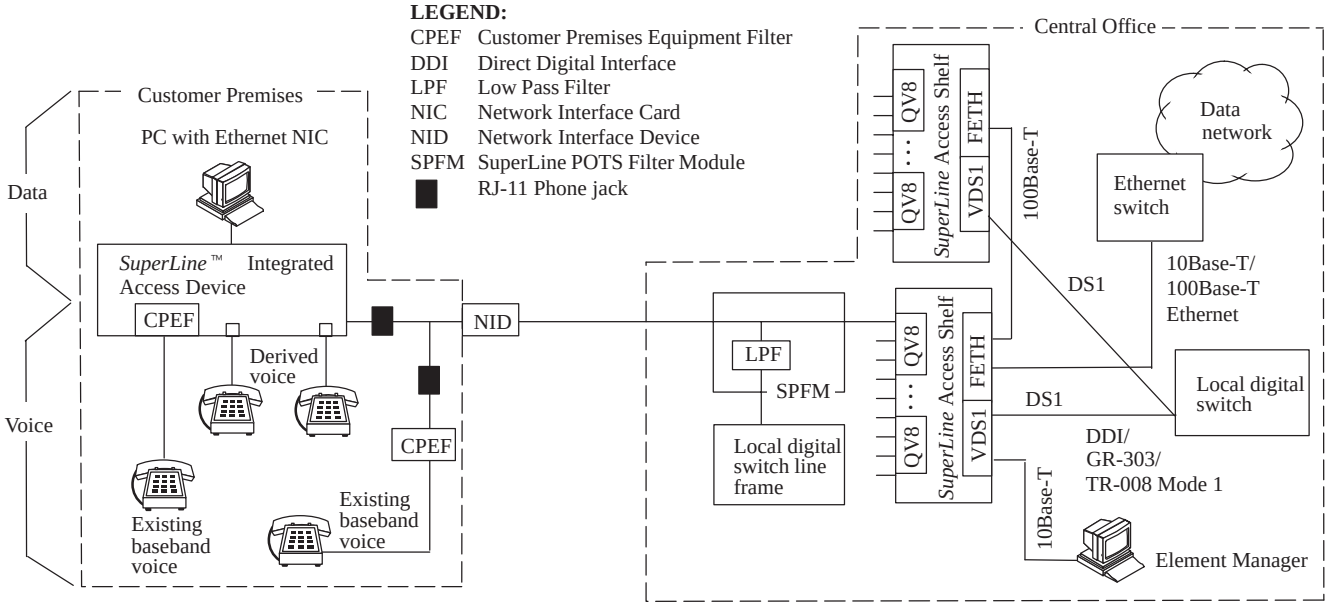
- One or more *SuperLine* Access Shelves, equipped with line cards and common cards, are installed at the Central Office (CO).
- The POWR card provides the power to the *SuperLine* Access Shelf.
- The VDS1 card has Digital Signal 1 (DS1) connections to the local digital switch.
- The FETH card has a 10/100Base-T Ethernet connection, using an Ethernet switch or router, to a customer's data network or another *SuperLine* Access Shelf.
- The QV8 line card connects to up to eight *SuperLine* IADs.
- The *SuperLine* POTS Filter Module (SPFM) provides the interface between the local digital switch and the *SuperLine* Access Shelf.
- The *SuperLine* IAD provides the derived telephony and data connections at the subscriber's premises.

Network figure

The following figure illustrates a typical CO application of the *SuperLine* Access System and provides an overview of the system and its interconnecting system elements, including the *SuperLine* Integrated Access Device at the customer premises and the *SuperLine* Element Manager at the CO.

Important:

1. Refer to the *SuperLine Integrated Access Device 6512-A2 Installation Instructions* for information on the configuration of the *SuperLine* IAD, and the *Model 6035 Phone Filter Installation Instructions* for information on the CPE filter.
2. To connect a PC, a crossover cable is required. To connect a hub, a straight-through Ethernet cable is required.
3. When connecting multiple PCs to a *SuperLine* IAD, a hub is required.



SuperLine™ is a trademark of AG Communication Systems.

2 *SuperLine* parts lists

Overview

Introduction

This chapter provides a list of all hardware and software elements for the *SuperLine*™ Access System, including their associated part numbers.

In this chapter

This chapter covers the following topics.

□

SuperLine Access Shelf hardware parts list

SuperLine Access Shelf components and part numbers

The following table identifies the major components that comprise the *SuperLine* Access Shelf assembly, including the *SuperLine* POTS Filter Module (SPFM). For a description of the purpose of each component, refer to the Hardware description chapter in the *SuperLine Access System SuperLine Access Shelf Installation, Operations, and Maintenance* document.

Important: The minimum issues for each piece of hardware listed is required for Release 3.0.0 of the *SuperLine* Access Shelf.

Part Number	Component Mnemonic	Minimum Issues for R3.0.0	*SuperLine*™ Access Shelf Component Description
EC-30267-A	DSLM	007	*SuperLine* Access Shelf
EC-30267-B	DSLM	001	*SuperLine* Access Shelf for NEBS compliance
FB-30102-1A	FETH	004	Fast Ethernet Switch Card
FB-30080-A	POWR	005	Power Supply and Display Panel Card
FB-30080-1A	POWR	002	Power Supply and Display Panel Card for NEBS compliance
FB-30101-A	QV8	006	Quadrature Amplitude Modulation Voice 8 Circuit Line Card
FB-30107-A	SPFC	002	*SuperLine* POTS Filter Card, 5th order
EC-30288-A	SPFM	002	*SuperLine* POTS Filter Module
FB-30103-1A	VDS1	006	Voice DS1 Card
FB-30103-2A	VDS1	002	Voice DS1 Card for NEBS compliance
EC-30273-A	BLNK	—	Blank faceplate to replace QV8 cards not equipped

□

SuperLine Access System software parts lists

SuperLine Access Shelf and *SuperLine* IAD software and firmware

A CD-ROM is provided that includes shelf software and firmware, and *SuperLine* Integrated Access Device (IAD) software as follows:

Important: This CD-ROM can be used to reload *SuperLine* Access Shelf software. *SuperLine* IADs automatically download once the shelf is running on the new load.

Part Number	Release Number	Description
SL-100300-SSFR-003	3.0.3	• *SuperLine*™ Access Shelf Software and Firmware • *SuperLine* IAD software (J02.13.02)

Element Manager software

A CD-ROM is provided that includes the *SuperLine* Element Manager software as follows:

Part Number	Release Number	Description
SL-110300-EMSR-004	3.0.3	• *SuperLine*™ Element Manager Software

Multi-Element Manager software

If purchased, a CD-ROM is provided that includes the *SuperLine* Multi-Element Manager (Multi-EM) software as follows:

Important: Multi-EM software is not included with the *SuperLine* Access System and must be purchased separately.

Part Number	Release Number	Description
SL-110300-MEMR-002	3.0.1	• *SuperLine*™ Multi-Element Manager Software

□

SuperLine Integrated Access Device parts list

SuperLine IAD part number and components

The *SuperLine* Integrated Access Device (IAD), part number TR-100890-2C, is supplied by AG Communication Systems. The *SuperLine* IAD kit contains the following components:

- *SuperLine* IAD
- AC power transformer
- 6-foot RJ-11 phone cable
- One CPE filter

Important:

- The *SuperLine* IAD has a built-in CPE filter for a baseband phone.
- Extra CPE filters may be ordered using part number TR-100890-2E.

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Glossary

4TEL®

Teradyne's computer-controlled diagnostic system for External Facilities.

5ESS®

Lucent Technologies' Class 5 local digital switch. *5ESS* is a registered trademark of Lucent Technologies.

10Base-T

An Ethernet Local Area Network (LAN) that operates on Shielded Twisted-Pair (STP) or Category 5 Unshielded Twisted-Pair (UTP) cable. Runs at 10 Mbps.

100Base-T

An Ethernet Local Area Network (LAN) that operates on Shielded Twisted-Pair (STP) or Category 5 Unshielded Twisted-Pair (UTP) cable. Runs at 100 Mbps.

A

ADSL

Asymmetric Digital Subscriber Line

ANSI

American National Standards Institute

ASN.1

Abstract Syntax Notation One

ARP

Address Resolution Protocol

B

B8ZS

Bipolar 8-bit Zero Substitution. Refers to a specific type of line coding.

Baseband voice line

A physical line that supports standard telephone service only over the baseband voice/POTS band, plus all standard telephony services.

C

CD-ROM

Compact Disc-Read Only Memory

Circuit pack

A printed circuit board with microprocessors, transistors, and other electronics components that slides into the *SuperLine* Access Shelf. Circuit packs include the POWR card, the QV8 card, the FETH, and the VDS1 cards.

CO

Central Office

CPEF

Customer Premises Equipment Filter

CSC

Customer Support Center at AG Communication Systems.

D

Data ratio

The percentage of bandwidth on a derived voice line that carries upstream data traffic, versus the percentage of bandwidth that carries downstream data transmissions.

DDI

Direct Digital Interface

Derived voice line

A standard 64 Kbps μ-law voice offering, supporting normal telephony services such as Caller ID, special ringing, message waiting, V.34 and V.90 modems, and so on. From the subscriber's perspective, a derived voice looks and behaves like standard telephony service.

DHCP

Dynamic Host Configuration Protocol

DMS™

Nortel Networks Corporation's Class 5 local digital switch. *DMS* is a trademark of Nortel Networks Corporation.

DS0

Digital Signal, Level 0. DS0 is equal to one voice conversation digitized under PCM. Twenty-four DS0s (24 x 64 Kbps) equal one DS1.

DS1

Digital Signal, Level 1. DS1 is 1.544 Mbps.

DTMF

Dual Tone Multifrequency. A synonym for pushbutton or touchtone telephone dialing.

E **Element Manager (EM)**

A software application for personal computers that enables Telco personnel to configure, administer, and monitor *SuperLine* Access Systems.

EOC

Embedded Operations Channel

ESD

Electrostatic discharge

Ethernet

A network topology that supports high-speed data communication among systems. A widely used standard for LANs.

F **FETH**

Fast Ethernet card for the *SuperLine* Access Shelf.

H **HDSL**

High-bit-rate Digital Subscriber Line

G **GR-303**

Protocol that defines an interface between a CO switch and a remote terminal to handle all call processing and operational functions. Developed by Telcordia Technologies Inc. (formerly Bellcore). In this document, GR-303 is used in place of TR-303 when referring to that telephony protocol.

***GTD-5*® EAX**

GTE's Class 5 local digital switch. *GTD-5* is a registered trademark of GTE Corporation.

GUI

Graphical User Interface

I **IAD**

Integrated Access Device. A voice/data device that makes *SuperLine* service possible at the customer premises.

IP

Internet Protocol

ISDN

Integrated Services Digital Network

ITOC

Independent Telephone Operating Company

K

Kbps

Kilobits per second (1,000 bits per second). A data transfer rate.

L

LAN

Local Area Network

LDS

Local Digital Switch

LED

Light Emitting Diode

M

MB

Megabytes

Mbps

Megabits per second (1,000,000 bits per second)

MHz

Megahertz

MIB

Management Information Base

MLT

Mechanized Loop Testing

Multi-Element Manager (Multi-EM)

Software application from AG Communication Systems that provides a graphical user interface for monitoring and administering *SuperLine* Access Shelves and their equipment. Multi-EM is a version of *SuperLine* Element Manager that runs integrated with *OpenView* Network Node Manager.

N

NEBS

Network Equipment Building Standard, Network Equipment Building System

Network element

A managed object that represents telecommunications equipment within the telecommunications network and performs network element functions; that is, provides support, service, or both to the subscriber.

NIC

Network Interface Card

NNM

Network Node Manager

NOC

Network Operations Center

O

OpenView Network Node Manager (NNM)

Network management software application. OpenView is a registered trademark of Hewlett-Packard Company.

P

PC

Personal Computer

POTS

Plain Old Telephone Service

PSD

Power Spectral Density

Q

QV8

Quadrature Amplitude Modulation Voice 8 card for the *SuperLine* Access Shelf. Multiplexes up to 8 Ethernet ports and 16 derived voice lines.

R

RDT

Remote Digital Terminal

S

***SLC*®96**

Subscriber Loop Carrier 96. *SLC* is a registered trademark of Lucent Technologies.

SMA2

Subscriber Carrier Module-100 Access

SMS

Subscriber Module SLC 96

SNMP

Simple Network Management Protocol

SPFC

SuperLine™ POTS Filter Card

STP

Shielded Twisted Pair

***SuperLine* Access Shelf**

A module that houses *SuperLine* QV8, VDS1, FETH, and POWR cards and the SPFM assembly.

***SuperLine* Access System**

AG Communication Systems product that enables a single standard copper, twisted-pair customer telephone connection to support multiple lines carrying voice and data traffic.

***SuperLine* Element Manager (*SuperLine* EM)**

Software application from AG Communication Systems that provides a graphical user interface for monitoring and administering *SuperLine* Access Shelves and their equipment.

***SuperLine*Integrated Access Device (IAD)**

A modem that makes *SuperLine* service possible at the customer premises.

***SuperLine* POTS Filter Module (SPFM)**

A passive filter splitter; provides the interface between the local digital switch and the *SuperLine* subscriber lines (baseband voice lines) connected to the *SuperLine* Access Shelf and the External Facilities lines.

T

Telco

Telephone company

TFTP

Trivial File Transfer Protocol

TMC

Timeslot Management Channel

TR-008 Mode 1

Protocol that defines an interface between a CO switch and a remote terminal to handle all call processing and operational functions. Developed by Telcordia Technologies Inc. (formerly Bellcore).

U **U**

A unit of measurement equal to 1.75 inches, or one mounting space in a telco rack.

UTP

Unshielded Twisted Pair

V **VDS1**

Voice Digital Signal 1 card for the *SuperLine* Access Shelf.

W **WAN**

Wide Area Network

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