
An Overview of Partner Phone Systems



Release 3

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Please send suggestions for enhancement to john@jshelton.com.

Acknowledgements

Several of the illustrations are from older AT&T and Lucent manuals available from the Avaya.com website. Some pictures are from Avaya product literature.

Any text quotations from other materials are identified by footnotes.

General information is summarized from Avaya.com documentation.

Some historical data gleaned from auctions on eBay.

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1 Introduction

1.1 Why this was written

I am a telephone hobbyist. My professional work is not related to telephone installation. In my spare time, I have tinkered with telephones for the last 40 years.

In the 1990, AT&T introduced the Partner phone system, aimed at small business and upscale residential markets. The Merlin phone system introduced a half-dozen years prior was evolving to larger sizes and more complex systems, leaving a gap at the small end. Since 1990, Partner has evolved to be a simple yet powerful system handling small and medium offices, yet still targeting the upscale residence. Perhaps because of the later start, Partner systems tend to have more user features than Merlin.

There is an active market in buying/selling used Partner equipment. Because older models are not now manufactured, there is a dearth of information available to hobbyists.

Avaya, successor to AT&T, makes a current line of equipment, the Partner ACS, which is extremely capable, and suitable for modern office telecom applications. By no means should this document dissuade anyone from considering purchase of new equipment from Avaya or its distributors.

Should you be interested in understanding the older systems, read further here. This is not an effort to dissuade you from purchasing a new Avaya Partner ACS system. New Partner ACS customers may also benefit from reading this guide.

It is not the intention of this guide to replace the documentation originally written for Partner systems. If you want to know how to install and program these systems, find the documentation elsewhere (see “Available Documentation,” on page 5.)

This guide will help you understand the different models of phones and systems, and compare them. It may also include obscure technical documentation not easily found elsewhere. I encourage those with additional knowledge to send me updates.

1.2 The Partner concept

With Partner, AT&T introduced the concept of an electronic key telephone system that supported both a range of System phones plus low-cost standard telephones. Unique to Partner, all System phones allowed connecting an adjunct standard telephone. This capability made it possible to attach standard telephone accessories, such as faxes, modems, credit-card-dialers, to any system phone, or hook them to the system directly.

While Partner started with only two system phones, the MLS-6 and -12, it soon added phones with more programmable buttons, and added a display.

At introduction, Partner was a “poor cousin” to Merlin, but during the 1990s, Partner grew to have more user-oriented features than Merlin. Merlin evolved to handle more complex situations such as multi-office networking.

Appendix A, “Comparison of Avaya phone offerings,” on page 44, offers a detailed comparison between Avaya’s current offerings.

Partner was also designed for end-user self installation. Circuit cards are encased in large, “friendly” plastic shells that are designed to be easy to fit together with little chance of error. Smaller installations use only 1 or 2 such cards. All connections are done with modular plugs.

Unlike the Merlin series, Partner has remarkably been able to handle older parts with newer processors. Even the earliest expansion boards and telephones will work with the newest ACS processor.

1.3 The manufacturers

Throughout this document, we typically say “AT&T,” but Partner systems have been manufactured by AT&T and its successors, as described below.

1.3.1 AT&T

After the breakup of the Bell System, AT&T Technologies, a part of AT&T, manufactured electronic telephone systems. The Western Electric name was retired. Partner was originally engineered, built, and sold by AT&T. The name “AT&T” was used on Partner equipment.

1.3.2 Lucent

In 1997, AT&T spun off Lucent, all the manufacturing divisions of AT&T. AT&T wanted to be able to buy equipment from other manufacturers, and the Lucent folks wanted to be able to sell more widely (including AT&T competitors.)

Lucent continued the Partner line of equipment. Many models of AT&T equipment were simply re-branded Lucent; later, Lucent introduced new models.

1.3.3 Avaya

Avaya is a new company, with a heritage dating back to Alexander Graham Bell and AT&T. Avaya grew up in the Bell system. Over the decades, the core of what is now Avaya became AT&T's Global Business Communication Systems group. The next evolution came in 1996, when Avaya was part of the systems and technology business that was spun off from AT&T as Lucent Technologies. Four years later, Avaya was finally set to launch when the enterprise networking

part of Lucent was spun off. The move allowed Avaya to singularly focus on the needs of enterprise customers. Avaya separated from Lucent on Sept. 30, 2000 and began operating as an independent company.¹

More importantly, Avaya continues the Partner ACS system.

1.4 Predecessors to the Partner systems

The old “Bell System” (AT&T, Western Electric, etc.) provided multi-line phone systems to users from the 1930s through the 1970s. These could be classified into:

- Private Branch Exchanges (PBXs), starting with traditional operator cordboards and advancing quickly to automatic exchanges; these served 100 – 10,000 phones
- Key systems, managing a group of telephone lines across a group of users, typically serving 5 – 100 users. Each user has access to a selection of outside lines (or, installed “behind” a PBX, access to a selection of PBX lines).

The most popular key system was the electromechanical 1A2 key system, built around small circuit cards, one per telephone line. Phones could support from 5 to 30 phone lines. Systems (Key Service Units) supported from 4 lines to hundreds, the larger ones built of racks of 15-line units. In addition to giving users access to designated lines, users could contact each other through manual signaling (press a button, and a buzzer somewhere else buzzed), or through intercoms (dial a number on an intercom line, and another user’s phone buzzed.) A given intercom circuit generally supported only 10 dial-able extensions, so was not terribly useful in larger offices, but since in larger offices the key systems were often used behind PBXs, a user could just dial the extension of the other user on a regular line.

¹ From Avaya’s corporate web site.

Fig. 1. AT&T 1A2 Key system telephone (565)



In the 1970s, AT&T introduced the ComKey system (an update to the 1A2 system with a few more features) and the Horizon system, about which I know very little.

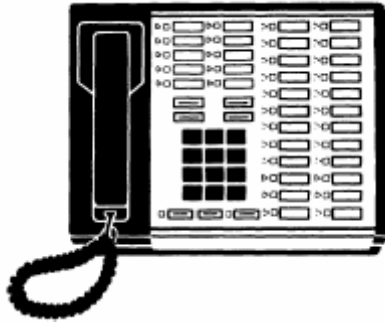
Fig. 2. AT&T ComKey system



AT&T's first true Electronic Key Telephone System was the Merlin, introduced in 1984, and through evolution, still made today.² (See "Overview of Merlin Phone Systems" from this same author.)

² Merlin evolved from handling small to medium installations in the 1980s, to today's Merlin Magix, targeted at medium-sided business. There are no small Merlin offerings from Avaya; Partner ACS is the only such offering. See the appendix for a detailed comparison.

Fig. 3. AT&T Classic Merlin phone



Soon after, AT&T introduced Spirit, for very small systems. The Spirit system had some design defect which caused AT&T to cease manufacture in a short time, and was the basis of a class action lawsuit. AT&T settled with discount coupons for maintenance or additional parts.³ Spirit was a feature-poor system, and of little interest here. Partner replaced Spirit, and continues to present-day; it has also replaced smaller Merlin systems.

Appendix A, “Comparison of Avaya phone offerings,” on page 44, offers a detailed comparison between Avaya’s current offerings.

1.5 Available Documentation

Avaya has kindly posted many old manuals on their web site in PDF format. Look at <http://support.Avaya.com> for their Product Documentation section.

Some information can be found in old AT&T manuals and by cruising public web auctions.

The Web forum “Tek-Tips” has a channel devoted to Partner phone systems; start at <http://www.tek-tips.com>. Send them some money to keep the web site alive.

³ According to the Chicago Clearinghouse, AT&T agreed to settle the case with transferable coupons. Coupons were sent to all eligible class members who purchased AT&T Spirit Phone Systems between April 21, 1987 and July 3, 1991. Coupon holders were entitled one of the following options:

- 20% discount off the best-negotiated price on selected AT&T phone systems
- 20% discount toward the purchase of a 4-year maintenance contract
- 20% discount toward the purchase of selected phone products from AT&T's sourcebook

AT&T coupons, good toward the purchase of a complete phone system, new 4 year maintenance contracts, or products in the AT&T Sourcebook.

2 The Systems

Partner systems are built using 1 – 10 Partner circuit cards, assembled into a Carrier (or pair of carriers.) In the sections below, we describe the whole package (system), and introduce the circuit cards. Many of the cards are usable in later systems, but are only described in the section corresponding to the system in which they were first introduced.

For each system, we identify the different processor releases. Each release adds functionality or support for new modules or accessories. Non-processor modules also went through a revision process, though at this time, we do not have descriptions for the different revisions.

2.1 Comparison at a Glance: the Partner systems

Here in a single chart are all the Partner systems compared side-by-side. This is not intended to be comprehensive: read the detailed descriptions that follow.

Fig. 4. Comparison chart, Partner systems

System	Size	Capacity (lines x stations)	Features
Partner (Basic)	1 – 2 modules	4 x 12	Limited
Partner Plus	1 – 5 modules	10 x 30	Moderate
Partner II	1 – 10 modules	16 x 48 or 24 x 24	Many
Partner Endeavor	1 – 5 modules	15 x 40	Many
Partner ACS	1 – 5 modules	19 x 44 or 9 x 48	Very many

Upgrades from one to the next system generally require only changing the processor.

All Partner processors and some other modules provide Power Fail Transfer, allowing a standard tip/ring phone to be connected automatically to a CO line during a power failure.

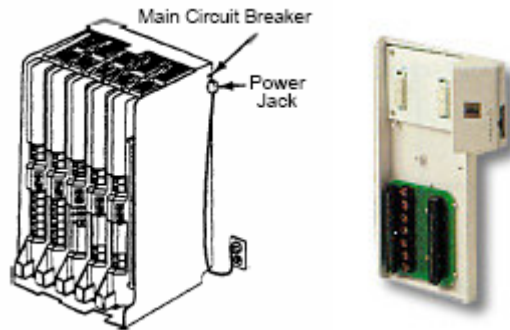
The modules are described after the systems, in section 2.8, “Partner Modules.”

2.2 Partner packaging

Partner systems consist of 1 to 10 modules (circuit cards) assembled into 2- or 5-slot carriers. Some single-module configurations are possible, and do not require a carrier. Each Partner module has its own power supply, and

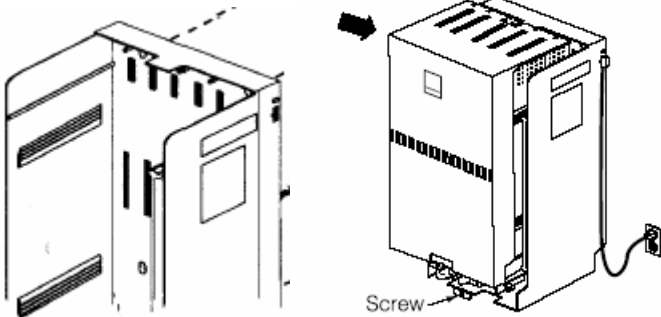
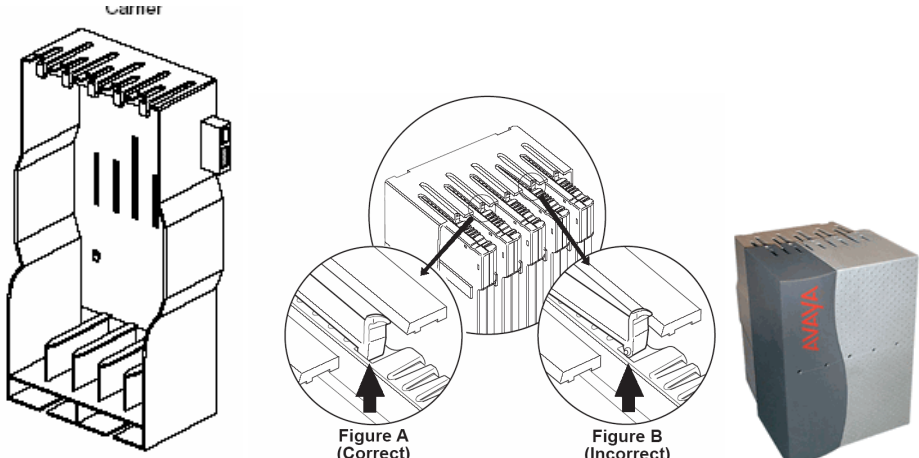
connects to the local electrical supply via a power cord, or via the carrier's internal electrical supply bus.

Fig. 5. Five-slot carrier, 2-slot carrier



The 5-slot carrier comes in several versions:

Table 1: Partner 5-slot carrier versions

Carrier version	Comments
Original Partner 5-slot carrier	<p>No locking tabs; modules are restrained by friction and installation of cover.</p>  <p>Note open top: Screw</p>
Expansion carrier	<p>For Partner II only, a second carrier for the expansion processor and cards.</p> <p>Not clear if this is different in any way than the original carrier, but AT&T documented it as a separate gadget.</p>
ACS R4 carrier	<p>Improved carrier that does not require a cover. Locking tabs keep modules in place. There is more space between modules to improve airflow. Color photo shows cover installed.</p> 

The 2-slot carrier (also called a “module connector”) had release numbers, such as “3.1,” but we do not have a complete list of such releases, and are unaware if there is any difference in functionality. The module connector is small, and does not provide any enclosure or cover; it merely serves to connect two modules. Since Partner modules themselves physically interlock, this works satisfactorily.

2.3 Partner (Basic)

The original Partner supported only 1 and 2 card installations, and initially only had one kind of card, the 206. Features were very limited.

Instead of a full carrier to hold the cards, 2-card installations use a “module connector” to bridge the two cards. A single card could be installed on a

table-top, but 2-card systems were only designed to be wall mounted, to allow for heat dissipation. The Partner Basic was designed for end-user installation.

The processor was based on the 80C321 microcontroller with 8K RAM and 64K ROM.

Table 2: Partner Basic software releases

Software release	Date introduced	Significant new features
1.0	1990.Oct	Call restrictions Speed dialing Ringing options
2.0	1991.Apr	Adds support for 200 module PBX & Centrex support Adds support for MLC-6 cordless phone
3.0	1993.Feb	Adds support for MLS-18D, MLS-12D phones Time/date display Group paging Power fail support Music on hold
3.1	??	Support for message waiting on T/R phones.
4.0	1994.Nov	Support for MDC and MDW wireless phones
4.1	1995.July	Final release of Partner Basic Support for "Partner" (Euro) phones.

The original Partner cards had a specific version of software installed, and could not be upgraded.

Because the 206 card did not have a music-on-hold port, a special adapter was needed to connect a music source to a CO line port.

Partner Basic was never designed to be large or feature-rich; Partner Plus was marketed at the same time with larger capacity and more features. Customers could upgrade by buying a new processor, keeping any extra circuit cards and phones.

2.4 Partner Plus

Partner Plus was "big brother" to the original Partner Basic. Sold at the same time, it offered more features and more capacity. There was an easy upgrade

from Basic to Plus. From the beginning, Partner Plus supported display phones, and required a display phone at extension 10 for programming.

The Plus processor included a jack for paging, and an RCA jack for music on hold input. The processor was based on Motorola's 68000 microprocessor.

Partner Plus allowed use of the 5-slot carrier for greater expansion in addition to supporting the two-slot carrier, supporting several modules adding line and station ports. See section 2.8, "Partner Modules," on page 10.

The list of features with Release 1 was impressive, and grew with further releases.

- Abbreviated Ringing
- Allowed List Assignment
- Allowed Phone Number Lists
- Automatic Privacy
- Calling Group Extensions
- Copy Settings
- Dial Mode
- Disallowed List Assignment
- Disallowed Phone Number Lists
- Display Language
- Doorphone 1 Extension
- Doorphone 2 Extension
- Doorphone Alert Extensions
- Emergency Phone Number List
- Fax Machine Extensions
- Hold Disconnect Time
- Hotline
- Line Assignment
- Line Type
- Line Use Restriction
- Music On Hold
- Night Service Button
- Night Service Group
- Number of Lines
- Outgoing Call Restrictions
- Outside Conference
- PBX Dial-Out Code
- Pickup Group Extensions
- Recall Timer Duration
- Rotary Dialing Timeout
- System Date
- System Day
- System Password
- SystemReset—
ProgrammingSaved
- System Speed Dial Numbers
- System Time
- Toll Call Prefix
- Transfer Return Rings

Table 3: Partner Plus software releases

Software release	Date introduced	Significant new features
1	1990.Oct	Original release. Supported MLS-12, -12D, and -6 Only 206 cards supported. Maximum 8x24 configuration
2	1991.May	Support for MLS-34D, MLC-6 phones Support for 206 board Maximum 8x24 configuration Support for Partner Plus Attendant.
3	1992.Jun	Support for 400 board Maximum 12 line support Support for CA-24 “Call Assistant” direct station selection. Added SMDR port to processor
3.1	1993.Oct	Support for 206E and 400E boards
4.0	1994.Aug	??
4.1	1995.July	Support for Partner (Euro) phones. Final Release of Partner Plus.

2.5 Partner II

Only a year after Partner’s introduction, AT&T released Partner II, the “big daddy” of the Partner world. Using up to 2 5-slot carriers, Partner II could support systems up to 24x24 or 16 x 48 (lines x stations.) Partner II also added even more features than Partner Plus. Because of large system size, both extensions 10 and 11 could do system programming and have the Call Assistant adjunct.

Partner II supported caller groups and night service, and later introduced Caller ID support. It also introduced Hybrid (Pooled) mode, where a pool of lines are made available via a single line pool button. When the user accesses a pool to make a call, the system selects an available line from the pool. Since multiple lines are associated with the pool, the user does not know which line within the pool is being used to make the call.

Using a second carrier required an Extension processor module, and a cable to connect the primary and extension processors. A fully loaded system is shown below. Partner II added support for several new modules; see section 2.8, “Partner Modules,” on page 10.

Fig. 6. Fully expanded Partner II system

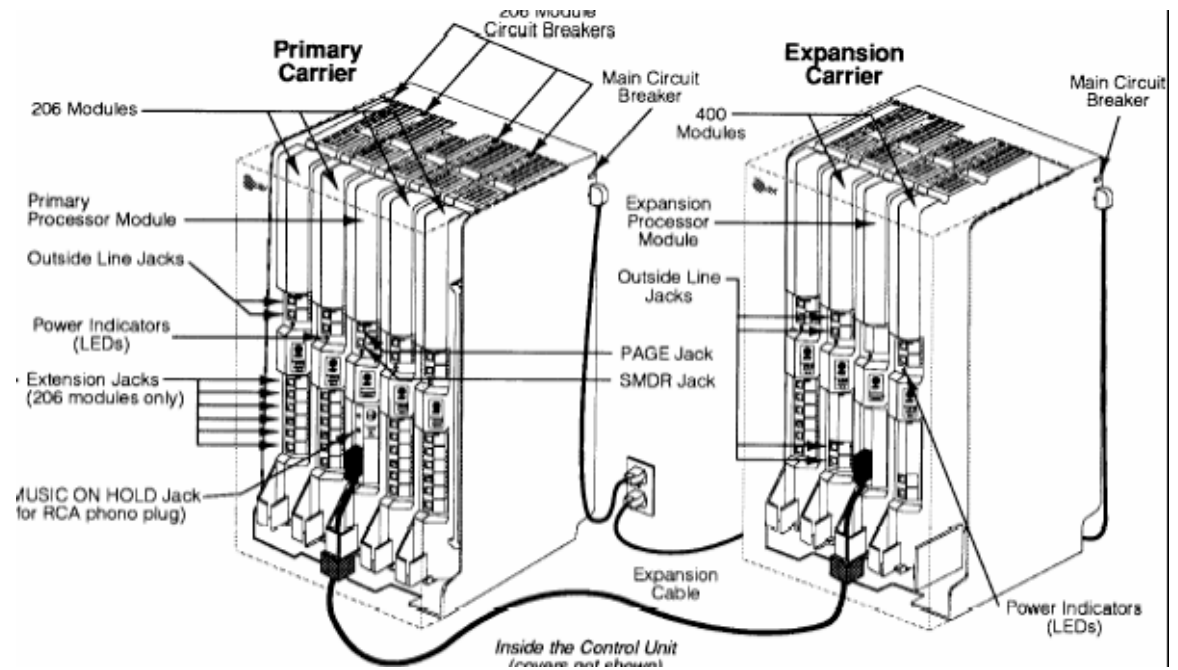


Table 4: Partner II software releases

Software release	Date introduced	Significant new features
1	1991.Sep	Original release Support for MLS and MLC phones
Centrex 1	1991.Nov	Specialized for use behind Centrex. I have found little information for this release.
2	??	
3	1992.July	Support for 206EC and 400EC modules; caller ID Voice Mail with external Partner Mail system
3.1	1993.Oct	Hospitality Features
4.0	1994.Aug	Support for Hybrid mode Support for MDC and MDW cordless phones Support for new Partner Mail VS module
4.0.1	??	??
4.1	1996.Aug	Final Release of Partner II Support for Partner (Euro) phones

2.6 Partner Endeavor

Compared to Partner ACS (see below), the Partner Endeavor, introduced later, was somewhat crippled.

Only two releases of Endeavor were made, starting in 1998. Aug. A colleague reports:

The Endeavor was made concurrently with the ACS. It was originally supposed to be available through distributors such as Graybar for Non-Business Partners, before the current Business Partner model was in place. It is truly strange equipment, and I'm glad that it is no longer made.⁴

The Endeavor used an interesting 362 module that provided ringing voltage on only the last 2 of 8 system ports. Partner system phones work on any port, but regular T/R phones could only ring on the last two. See section 2.8, "Partner Modules," on page 10.

Partner Endeavor was officially compatible with only Partner Endeavor phones, plus the MDC and TransTalk series cordless phones, though other Partner compatible phones should work.

Endeavor, like ACS, allowed the use of PCMCIA (PC Card) slots on the processor, for upgrades, functional enhancement, and auxiliary features. Cards accepted were:

- Upgrade Software
- Backup/Restore
- Auto System Answer/Direct Extension Dialing
- Partner Voice Messaging PC card.

See Section 2.7.1, "Partner ACS PC Cards," on page 8 for more discussion about PC Cards.

The processor also used AAA batteries for configuration backup. The processor was based on the Motorola 68036 microprocessor.

The Endeavor processor had connectors for:

- RCA jack: Music on Hold

Strangely, there was no SMDR port.

⁴ From "TouchToneTommy" at TekTips.org

Table 5: Partner Endeavor software releases

Software release	Date introduced	Significant new features
1.0	1998.	Original release
1.1	??	Avaya Beep Code Table shows 1.1 release, but no documentation found.
2.0	1999.June	The R2 (called the Large System Upgrade) allowed for expanded system capacity and also additional Partner modules: 200E, 206E, 400E, and the EC version of these modules Final release

2.7 Partner ACS

Introduced in 1997, Partner ACS is still made today, and incorporates all significant features from prior Partner systems, plus adds many new modules allowing for increased capacity and interconnection.

ACS was designed after the Lucent spin-off from AT&T.

ACS used a new processor, based on the Motorola 68306 microprocessor. At introduction, ACS used modules from previous Partner systems (except Endeavor). Later, ACS added support for several new cards.

ACS supports standalone processor use (ideal for small office/home office), 2-card configuration, or the 5-slot carrier. 2- and 5-card configurations must be wall-mounted. Avaya now specifically markets Partner ACS to upscale homeowners.⁵

ACS now supports high-density modules, permitting more than 48 station ports. But as of Release 6, the “dial plan” only allows for 48 stations to be accessible. Some of the voice mail products allow for more voice mail stations to be assigned, but they cannot be physically associated with stations because of the dial plan limit allowing station IDs from 10 to 57. With a voice mail product installed, some station IDs (2 – 6) are unavailable for telephone assignment as well, further reducing total system capacity.

The Partner ACS processor comes complete with a wide variety of connections:

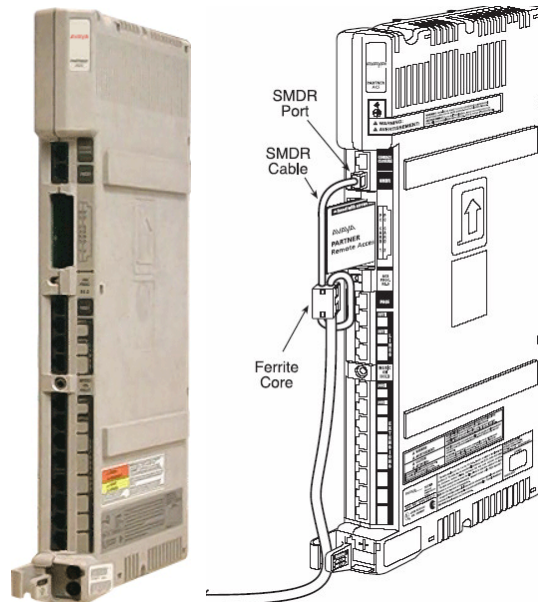
⁵ “Your investment in a luxurious new home is an important milestone for you and your family. You’ve realized your dream of owning a magnificent new home... and attained the lifestyle that comes along with it. Central to all of today’s busy lifestyles is one thing: the need for efficient and reliable communications. Lucent's newest PARTNER telephone system is designed for savvy homeowners like you who simply want the best daily-use phone system. Jam-packed with convenient features and thoughtful extras, this "too good to be true" system is the perfect compliment to your new home.”

- Grounding connection, important for protection. (See section 6.4, “Ground wiring,” page 41, for more information.)
- Contact Closure jack – for connecting up to 2 contact closure devices (See section 5.1, “Contact Closure,” page 36 for more detail.)
- SMDR port – for connecting a printer or PC to log calls. (See section 5.3, “SMDR Logging” on page 36.)
- Two PCMCIA (PC Card) slots for added functionality. (See section 2.7.1, “Partner ACS PC Cards,” on page 8.)
- Paging Jack for external paging speakers
- 3 CO Line jacks
- RCA Phono connector for Music on Hold
- 8 Partner System Phone station jacks (T/R compatible)
- AAA battery backup.

The first two station jacks are automatically connected to the first 2 CO line jacks in the event of power failure; the user must plug in a standard T/R phone to access the CO lines in that event.

A standalone processor is capable enough to support a small office or home system without needing a carrier and more cards.

Fig. 7. Partner ACS Processor



Since introduction, ACS has undergone nearly annual software revision, and each revision has been significant in terms of additional feature support or support for new modules. Avaya continues to invest in Partner improvement. The table below summarizes major changes in successive Partner releases.

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Table 6: Partner ACS software releases

Software release	Date introduced	Significant new features ⁶
1.0	1997.Jan	Original release Initial features similar to final features from Partner II, with addition of features to support Contact Closure.
1.1	??	Support for Partner Voice Messaging PC Card release 1.0
2.0	1997.Nov	Automatic System Answer to help answer and route calls. Direct Extension Dial to allow callers to dial an extension or help group directly without the aid of the receptionist. Line Pooling to create up to four groups, or pools, of multiple outside lines. When users access a pool to make a call, the system selects an available line from the pool. Call Coverage for users who are unable to answer their calls but want their calls answered by another individual. Caller ID Logging and Dialing feature for users to view the names and numbers of logged calls from system telephones. Users can press the Dial option to automatically dial the caller's number. SMDR Talk Time to allow you to track on an SMDR call report the length of time that users talk on incoming outside calls. Support for 308EC Expansion module
3.0		Call Screening to listen to a caller leaving a message in the user's mailbox. Fax Calling Tone Detection to automatically route incoming fax calls to a fax machine. Record-a-Call to record an active conversation in the user's mailbox. PARTNER MAIL VS. Voice Messaging System (PMVS) 5.0 or later is required. Unique Line Ringing for a user to differentiate which line is ringing. Enhanced programmable features: <ul style="list-style-type: none"> ▪ Call Coverage Rings ▪ VMS Cover Rings ▪ VMS Hunt Delay ▪ VMS Hunt Schedule Automatic Daylight Savings Time to change the time one hour as Daylight Savings Time begins and ends. 911 Calls do not require account code entry. PARTNER Remote Access PC Card allows you to program the system remotely or locally from a PC and perform backup and restore functions. You must have the PARTNER ACS R6.0 PC Administration software to program the system from a PC.

⁶ New features releases 2-6 are reproduced from the ACS Release 6 Programming manual.

An Overview of Partner Phone Systems

Software release	Date introduced	Significant new features ⁶
4.0		<p>Support of the 1600 DSL module, a module that contains up to 16 lines on one line jack.</p> <p>Caller ID name and number appear on display telephones while a call is ringing.</p> <p>Newly designed [5-slot] carrier, requiring no cover.</p> <p>Dial plan increased to support 48 stations.</p>
5.0		<p>Support of the 012E module, a module that increases the maximum extension capacity to 48.</p> <p>Support of the Endeavor 362EC module, enabling PARTNER® Endeavor telephones to function with PARTNER ACS.</p> <p>Remote administration of the 1600 DSL module is available through the PARTNER ACS R6.0 PC Administration software. For more information, see the PARTNER® ACS R6.0 PC Administration Getting Started.</p> <p>With the PARTNER ACS R6.0 PC Administration software, the content of the PC Cards that are installed in the PARTNER ACS processor module as well as the modules installed in the carrier are displayed in an inventory screen. For more information, see the PARTNER® ACS R6.0 PC Administration Getting Started.</p> <p>Firmware upgrade capability of the 1600 DSL and 012E modules is available by using a Remote Access PC Card or a Backup/Restore PC Card that is configured for the firmware upgrade.</p>
6.0		<p>Support of the T1 module, a module that contains up to 16 lines on one line jack.</p> <p>Support for Direct Inward Dialing (DID) service for PARTNER systems that have a T1 module. Note: You must use the PARTNER ACS R6.0 PC Administration software to administer the DID service.</p> <p>Remote Call Forwarding to allow users to forward all intercom, transferred, and outside calls from their extensions to an outside telephone number they specify.</p> <p>Cell Phone Connect to allow users to forward all intercom, transferred, and outside calls from their extensions to an outside telephone number they specify and simultaneously have the PARTNER system also ring their extensions. Depending on how the user's coverage is administered (for example, they have a PARTNER Messaging system), the call can go to coverage. Cell Phone Connect is available only on PARTNER systems that have a T1 module.</p> <p>Administrable Hold Reminder Tone to allow you to set the length of time calls must be on hold before the Hold Reminder Tone alerts the users.</p> <p>Caller ID name and number appear on display telephones when a call is transferred from the Automated Attendant, Voice Messaging System, or Direct Extension Dial.</p> <p>Call timer on display telephones now shows the entire time that a call has been in progress on the PARTNER system (including on hold and transferred).</p> <p>The number dialed will now remain on display telephones until the user receives another call.</p> <p>All Lines Busy Event to report when all lines in the PARTNER system were busy. This feature is available only in the PARTNER ACS R6.0 PC Administration application.</p> <p>Electronic serial numbers for the PARTNER ACS Processor Module and the PARTNER 308EC. This information can be viewed using the PARTNER ACS R6.0 PC Administration application.</p>

Partner ACS can use all previous Partner modules, and has added several new ones supported by the ACS processor. See section 2.8, “Partner Modules,” on page 10.

2.7.1 Partner ACS PC Cards

Like the Endeavor, Partner ACS includes a pair of PC card slots allowing for expanded functionality. Using PC cards, owners can improve their system without needing to add modules.

Available PC Cards include:

Remote Access/ Software upgrade – One time use card upgrades processor from older release to newer release. Even original ACS Release 1.0 processor can be upgraded to latest software release. Allows remote administration of the Partner ACS.

Backup/Restore – Provides non-volatile backup of system configuration. Under processor control (timed or manual), system programming is saved to the card, and can be restored on demand.

Auto System Answer/Direct Extension Dialing – Allows Partner to automatically answer inbound calls, play a greeting, and let callers specify a destination extension. Useful when full voice-mail/auto attendant capabilities are not needed.

Partner Voice Messaging PC card – Small version of voice mail and auto attendant. See more detail in section 3.3, “Partner Voice Messaging PC Card,” page 21.

Partner API Card - The PARTNER API card enables the following applications to work with PARTNER ACS Release 6: Screen Pop, Small Call Center, Interactive Voice Response (IVR), 911 Solutions, Call Accounting and Traffic Reports, and Customer Relationship Management (CRM). API is a feature enhancement for PARTNER ACS Release 6 that allows new and existing server-based applications from Avaya’s DeveloperConnection program to work with and enhance the operation of PARTNER ACS Release 6 systems. The software allows API to be activated in place of Station Message Detail Recording (SMDR). API is a feature that provides for system reporting details of incoming, outgoing, transfer and conference traffic on the PARTNER system. It also reports entered account codes and the activation/deactivation of Do Not Disturb. API is similar to SMDR, except that all events (for example, off hook, time, originating extension, line accessed, number dialed, Caller ID number, etc.) are sent out the SMDR port (RS232) near real time.

SMDR waits until the call is completed and then sends all the data for the entire call.⁷

Fig. 8. Partner ASA/DXD, Remote Access/Upgrade, and Backup/Restore cards



2.7.2 Partner ACS PC Remote Administration

Though it's possible, and relatively easy, to administer features from stations 10 or 11 using a Partner display phone, one can also administer the system using Partner ACS PC Administration software, downloadable from Avaya.com. It requires a remote administration card to be installed in the ACS processor, and a Windows PC with a modem.

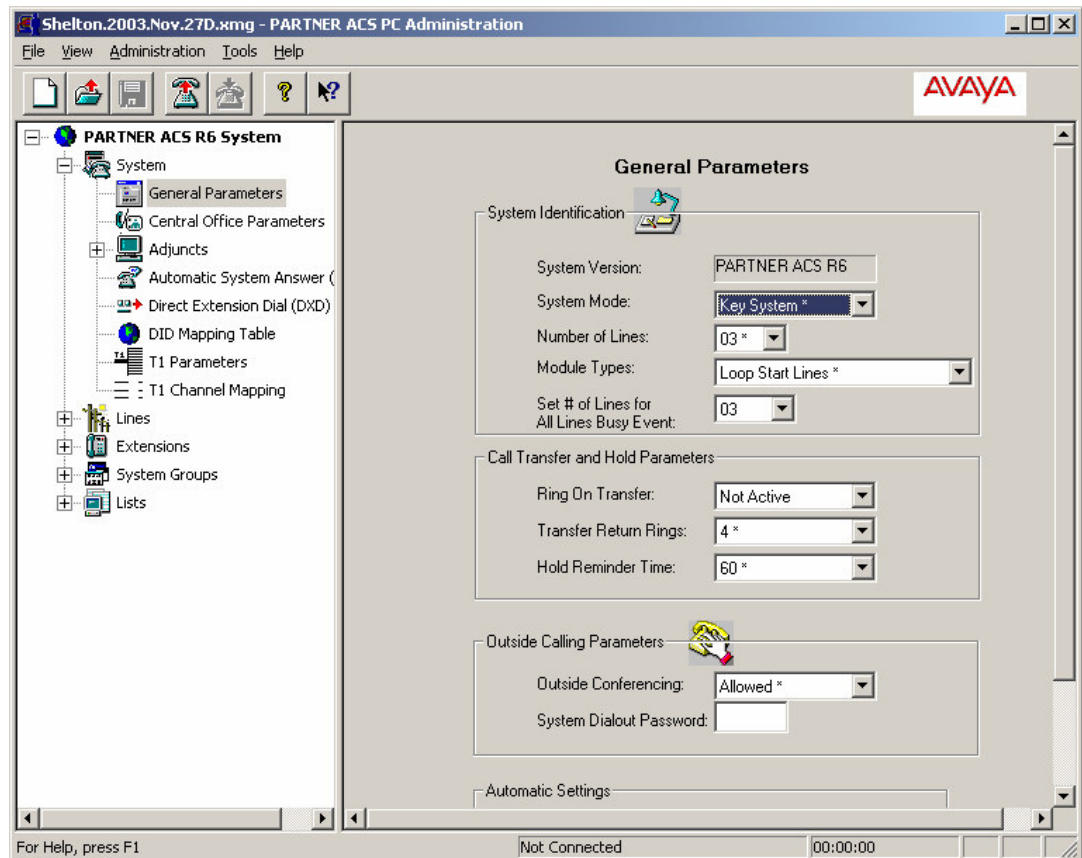
Using the software is much faster than using a system phone, and system configuration can be reviewed and setup without being connected to the Partner. The software reads and builds Translation files which are uploaded to, or downloaded from the Partner processor.

Some Partner configuration, particularly the T1 module, can only be done via this software.

Earlier versions of PC Administration could also administer Partner Plus and Partner II via the PassageWay interface.

⁷ Quoted from the API card installation manual.

Fig. 9. Sample screen shot, PC Administration software



The current release (R6) can administer Partner ACS releases 3 through 6.

Although remote access via modem can operate at high modem speeds, many people report problems with connecting, particularly from laptops. Setting the modem speed slower, sometimes *as slow as 1200 bits per second*, may be necessary to get a good connection. Also, dialing in from within the system (i.e., attaching the laptop directly to a Partner port) may present a modem signal strength too good; consider dialing via an outside line, through a central office, back into the Partner system.

2.8 Partner Modules

This section summarizes all the Partner modules. Many modules introduced in an older Partner system are usable in later systems.

For most modules, multiple revisions were released. We have listed all the processor versions in the System sections above.

There are some restrictions on the ordering of modules in the system. Consult Avaya documentation for details.

An Overview of Partner Phone Systems

Partner Module	Description	Usable in Partner System	Known Module Releases ⁸
Partner Plus Processor	Processor with no lines or stations. Multiple revisions	Partner Plus	1.0, 2.0, 3.0, 3.1, 4.0, 4.1
Partner II Processor	Processor with no lines or stations; used in first carrier only. Multiple revisions.	Partner II	1.0, Centrex 1.0, 2.0, 3.0, 3.1, 4.0, 4.0.1, 4.1
Partner II Expansion Processor	Required for use in 2 nd carrier to support 4 additional line/station cards.	Partner II	3.1
Partner Endeavor 362 Processor	Processor with 3 lines, 8 stations. Only last 2 station ports support T/R ringing. 2 touch-tone receivers, unless a 362EC module installed. One power failure port.	Partner Endeavor	1.0, 1.1, 2.0
Partner ACS R1.0 Processor	Processor, 3 lines, 8 stations. Contact Closure, Music on Hold, SMDR, paging ports.. Battery backup. 2 touch-tone receivers. 2 power-fail transfer ports. Not upgradeable via upgrade card	Partner ACS R1.0	
Partner ACS R1.1 Processor	Same as 1.0, but supports flash upgrade to later releases.	Partner ACS R1.1 or later	
Partner ACS Processor (R4 or later)	Improved power supply	Partner ACS R4 or later	
012E	12 stations high-density module. 10 touch-tone receivers. Support for Fax CNG detection.	Partner ACS R5.0 or later	
200	2 CO lines, no stations Provides enough processor capability to work in a Partner Basic system, also usable as expansion module in other Partner systems	Partner Basic R2.0 or better	
200E	2 CO lines, no stations.	Partner Plus or better First mentioned in 4.1 release, but probably supported earlier	3.1
206	Partner Basic Processor with 2 CO lines and 6 stations. Works as standalone system, or can add one module. Various versions from 1.0 – 4.1 One power-failure transfer port.	Partner Basic or better, any release	1.0, 2.0, 3.0, 3.1, 4.0, 4.1

⁸ Listing of particular releases for modules should not imply that other releases were not made. For many expansion boards here, we only list the releases documented to exist. AT&T and successors probably made others. Some release numbers gathered from eBay advertisements, and are believed to be accurate.

An Overview of Partner Phone Systems

Partner Module	Description	Usable in Partner System	Known Module Releases ⁸
206E	2 CO lines, 6 stations Unlike 206, this is an expansion unit only. 1 touch-tone receiver 1 power-failure transfer port	Partner Plus 3.1 or better	3.0, 3.1, 4.0, 4.1
206 EC	2 lines, 6 stations, Caller ID	Partner II R3 or better	3.0, 3.1, 4.1
308EC	3 CO Lines, 8 stations, Caller ID support 6 touch-tone receivers. 2 power-failure transfer ports 308EC R3.0 has improved Fax CNG detection.	Partner ACS R2.0 or later.	3.0,
362 EC	3 lines, 8 stations (only 2 support T/R ringing)	Partner Endeavor Partner ACS R5.0 or later	
400	4 CO lines Despite not having the “E” designation, this module does not have a processor in it.	Partner Plus R3.0 or better Partner II R1.0 or better	2.0
400E	4 CO lines 2 touch-tone receivers	Partner Plus R3.1 or better	3.1, 4.0
400 EC	4 lines, Caller ID	Partner II R3 or better	3.1
1600 DSL	Support for SDSL delivery of 16 CO lines, plus Ethernet gateway. 2 touch-tone receivers. Caller ID support	Partner ACS R4.0 or later	
T1	Support for T1 delivery of 16 CO lines. 8 touch-tone receivers. Support for DID (Direct Inward Dialing) Support for Cell Phone Simultaneous Forwarding	Partner ACS R6.0 or later	
Partner Mail VS	Internal voice mail	Partner Plus R3.1 or better	1.0, 3.0, 4.0, 4.1, 5.0
Partner Messaging	Enhanced internal voice mail, replaces Partner Mail VS.	Partner Plus R3.1 or better	1.0, 6.0

2.9 Partner Identification Chart

Avaya describes how to identify Partner systems at their web site. For convenience, we have reproduced this here.⁹

“There are two ways to determine the type and release of your Partner system:

⁹ Quoted text from Avaya.com FAQ list for Partner systems.

An Overview of Partner Phone Systems

- Using **Feature # 1**
- Using **Feature 5 9**

When you use the **Feature #1** option, you will hear various beeps from the handset which correspond with the beeps indicated on the chart below. You must be on an active call on an outside line. You can accomplish this several ways:

- Call one of the incoming lines to the Partner system and have another person answer, then press **Feature # 1**.
- Call an outside party and explain that they will hear some beeps on the phone while you conduct this test. Press **Feature # 1**
- Pick up an unused line and press **Feature # 1**. You will hear the dial tone in the background and possibly an error message.
- On Partner Plus/III/ACS and Endeavor systems, you can program a ghost line (that doesn't have an actual line installed on it), then select that line and press **Feature # 1**.

Feature 5 9 can only be used on Partner ACS or Endeavor systems. Just use any display phone on the system and press **Feature 5 9**. The display will show the type of system and release as indicated in the table below.¹⁰

Considerations:

- On some Partner ACS and Endeavor systems, using **Feature 5 9** is preferable because the beeps provided by **Feature # 1** are the same for different releases.
- With **Feature # 1**, if you receive an error or waive-off tone after pressing #, the phone may be installed on a Merlin Legend or Merlin Magix system.
- The dash (-) in the chart below indicates a pause between each beep pattern.
- On Partner Endeavor systems, "Small" means the system is either a single processor or two-slot carrier. "Large" means it is a 5-slot carrier installation."

The table below summarizes the releases. For ACS and Endeavor, we also show the display of F59 codes.

¹⁰ On Partner ACS, the display also shows a country code.

An Overview of Partner Phone Systems

Table 7: Partner System Release beep codes

Rel	Partner Basic	Partner Plus	Partner II	Partner ACS	Partner Endeavor (Small)	Partner Endeavor (Large)
1.0	1 beep	2 beeps	2-1 beeps	5-1 beeps P ACS R1.0	2-1-1 beeps P ECS - S - R1.0	2-2-1 beeps P ECS - L - R1.0
1.1				5-1 beeps P ACS R1.1		
2.0	3 beeps	4 beeps	2-2 beeps	5-2 beeps P ACS R2.0.1	2-1-1 beeps P ECS - S - R1.0.1	2-2-1 beeps P ECS - L - R1.0.1
3.0	1-3 beeps	2-4 beeps	3-1 beeps	5-3 beeps P ACS R3.0		
3.1	1-3 beeps	1-2 beeps	1-4 beeps			
4.0	2-3 beeps	3-2 beeps	3-3 beeps	5-4 beeps P ACS R4.0		
4.0.1			3-4 beeps			
4.1	4-1 beeps	4-2 beeps	4-3 beeps			
5.0				5-5 beeps P ACS R5.0		
6.0				5-6 beeps P ACS R6.0		

An alternate chart makes lookup by beep-code easier. The “P” indicates a pause between beeps.

Table 8: Beep Code to Partner Release lookup¹¹

Beeps	Partner System and Release
1	Partner Basic 1.0
1 P 2	Partner Plus 3.1
1 P 3	Partner Basic 3.0 or 3.1
1 P 4	Partner II 3.1
2	Partner Plus 1.0
2 P 1	Partner II 1.0
2 P 2	Partner II 2.0
2 P 3	Partner Basic 4.0
2 P 4	Partner Plus 3.0
2 P 1 P 1	Partner Endeavor Small 1.0 or R 1.0.1
2 P 2 P 1	Partner Endeavor Large 1.0 or R 1.0.0
3	Partner Basic 2.0
3 P 1	Partner II 3.0
3 P 2	Partner Plus 4.0
3 P 3	Partner II 4.0
3 P 4	Partner II 4.0.0
4	Partner Plus 2.0
4 P 1	Partner Basic 4.1
4 P 2	Partner Plus 4.1

¹¹ Courtesy of “TouchToneTommy”

An Overview of Partner Phone Systems

Beeps	Partner System and Release
4 P 3	Partner II 4.1
5 P 1	Partner ACS 1.0 or 1.1
5 P 2	Partner ACS 2.0
5 P 3	Partner ACS 3.0
5 P 4	Partner ACS 4.0
5 P 5	Partner ACS 5.0
5 P 6	Partner ACS 6

3 Partner Voice Mail Systems

Avaya and predecessors built four different voice mail systems for Partner. Of course, there are others from third parties; they are not reviewed here.

Only Partner Plus and better support voice mail. Partner Basic does not have the ability to support any Partner voice mail systems.

The original, **Partner Mail**, uses a separate box, like a desktop PC, and integrates via station ports in the Partner system.

Partner Mail VS, supported on Partner Plus and later systems, is a module (circuit card) that plugs into a 2- or 5-slot carrier, and integrates via the digital bus. As a card, it “emulates” a certain number of station ports.

Partner Voice Messaging PC Card (PVM) is a miniaturized voice mail system embedded in a PC card, and plugs into Endeavor and ACS processors. It emulates 2 station ports, but doesn’t take up any carrier slots, and is ideal for smaller systems due to low cost.

Partner Messaging, a full replacement for Partner Mail VS, also is built into a module (circuit card), plugging into 2- and 5-slot carriers. Partner Messaging is compatible with Avaya’s integrated messaging strategy, and has LAN access for message exchange with other services.

Voice mail systems are often compared by capacity. In this overview, we cover the following:

Number of ports – how many active calls can access the voice mail system at one time. Ranges from 2 – 6.

Number of mailboxes – how many different users can accept messages and administer their mailbox.

Hours of storage – how much total voice can be recorded.

The table below compares *some* versions of these systems when used on Partner ACS. Later, we describe the systems in more detail.

Table 9: Comparison chart of Voice Mail for Partner ACS¹²

Features	Partner Mail R3	PMVS R4	PMVS R5	PVM R3	Partner Messaging R1	Partner Messaging R6
# of Ports	2, 4 or 6	2 or 4	2 or 4	2	2, 4 or 6	2, 4 or 6
# of Mailboxes	100	10, 20 or 40	48	4 or 12	200	200
Hours of Storage	21	5, 9, 17	100	40 or 120 (minutes)	100	100

¹² Chart courtesy of Ron Rogers at Avaya. Thanks to “TouchToneTommy” for identifying this resource. Data current as of 2003.May

An Overview of Partner Phone Systems

Features	Partner Mail R3	PMVS R4	PMVS R5	PVM R3	Partner Messaging R1	Partner Messaging R6
Max. Mailbox Storage (minutes)	60	20	180	20 or 30	180	180
# Auto Attendants	3	1	4	1	4	4
Auto Attendant Schedule	Yes	No	No	No	Yes	Yes
Bi-Lingual	Yes	Yes	Yes	No	Yes	Yes
Centrex Transfer from AAT	No	No	Yes	No	Yes	Yes
Temporary Schedule Closing	Yes	No	No	No	Yes	Yes
Auto Attendant Mailboxes	Yes	No	No	No	Yes	Yes
Restrict Transfer to Subscribers Only	Yes	No	No	No	Yes	Yes
Backup to PCMCIA Card	No	No	Yes	No	Yes	Yes
Backup to External Media	No	No	No	No	Yes	Yes
Software Programmable	No	No	No	No	Yes	Yes
Cascade Outcalling	Yes	Yes	Yes	No	Yes	Yes
Based on Priority	No	No	No	No	Yes	Yes
Sub-Menus	Yes	No	No	No	Yes	Yes
Day & Night Menus	Yes	Yes	Yes	No	Yes	Yes
Separate Day / Night Definition	Yes	No	No	No	Yes	Yes
Fax Detection & Routing	Yes	No	No	No	Yes	Yes
Dial-by-Name Directory	Yes	No	No	No	Yes	Yes
Multiple Personal Greetings	3	1	1	1	6	6
Create / Broadcast Message	Yes	No	No	No	Yes	Yes
Forward a Message	Yes	Yes	Yes	No	Yes	Yes
Personal Operator	Yes	No	Yes	No	Yes	Yes
Group Mailboxes	Yes	No	No	No	No	No
General Mailbox	Yes	No	No	No	Yes	Yes
Forward / Rewind Message	No	No	No	Yes	Yes	Yes
Pause / Resume Message	No	No	No	No	Yes	Yes
Message Speed Up / Slow Down	No	No	No	No	No	Yes
Message Preview	No	No	No	No	No	Yes
Message Status Change	No	No	No	No	No	Yes
Message Retrieval Order	No	No	No	No	No	Yes
Return to Previous Message	No	No	No	No	No	Yes
Last Heard Message	No	No	No	No	No	Yes
LAN Enabled	No	No	No	No	Yes	Yes
www.messenger Software	No	No	No	No	Yes	Yes
Unified Messaging (Voice Mail & E-Mail)	No	No	No	No	No	Yes
Auto Copy	No	No	No	No	No	Yes
Phantom Mailbox	No	No	No	No	No	Yes
Call Screening Compatible	Yes	Yes	Yes	Yes	Yes	Yes
Record-a-Call Compatible	No	No	Yes	No	Yes	Yes

3.1 Partner Mail System

Partner Mail was introduced in 1993¹³ for Partner II release 3. Unlike later systems, Partner Mail required a separate cabinet, essentially a modified PC. Like other such systems, messages are stored on a PC hard disk. The cabinet was designed for wall-mounting.

Partner Mail integrated with the Partner II using modular cables attached to station ports on 206 modules. Release 1 supported 2 or 4 ports, but a later release supported 6 ports.

Partner Mail allowed connection of a modem (“Remote Maintenance Device”) for remote programming and maintenance.

Fig. 10. Partner Mail – separate cabinet

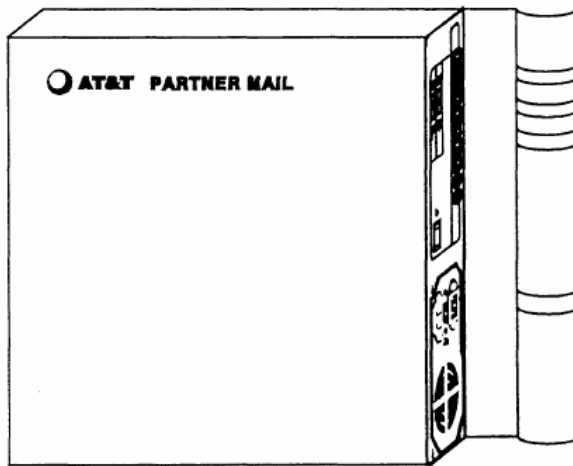


Table 10: Summary of Partner Mail releases

Partner Mail Release	Date of introduction	Significant features
1.0	1993 ¹⁴	2 or 4 port only.
3.0	1996.June	Three configurations: <ul style="list-style-type: none"> ▪ Two-port system with a message storage capacity of 6 hours ▪ Four-port system with a message storage capacity of 11 hours ▪ Six-port system with a message storage capacity of 16 hours

¹³ Date is estimated; no copyright date on AT&T documentation.

¹⁴ Estimated.

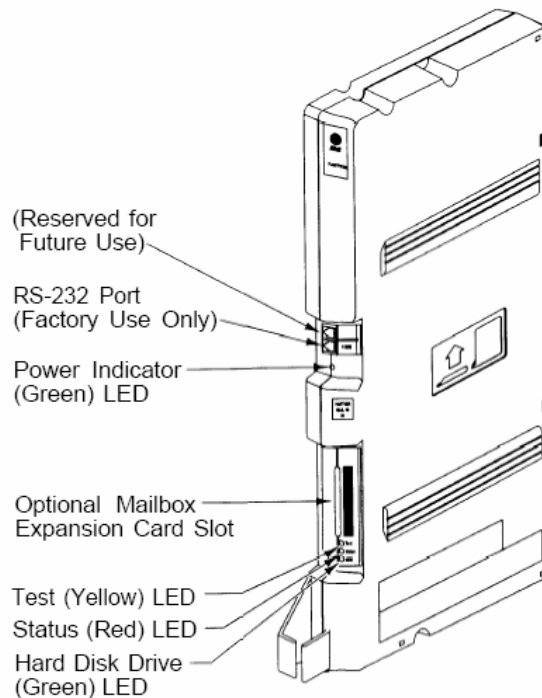
3.2 Partner Mail VS

AT&T introduced the Partner Mail VS integrated voice mail system in 1994, targeted at Partner Plus and II (Release 3.1 or better.) Unlike the earlier Partner Mail, VS is a complete system in a single Partner module, plugging into 2- or 5-slot carriers. Integration is via the digital bus, rather than direct connection to station ports, which saves system capacity.

5 releases were made until Avaya replaced VS with Partner Messaging.

The basic module includes support for 2 ports and 10 voice mailboxes, but through installation of PC cards, the owner can increase capacity to 4 ports and 48 mailboxes. The final release included up to 100 hours of voice message storage.

Fig. 11. Partner Mail VS module



Partner Mail VS adds new functionality called Record-a-Call, allowing a system phone user to record the telephone call in progress. Recordings go into the user's voice mailbox. Record-a-Call requires a 4-port PMVS installation.

Since the VS module plugs into a Partner carrier, it emulates a station board, consuming (typically) 6 station identifications. Details are dependent on the Partner system and location within the carrier.

An Overview of Partner Phone Systems

Table 11: Partner Mail VS releases

Partner Mail VS release	Date of introduction	Significant features
1.0	1994.January	Original release 2 port only, 10 or 20 mailboxes
3.0	1995.July	Support for mystery "Partner 48" system. 2 port only, 10 or 20 mailboxes
4.0	1997.March	Support for up to 4 ports, up to 40 mailboxes, up to 17 hours of storage. "Outcalling, Automated Attendant Announcements, and Message Forward features are introduced with this new release of PARTNER MAIL VS. The ability to expand the standard 2-port, 10-mailbox configuration to any one of three other configurations with the installation of the appropriate Mailbox Expansion Card is also a new feature of Release 4." ¹⁵
4.1	??	??
5.0	1998.Dec	Final release Support for up to 4 ports, 48 mailboxes. Increases to 4 Auto Attendants from 1. Increased total storage time to 100 hours. Supports backup of programming to PC card Supports Record-a-Call, allowing user to record a call in progress. Personal Operator designation for each mailbox.
5.0.2	??	??

Upgrading from one release to the next requires changing out the hardware; there is no firmware upgrade.

Using a PC card, one can upgrade the firmware *within* a release for minor bug fixes, but few such incremental releases were ever offered.

Using a PC card, the 4.0 or later PMVS can be expanded to more ports and mailboxes.

Fig. 12. Partner Mail VS Expansion cards



¹⁵ From the Partner Mail VS Release 4 manual.

3.3 Partner Voice Messaging PC Card

Lucent cleverly introduced Partner Voice Messaging PC Card in 1997, allowing Endeavor and ACS installations to add inexpensive voice mail without consuming slots in a carrier. By using flash memory and PC Card technology, the entire voice mail system plugs into the expansion PC Card slot on the Partner processor.

At low cost, the PVM PC card is necessarily limited in capacity and function. These cards support only 2 ports, and 4 or 12 mailboxes, 40 or 120 minutes of total storage.

Fig. 13. Sample Partner Messaging PC Card for use in Partner ACS



Compared to Partner Mail VS, the PVM PC card has some functional limitations. There is only one Auto Attendant. Only a single language is supported. Backups cannot be made. Outcalling cannot be cascaded. There is no separate day vs. night menu. Users cannot forward voice messages to another user. There is no Record-a-Call. But, users can rewind or fast-forward message playback.

Reliability should be good for this card since there is no disk drive.

Table 12: Partner Voice Messaging PC Card releases

Partner Voice Messaging PC Card release	Date of introduction	Significant features
1.0	1997.Nov	Original release 2 port only, 4 mailboxes only
2.0	1998.Aug	
3.0	2000.June	Small card can be configured for 2 or 4 mailboxes. Large card can be configured for 4, 6, 8, 10, 12, 14, or 16 mailboxes. Some additional functional enhancements.

All Partner Voice Messaging PC Card releases assign the 2 ports to virtual stations 78 and 79.

3.4 Partner Messaging

PARTNER Messaging, available in a 2-, 4-, or 6-port configuration, is an embedded voice messaging system housed in a module (circuit pack) that plugs into the Partner system carrier. It replaces the Partner Mail VS system, and adds substantial additional features. Most importantly, it joins Avaya's Unified Messaging architecture:

The Unified Messaging Application is a software application that interfaces between PARTNER Messaging and email servers (Microsoft Exchange servers and SMTP servers). The Unified Messaging Application receives PARTNER Messaging voice mail messages and forwards them to the email server(s) so that users can access their voice messages from their email account. Users can view these voice mail messages as they would normally view their email messages using any email client (for example, Microsoft Outlook for an Exchange email server, and Yahoo mail or AOL mail for SMTP email servers). The mail messages have attached .WAV files that the users can play using an audio player on their PC.¹⁶

Partner Messaging supports 3 languages, two of which can be active. The disk has 100 hours of recording capacity, and supports up to 200 mailboxes, with up to 120 messages, 180 minutes per mailbox, administrable on a per-mailbox basis. Users can record their personal phone calls using Record-a-Call up to 60 minutes in length¹⁷. There are 4 Auto Attendants, and Day/Night mode operation.

With support for 200 mailboxes, yet Partner dial plans supporting only 48 extensions, one might wonder of what use are all the extra mailboxes. These can be used as guest mailboxes, and are dialable from the Messaging prompts. Calls from ACS cannot be transferred to extra mailboxes; callers may be transferred to the voice mail extension (777) and instructed to dial *8 plus the three digit mailbox number.

Partner Messaging requires a PC Card to enable 2, 4, or 6-port operation. The port card includes a modem ("Remote Maintenance Device.")

Fig. 14. Partner Messaging 6-port PC card

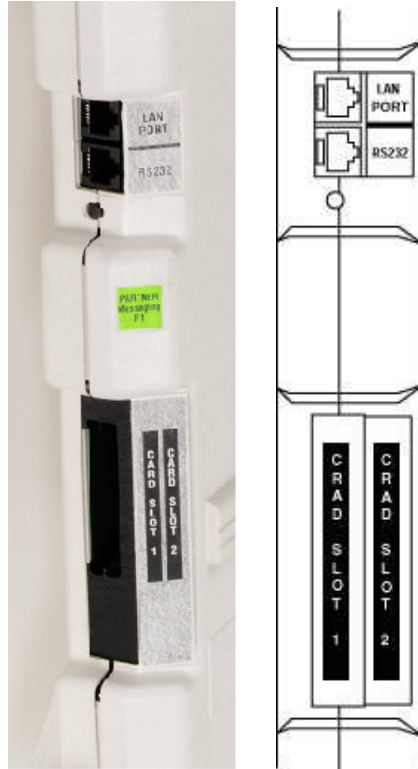


¹⁶ From Partner Messaging R6 Web Help system

¹⁷ Record-a-Call only works with 4- or 6-port systems.

A LAN port allows message interchange with other systems, and administration. An RS-232 port allows direct connection of an administrative PC.

Fig. 15. Front panel, Partner Messaging module, photo and sketch



Although a relatively new voice mail option, Partner Messaging works with Partner Plus and Partner II in addition to ACS.

Partner Messaging releases are summarized below. We do not know why release numbering went directly from 1.0 to 6.0.

Table 13: Partner Messaging releases

Partner Voice Messaging PC Card release	Date of introduction	Significant features
1.0	2001.Jun	Original release
6.0	2003.May	Improved message playback features like Preview and playback speed.

3.4.1 Partner Messaging Functionality

Partner Messaging is functionally divided into the following areas, as found in the Partner Messaging System Manager's Quick Reference guide.

3.4.1.1 Call Answer Service

Functions as a personal answering machine, allowing a caller to:

- Hear the Personal Greeting recorded by the mailbox owner.
- Switch to the alternate language, if the system is configured in Bilingual Mode.
- Leave a voice mail message.
- Designate the voice mail message as a Priority or Private message.
- Transfer to an operator or to another extension.

3.4.1.2 Automated Attendant Service

Answers incoming lines and presents callers with a list of options. Based on callers' input, they may be:

- Transferred to an extension.
- Played an informational Announcement.
- Transferred to a voice mailbox.
- Presented with a Submenu containing additional options.
- Transferred to another Automated Attendant.
- Transferred to a pre-defined Centrex number.

Automated Attendant Service can also detect and route fax calls to a predetermined Fax extension.

3.4.1.3 Voice Mail Service

Allows mailbox owners to:

- Record and send messages.
- Forward and reply to messages.
- Designate message as Priority, Private, and/or request a Return Receipt.
- Listen to messages.
- Return calls to internal callers.
- Record their names and Personal Greetings.
- Activate Personal Greeting(s).
- Change their Personal Operators.
- Change their passwords.
- Set up Outcalling (if permission is provided).
- Create Personal Group Lists.
- Change Call Answer Mode of their mailbox.
- Transfer to another extension.
- Record a call and store it in their mailbox (if permission is provided).

3.4.1.4 Diagnostics and Maintenance

Provides on-site and remote system serviceability functionality, including:

- Terminal-based reporting.
- Trouble/fault isolation.
- Backup and Restore.

3.4.1.5 System Administration

Allows individuals responsible for configuring and programming PARTNER Messaging to:

An Overview of Partner Phone Systems

- Administer System Parameters, such as System Language Mode and Call Answer Service Operator extension.
- Administer an extension to be either a Mailbox, Fax, Transfer-Only, or Automated Attendant extension.
- Administer up to four Automated Attendants.
- Administer System Security Parameters.
- Administer Line Ownership.
- Administer System Group Lists.
- Perform a System Backup or System Restore.

4 The phones

4.1 Comparison at a glance

This quick chart shows basic differences between the different kinds of phones supported by Partner.

Telephone model	Technology	Range of buttons	Discussion
MLS	ETR	6, 12, 18, 34	Membrane technology Adjunct CA-24 Available in creamy white or black.
Partner Endeavor	ETR	6, 18, 34	Special to Endeavor modules
Partner (Euro)	ETR	6, 18, 34	Current technology. Adjunct CA-48 Available in White, Gray, or Black.
MLC-6 Cordless		6	Designed for Partner
TransTalk MDC 9000		6	Configurable compatible with Partner and Merlin
TransTalk MDW 9000, 9010, 9030, 9031, 9050		6	Configurable compatible with Partner and Merlin; system approach to supporting multiple phones.
Single line (Tip-Ring)	Analog T/R	n/a	Essentially any industry standard phone. LED Message waiting light support.

4.2 Single line telephones

Partner has excelled at single-line telephone support from the beginning, allowing users to attach a standard tip-ring phone to any system port, or as an adjunct to any system phone.

Since the introduction of Caller ID support, system phones have been able to display Caller ID information, but unfortunately, Caller ID is not passed along to attached standard telephones.

Partner supports Message Waiting indicators on single-line phones with low-voltage LED lights. The older neon-based message-waiting indicators do not work.¹⁸ When a system phone and single-line phone are combined at one extension, both message waiting lights will function.

¹⁸ Neon-based MW lights require 90 volts AC, similar to ringing current.

4.3 MLS Phones

The MLS series phones were introduced with the Partner originally. Each system phone has an analog voice path and a digital signaling path. Phone wiring requires only 2-pairs, unlike the Merlin phones.

Partner phones use an 8-pin modular jack, but work correctly with traditional 4-wire, 6-pin modular cords.

All system phones have an Adjunct jack that supports a standard “tip-ring” telephone or phone accessory. Only a single pair is used.

MLS phones were built using a flexible membrane that has button contacts. Over time, the membranes can corrode and fail; repairs are possible. See more in section 7, “Maintenance.”

Fig. 16. MLS-34D

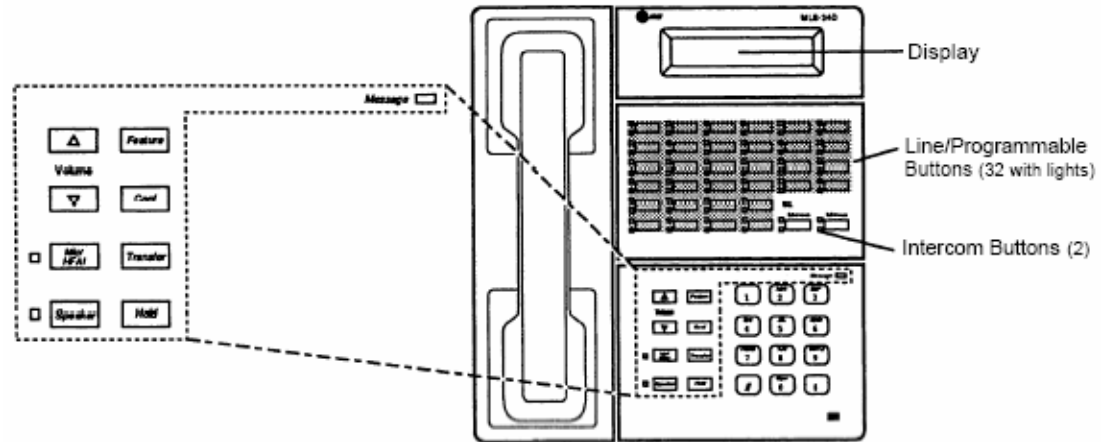


Fig. 17. MLS-18D, -18, and -12

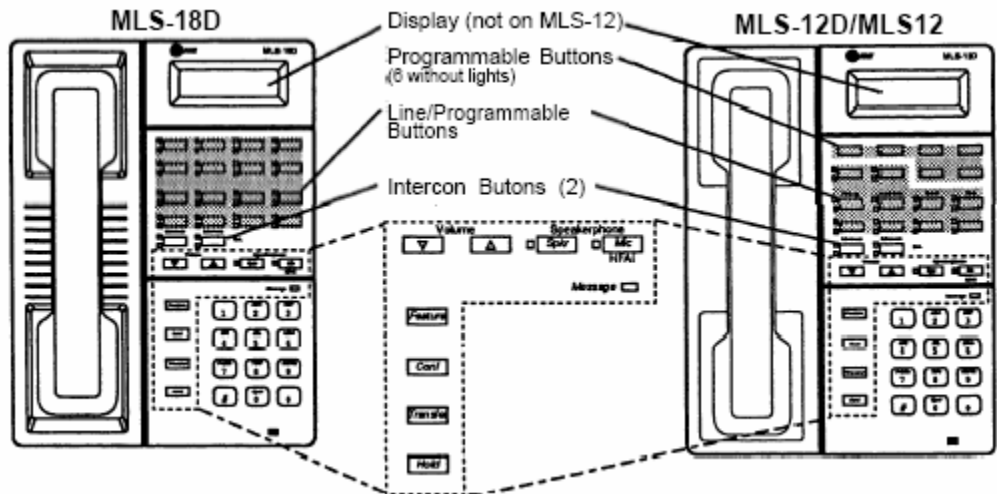
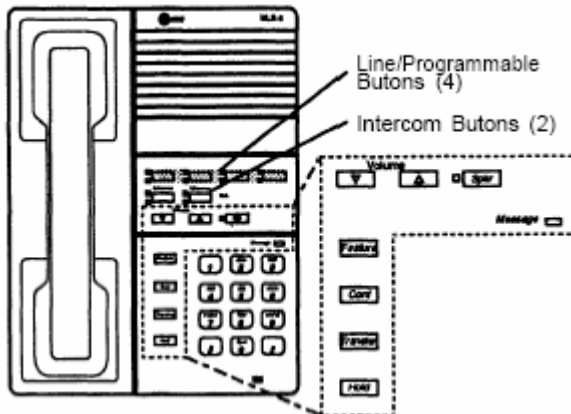


Fig. 18. MLS-6



Also available was the Call Assistant 24 (MLS CA24), allowing direct station selection of 24 extensions. from the primary console (10, or 10 and 11 on Partner II and ACS). The CA24 will also work with Partner (Euro) phones. Two such units could be daisy-chained to address 48 stations. Each CA24 requires its own power supply, a small “nugget” or “wall-wart.”

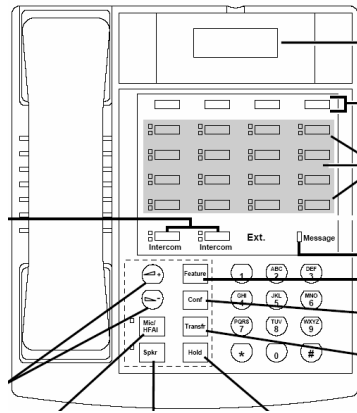
Fig. 19. MLS CA-24 Direct Station Selection adjacent to MLS-34D phone



4.4 Partner Endeavor Phones

The Endeavor phone is physically similar to Partner (Euro) phones, but was only supported on Endeavor processor, or the Endeavor 362 module (which can be installed in Endeavor or later ACS systems). Button layout is the same as that for Partner (Euro) phones.

Fig. 20. Partner Endeavor 18D phone



Endeavor phones have “small displays” (see illustration, above) that cannot show Caller ID and Name simultaneously, similarly to the MLS phone displays.

4.5 Partner (Euro) phones

Electrically compatible with the original MLS phones, these current-manufacture system phones have a 2-line, 24-character display (18D and 34D models) that has a pleasant adjustable back-lighted display with 3 display angles. This is a rare feature in the industry.

Phone size numbering is non-intuitive: the -18 phone has 16 line/programmable buttons, plus two Intercom buttons, but the -18D has an additional 4 programmable, non-lighted buttons.

In addition to the variable-counted buttons, all Partner phones have 8 common feature buttons and the 12 standard dial buttons.

Like the MLS phones, Partner phones have an adjunct jack for connection of Tip/Ring devices such as a fax or headset. Unlike MLS, the Partner phones are better built with a sturdy circuit board, and have low reported incidents of failure.

Fig. 21. Partner -6, -18, and -18D phones

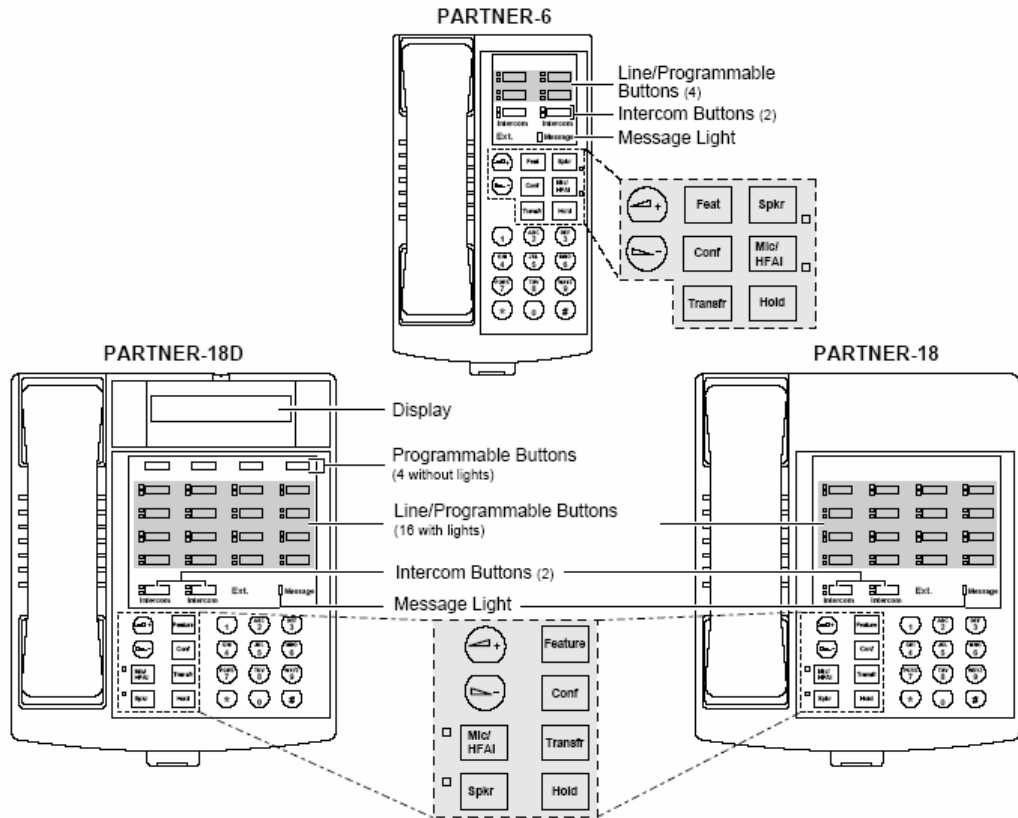
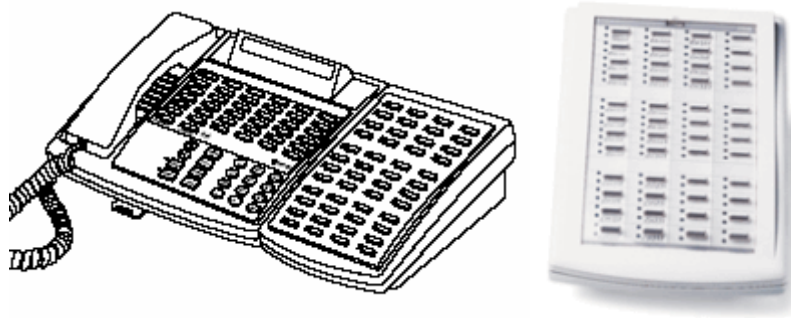


Fig. 22. Partner 34D phone, gray



An improved direct station selection device, the Partner CA48, allows the users at extensions 10 and 11 (Partner II and ACS) to direct calls to stations 10 – 57. The CA48 includes a button for each extension, and in-use activity light. Out of the box, the CA48 buttons will directly ring an extension if pressed, but can be re-programmed to voice-intercom instead of ringing. Each CA48 requires a wall-wart power supply.

Fig. 23. Partner CA-48 Direct Station Selection adjacent to Partner 34D



Like the MLS-CA24, the CA48 requires a power supply.

4.6 MLC cordless phone

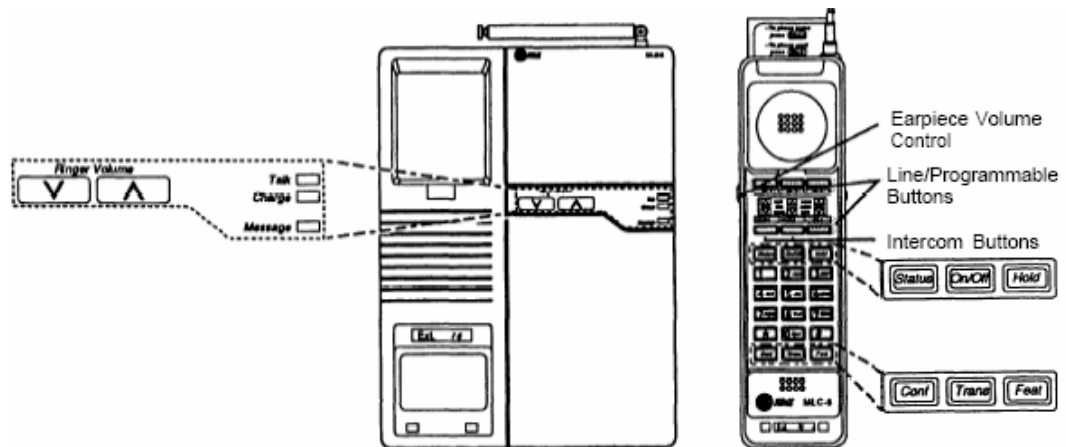
The MLC-6 cordless phone was designed for Partner:

The AT&T MLC-6 cordless telephone is compatible with your PARTNER™ Plus or PARTNER Communications System. It gives you the freedom of a cordless phone while providing the same features as a corded MLS™-model telephone.

The MLC-6 cordless phone is functionally similar to the MLS-6™ corded phone. The cordless phone can be programmed with system features and dialing restrictions the same as any other MLS-model phone.¹⁹

It's a stand-alone cordless system with base station and handset, similar to home cordless phones of the same era. 10 radio channels are available, allowing at most 10 different sets in the same office. AT&T recommended, however, assigning multiple channels to fewer than 10 handsets to get better coverage.

Fig. 24. MLC-6 Cordless



¹⁹ From the manual.

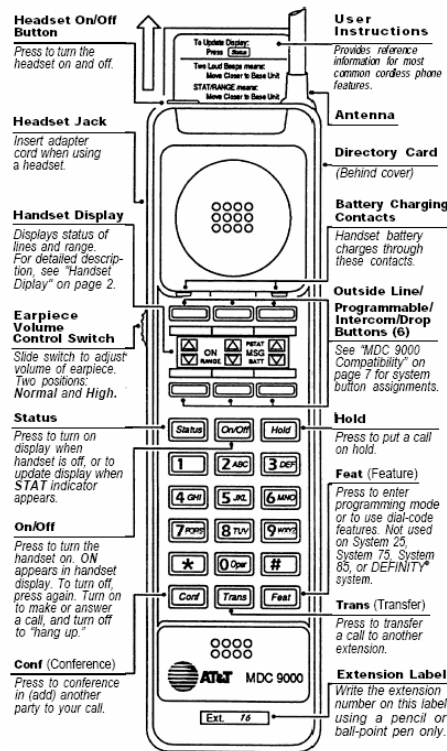
4.7 TransTalk MDC 9000 Cordless phones

The MDC 9000 was designed for use with Partner, Merlin, and Definity systems, so is not optimized for Partner, but claims to be fully compatible. It provides 6 line/feature buttons with a status display for the buttons.

Like the MLC-6, the MDC 9000 used a standard handset plus base arrangement. Using newer technology (the “D” in MDC stands for “Digital”), this set provided digital transmission for greater range, clarity, and security. The base station can be wall or desk mounted. A standard “wall-wart” power supply provides necessary DC to the base. A headset jack allows an optional headset to be connected.

This set used the 902-927 MHz radio band, with 50 total channels dynamically allocated out of 173 available channels.

Fig. 25. MDC 9000 Cordless handset



4.8 TransTalk MDW 9000 series Cordless phones

AT&T introduced the TransTalk MDW “Multi-line Digital Wireless” series in 1995 to replace and extend the MDC series. This series was designed for larger installations, and separates the charging base from the transmitter. Transmitters are installed in carriers (backplanes), supporting 2-6 phones used in the same area. Use of the carrier keeps radio signals coordinated, promoting higher quality service when multiple MDWs are in operation nearby.

Still fully compatible with Partner, MDW phones also work with Merlin; Systems 25, 75, 85; and Definity. To a Partner, the MDW appears to be the old MLC-6 phone.

Fig. 26. MDW 9000 handset and base

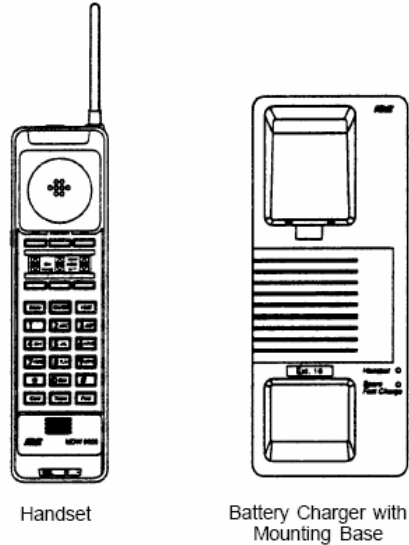
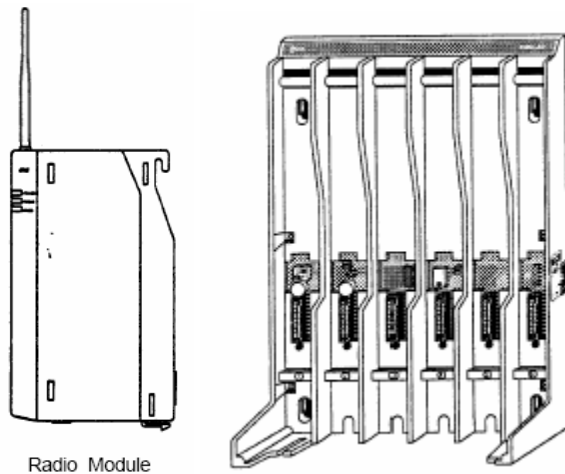


Fig. 27. MDW 9000 Radio module and multi-module carrier



Since introduction, AT&T and successors have made several different models:

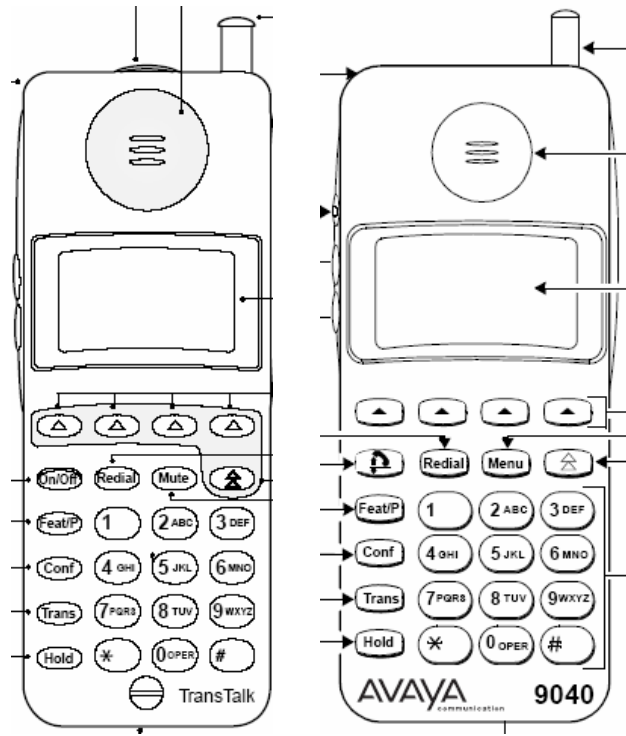
An Overview of Partner Phone Systems

Table 14: TransTalk MDW phones

TransTalk model	Distinguishing characteristics
MDW 9000	First model, introduced 1995
MDW 9010	Introduced 1996; similar in appearance to the 9010. Supported linking multiple carriers for larger arrays of phones, up to 18 total.
MDW 9030P	New "Pocketphone," smaller handset. Introduced 1997. Emulates 12 button set, through use of shift keys (only 4 actual line buttons, but 12 display indicators.)
MDW 9031	Introduced 1997 Support for up to 24 phones using 4 carriers. Same Pocketphone form-factor. Transmitter power reduced from 325mw max to 160mw, but additional 3 dBm receiver sensitivity.
MDW 9031 DCP	Introduced 1999.
MDW 9031 Dual Zone (DZ)	Introduced 1999. Adds Dual Zone support. Handset can choose between two different radio transmitters, allowing greater geographic coverage in larger sites.
MDW 9040	Introduced 2001 Not backwards compatible with MDW 9000-9031 phones. Uses new Dual Radio Module (two handsets matched to one module). Supports Dual Zone operation for greater geographic coverage. No carrier required for Dual Radio Modules; modules are linked by cable to retain the system approach. Channel spacing increased, fewer total channels available (25 dynamically allocated out of 64 possible.)

As can be seen, the TransTalk series has undergone steady improvement.

Fig. 28. MDW 9030P, 9040 Pocketphones

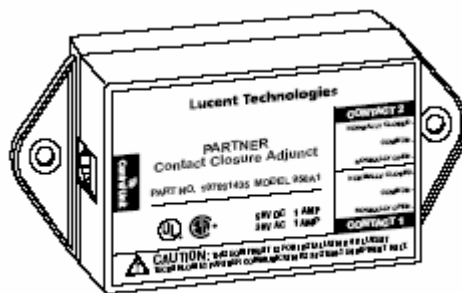


5 Adjunct devices and software

5.1 Contact Closure

Partner ACS supports Contact Closure devices, essentially relays that can control electrical power. Under ACS processor control, buttons on a system phone can activate the contact closure, thus activating some device. For example, pressing a button on a phone could unlock an electric door, or start a coffee maker. ACS processor can control two different contact closure devices.

Fig. 29. Contact Closure peripheral



PARTNER Contact Closure Adjunct

The controller can be configured for momentary or toggle mode. In toggle mode, each phone button press turns the relay on, or off. In momentary mode, the relay is on as long as the phone button is pressed.

5.2 Fax

Fax machines can plug into any system port²⁰. Several of the Partner processors provide special support for faxes; with voice mail systems, automatic fax detection is possible.

5.3 SMDR Logging

Partner allow logging of calls via an SMDR port. On Partner Plus, II, and ACS, an RS-232 port is built into the processor.

Also note detailed logging option on ACS with the API card. See 2.7.1, "Partner ACS PC Cards," above.

²⁰ Partner Endeavor has limitations – some system ports do not provide ringing voltage to standard T/R devices such as fax machines.

5.4 Modem

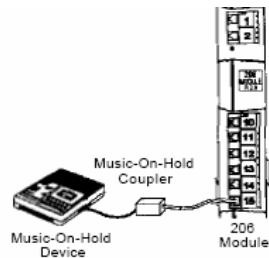
As with other tip-ring devices, modems can be attached to station ports on Partner systems. Because the Partner processor is internally a digitally switched system, there is some degradation of signal quality. For normal speech, this is unnoticeable, but modems may not run at full speed. Avaya recommends bypassing Partner switching for maximum modem performance.

Partner ACS has a modem built-in for remote administration.

5.5 Music on Hold

Most Partner processors support Music on Hold, generally by an RCA Phono jack (on Partner Plus, II, Endeavor, and ACS.) Partner Basic requires a special adapter that plugs into a designated station port.

Fig. 30. Partner Basic Music on Hold connection



5.6 Off Premises

AT&T specifies that any phones outside the building in which the processor is located require special Off Premises protection equipment. These devices provide surge protection, isolating both phone and processor from electrical imbalances that often arise when wires leave a building.

Two such devices are available:

IROB – In Range (within 3000 feet), Out of Building, providing just protection.

OPRE – Off Premises Range Extender, providing additional range beyond 3000 feet.

5.7 Doorphones

Door Phones are special phones designed to be installed outside a locked door; under Partner control, a door can be unlocked at the request of a caller from the door phone. Avaya's doorphone mounts flush inside a wall and has a push-button to announce the caller.

On Partner Plus and II, the system understands doorphone programming, and allows up to 2 extensions to be so designated. When the button on the

doorphone is pressed, designated inside extensions are alerted. On ACS, the addition of contact closure support allows remote unlocking.

Fig. 31. Avaya Doorphone



5.8 Partner Plus Attendant

Introduced in 1991, the Partner Plus Attendant provides automatic call answering and redirection for Release 2 Partner systems. It can help handle incoming calls efficiently, even after business hours and on holidays and weekends. It can serve as a backup for a busy receptionist, or it can serve as the primary answering position.

This hardware device plugs into a station port on a 206 module, and must not share that port with a phone.

Fig. 32. Partner Plus Attendant, front view

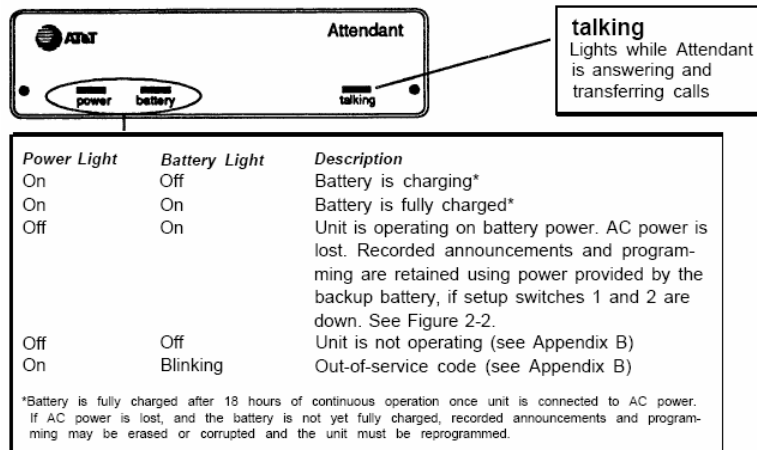
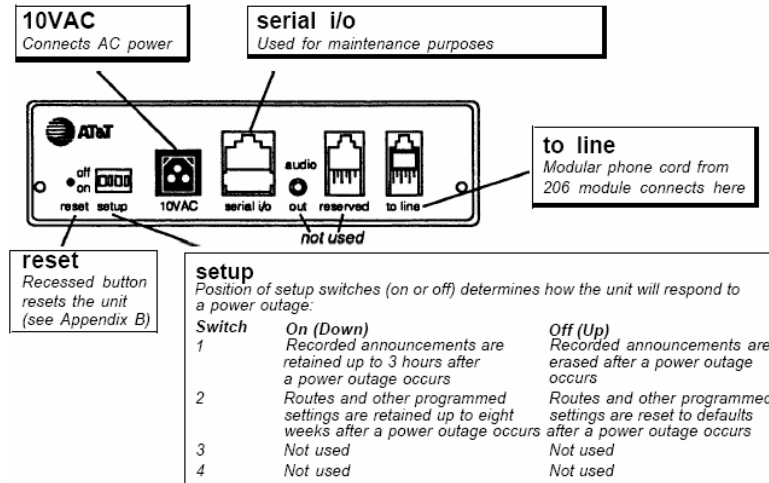


Fig. 33. Partner Plus Attendant, rear view



5.9 Partner II Attendant

Similar to the Partner Plus Attendant, above.

5.10 Partner Reporter

Partner Reporter software for Windows supports processing of SMDR records for analysis; it was designed for Partner II.

5.11 Partner PassageWay

Introduced in 1993, PassageWay™ Solution is a collection of software applications that ran on Microsoft Windows™ operating system version 3.1 or later. These applications provided an interface between an IBM®-compatible personal computer and a Partner system via a system or standard telephone. Release 2 followed in 1998 with support for newer Windows operating systems and revised software features.

PassageWay included the following applications:

Telephony Manager – for controlling incoming and outgoing calls

Phonebook – for managing contact information

Log Manager – automated recording of phone call information, and support for collecting notes.

Script Editor – for automating repetitive tasks

Auto-Task Manager – allows specifying criteria for triggering scripts to run automatically

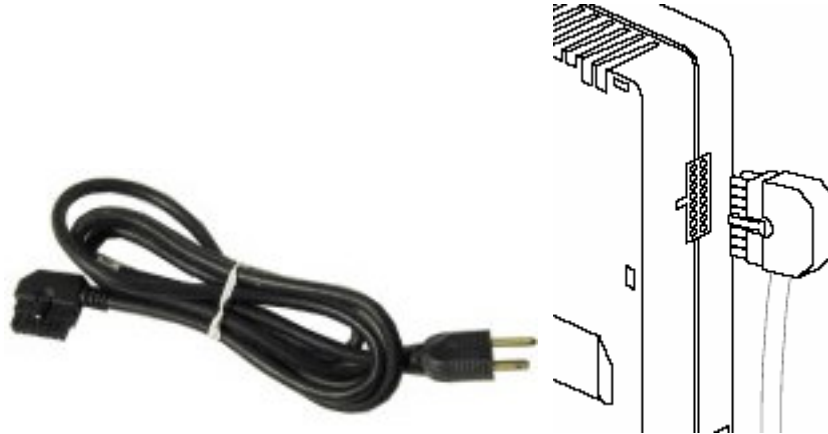
Anywhere Dialer – Allows dialing phone numbers from within any Windows application.

6 Wiring

6.1 The Partner Power Cord

Partner systems use a special power cord; the cord can plug into a module directly, or into a 2-slot or 5-slot carrier.

Fig. 34. Partner Power Cord, photo and sketch of plug mating to module



Avaya urges: “The power cord should hang straight down from the connector, flush against the plastic case for the entire length of the board. Do not install the power cord at an angle to the case or with a loop in it.”

6.2 Station Wiring

Partner system phones require two pairs of wire. Ordinary 6-pin modular telephone jacks work well, using pairs 1 and 2 (the center 4 pins.)

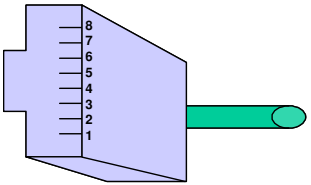
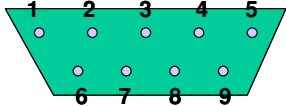
Partner system phones use 8-pin modular jacks, using pairs 1 and 2 (the center 4 pins.) CAT-5 style cables work well with Partner phones, and provide enhanced immunity to radio frequency interference.

The first pair (White/Blue, Blue/White) in station wiring is fully tip-ring compatible; a system phone and a standard single-line phone can be bridged on this pair. The second pair (White/Orange, Orange/White) provides power and signaling information to Partner system phones.

6.3 Other Wiring

355A SMDR adapter – 8 wire modular to DB-9 (PC serial line) for SMDR. If you wanted to make an adapter to connect to the DB-9 serial port on a Windows computer, the following chart should help. This information is believed to be accurate, though not necessarily identical to the internals of an Avaya 355A adapter.

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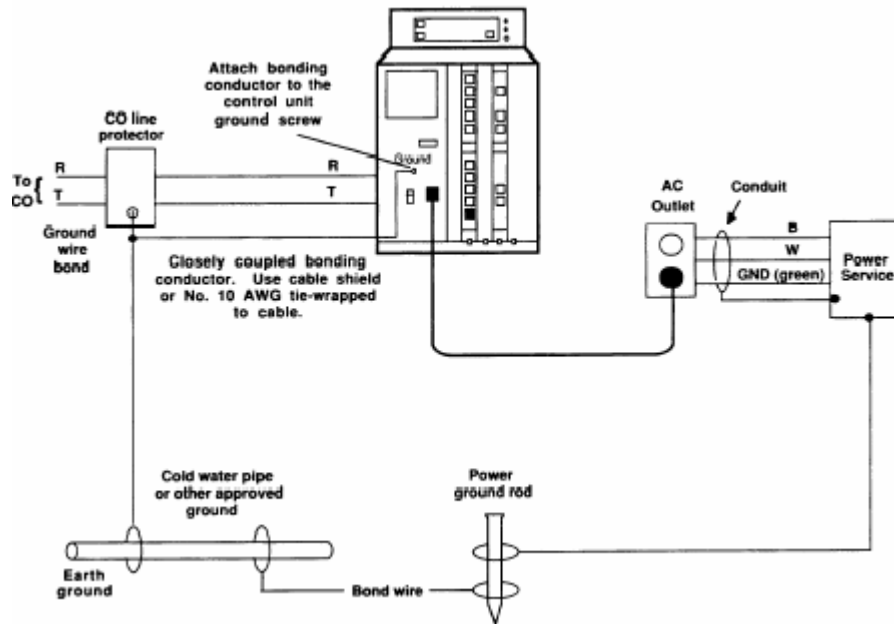
8-pin modular jack	DB-9 female connector (PC serial)	DB-25 traditional serial
	 view from back side of connector.	
Pin 1	Pin 9	22
Pin 2	Pins 1, 6, 8	6 + 8
Pin 3	Pin 4	20
Pin 4	Pin 5	7
Pin 5	Pin 2	3
Pin 6	Pin 3	2

6.4 Ground wiring

AT&T has a long track record of safety and reliability. To improve both aspects of an installation, they insist on strong ground wiring requirements. My recommendation is to follow them; they take little money, a few extra minutes during installation, and can prevent problems in the future.

In general, AT&T recommends additional ground wires be installed between the system and known reference points (beyond the grounding provided in the grounded power cord.). Consult your installation guides for details. The following illustration, for a Merlin Plus, has a typical arrangement: separate ground wire from equipment, closely coupled to the incoming phone lines, back to a good ground source. Though we show a Merlin here, similar arrangements are possible (and recommended) for Partner installations.

Fig. 35. Example grounding



7 Maintenance issues

7.1 Heat

Partner modules include telephone electronics and a switching power supply that accepts various world voltages. Special Partner power cords supply input electrical voltage to the correct power supply wires. Modules cool themselves convectively; in normal installations, modules are mounted vertically, and as electronic components heat, the heat transfers to surrounding air, which rises, flowing out of the top of the module.

Long-term reliability depends on proper heat dissipation. A rule of thumb for understanding heat is that as temperature rises 10°, electronic component life drops in half. Keeping Partner equipment cool will prolong its life.

Proper installation, with plenty of clearance, in a ventilated, dust-free environment is the best approach. Some Partner users feel that the Partner 2-slot carrier, and using older 5-slot carrier *covers* can impede airflow, reducing component life. The newest ACS 5-slot carrier cover allows much more air flow.

7.2 Designation strips

Avaya.com officially recommends Desi.com as a source of designation strips. There are many other providers. Unlike Merlin phones, Partner phones need specially punched desi strips.

7.3 Partner Phone self-test

To test the lights and ringer in any Partner phone, hold down the # button with the handset in the cradle for at least 5 seconds, then go off hook while still holding down the # button. All lights will illuminate with a steady ring. Hang up to end this test.

7.4 MLS Phone flex-circuit problems

Several service people report that the flex circuits in MLS phones can work intermittently, failing only after 24 hours of being plugged in. When testing MLS phones, leave them powered up for at least 24 hours before declaring that they work.

A Comparison of Avaya phone offerings

The following chart is reproduced from a 2003 April Avaya brochure, showing the differences between Avaya's SMB offerings.

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Capacities	PARTNER ACS	MERLIN MAGIX	IP Office
Stations/Endpoints capacity	Up to 48	Up to 200 digital or a combination of digital and analog phones with a max of 200.	IP403 is 100; IP406 is 180; IP412 is 256
Trunk Capacity	Up to 31	80 trunk max	96 digital + 192 analog, maximums apply to IP412
Network Trunk Connection			
Supported trunks (subject to region availability)	T/R Loop start Centrex VoDSL via SDSL module, and fractional T1 (R6)	T1 (voice & data); ISDN—both PRI & BRI; Ground Start trunks, Loop Start Lines, E&M tie line, DID trunks, OPX trunks, Centrex Lines	T1 (voice & data); ISDN—both PRI & BRI; Ground Start trunks, Loop Start Lines.
Call Center (Basic)			
Call queue management	No	Yes	Yes
• Delay announcement	No	Yes	Yes
• Message waiting receiver	No	Yes	Yes
• Priority queuing	No	Yes	No, planned with R2
• Service observing	No	Yes	Yes, with R1.3
Direct Group Calling (DGC)	Yes	Yes	Yes
Group call/pick up	Yes	Yes	Yes
Hunt Groups	Yes	Up to 32 groups	Yes
• A user/phone set can belong to several groups	Yes	Yes, beginning with R2.1	Yes
• Direct department calling (cyclic, fixed head)	Yes	Yes	Yes
• Most idle agent	No	Yes	Yes
• Overflow on another group	No	Yes	Yes
• Terminating extension group (simultaneous)	Calling groups	Yes, through Call Coverage Feature	Yes
• Uniform call distribution (cyclic, rolling head)	No	Yes	Yes
• Multiple agent login /logout	No	Yes, beginning with R2.1	Yes, in multiple groups
Music-on-hold	Yes	Yes	Yes
Record a call	Yes, with PARTNER Messaging	Yes, utilizing recorder interface module or a TSAPI solution through the Developer Connection Program, or via Voicemail Conference	Yes
Trunk control and supervision on display facility	No	Yes	Yes

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Call Center (Advanced)	PARTNER ACS	MERLIN MAGIX	IP Office
Callback request capability based on CLI or user entered data	No	Yes, with CTI link and Taske	Yes
Integrated Formal Contact Center	No	Yes, with CTI link and Taske	Yes, Compact Call Center
Integrated Informal Contact Center	No	Yes, with CTI link and Taske	Yes, Compact Business Center
Interactive Voice Mail	Some capabilities	Some capabilities	Yes
Management by exception (alarm on conditions)	No	Yes, with CTI link and Taske	Yes, 3 tiers of alarms
Maximum number of supervisors in contact center	No	8	Yes, 5 with Compact Contact Center
Queue Management (includes time & position in queue)	No	Yes, with CTI link and Taske	Yes, with VoiceMail Pro
Recording Services (record on demand & sampling)	No	Yes, with CTI link and Taske	Yes, with VoiceMail Pro
Reporting			
• Custom report designer tool	No	Yes, with CTI link and Taske	Yes
• Number of standard management ready graphical reports	No	Yes, with CTI link and Taske	Yes, 48
• Reporting on queue management	No	Yes, with CTI link and Taske	Yes
Softphone for Agent	No	No	Yes, in R1.3 up to 250
True Real-time time screens	No	Yes, with CTI link and Taske	Yes, with Compact Contact Center and Compact Business Center
Wallboards			
• Fixed Wallboards	No	Yes, with CTI link and Taske	Yes, up to 30
• PC Wallboards	No	Yes, with CTI link and Taske	Yes, up to 250
Call Handling			
Bridging	Yes	Yes	Phase 1 in R1.3; Phase 2 in R2.0
Busy lamp fields on DSS	Yes	Yes	Yes
Call forward:	Yes	Yes	Yes
• Conditioned Call Forward	No	No	Yes
• Delayed call forwarding	No	Yes	Yes
• Follow me	Yes	Yes	Yes
• For internal or external calls	Yes	Yes	Yes
• To an internal or an external number	Internal only	Yes	Yes
• To a designated number	Yes	Yes	Yes

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Call Center (Advanced) cont.	PARTNER ACS	MERLIN MAGIX	IP Office
Call Hold	Yes	Yes	Yes
• Call park (Controlled Hold)	Yes	Yes	Yes
• Direct selection of a parked call	Yes	Yes	Yes
• Exclusive hold	Yes	No	Yes
• Shared hold	Yes	Yes	Yes, Park slots
Call interrupt / intrusion /barge-in	Yes	Yes	Yes
Call pick up	Yes	Yes	Yes
Call screening	Yes	Yes, R2.2	VoiceMail Pro offers Whisper Announce only. Please refer to VoiceMail PRO documentation for specifics.
Call waiting	Yes	Yes	Yes
Camp on	No	Yes	Yes
Coverage—stations or groups	Yes	Yes	Yes, R1.3
Display call timer	Yes	Yes	Yes
Display facility:			
• Attendant call forward	Yes	Yes	Yes
• Incoming call display	Yes	Yes	Yes
Do not disturb/Send all calls	Yes	Yes	Yes
Hands-Free Answer on Intercom (HFAI)	Yes	Yes	Yes
Headset supported	Yes	Yes	Yes
Keypad lock/Station lock/Authorization codes	Yes	Yes	Yes
Outcalling	Yes	Yes	No, VoiceMail Lite offers Ringback to an internal number, VoiceMail Pro offers Ringback to an internal or external number.
Privacy (relating to Bridging)	Yes	Yes	Yes, via the Analog Trunk Module (ATM 16) which provides 2 power failure sockets
Voice announce on busy	Yes	Yes only on MLX sets	No
Call Routing			
Automated Attendant	Yes	Yes	Yes, with Voicemail Pro
Outcalling	Yes	Yes	No, Ringback with Voicemail

An Overview of Partner Phone Systems

Messaging	PARTNER ACS	MERLIN MAGIX	IP Office
Messaging System	Partner Voice Messaging (PVM)/PCMCIA PARTNER Messaging	Merlin® Messaging, Intuity™ Audix®, Zeacom PC-based VM, Octel 100	IP Office VoiceMail Lite (included); IP Office VoiceMail Pro (optional)
Capacity			
• Ports	PVM: 2 PMR1: 2,4,6	Merlin Messaging: 2,4,6,8,10 or 12	VoiceMail Lite: 4 VoiceMail Pro with IP403: 10 with IP406: 20 with IP412: 30
• Mailboxes	PVM: 12 PMR1: 200	200	No limit
• Storage	PMR1: 100 hrs	400 transfer-only destinations, 100 hrs storage, mailbox size 5-180 min, message length 2- 60 min	Storage limited to size of the associated PC hard drive (voicemail Lite/VoiceMail Pro). 1 min of recording = 1 MB.
Answering machine connectivity	Yes	Yes	Yes
Call screening	Yes	Yes, R2.2 up	Yes
Configuration PC tools online/off-line (multilingual)	Remote administration	WinSPM Socket Magix (available through Interactive Northwest)	PC Windows-based programming tool
Languages for voice messaging system prompts	Yes	Yes, Merlin Messaging release dependent	19 languages
Message waiting light	Yes	Yes	Yes
Outcalling	Yes	Yes	No, VoiceMail Lite/Pro offers Ringback to an internal/internal or external number.
Personal Numbering	No	No	Yes, with VoiceMail Pro
Record a call	Yes	Yes, with recorder interface module or a TSAPI solution through the Developer Connection Program, or Voicemail Conference	Yes, with VoiceMail Pro
Simple Call Scripting	No	No	Yes, with PhoneManager Pro
Unified Messaging			
Integrated Messaging	Yes (PMR6)	Yes (MMR6)	Yes, voicemail e-mail capability with Integrated Messaging Lite
Synchronization with Microsoft® Exchange/Outlook	Yes (PMR6)	Yes (MMR6)	Yes, with VoiceMail Pro via optional Integrated Messaging Pro
Email forward to any SMTP server	Yes (PMR6)	Yes (MMR6)	Yes, voicemail e-mail capability with Integrated Messaging Lite
Voice Recording – Automatic/On-demand	Yes, via button access with PMR1	No	Yes, included with VoiceMail Pro

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Interactive Voice Response (IVR)	PARTNER ACS	MERLIN MAGIX	IP Office
TAPI WAV and TAPI 3.0 Media Service Provider for IVR capability	No	No	Yes, in R1.3
Voice forms for structured interview	No	Yes, with CTI link and TASKE	Yes, with VoiceMail Pro
Voice questionnaire forms (Campaign Manager)	Yes, via Developer Connection Program	No	Yes, with VoiceMail Pro
Mobility			
Hands-Free Answer on Intercom (HFAI)	Yes	Yes	Yes
Headset supported	Yes	Yes	Yes
Outcalling	Yes	Yes	No, Ringback feature through VoiceMail
TransTalk® 9000 Digital Wireless System support	Yes	Yes	Yes
Networking			
Centralized Voicemail (CVM)	No	Yes, in a pure Merlin MAGIX environment and/or with Avaya DEFINITY® system	Yes, in a pure IP Office environment. Also R1.3.2 includes connection to a central Definity/MultiVantage Intuity Audix
Feature Transparency	No	No	Yes, with IP Office Small Community Networking requiring VoIP network
Frame Relay	No	Yes	Yes
Integral LAN port (X21/V35)	No	No	Yes
Q Sig Networking over E1/T1	No	No	Yes
Q Sig Networking over IP to MultiVantage	No	No	Yes
Router function	Yes, via the DSL Module	Yes, via the INA module	Yes
Uniform Dial Plan	No	Yes	Yes
Paging			
Group page			
• Overhead paging	Yes	Yes	Yes
• Simultaneous overhead paging	Yes	Yes, with R2.2	Yes, via custom solution
• Page an individual	Yes	Yes, except that Single Line sets cannot make or receive a voice announce page.	Yes (not currently supported to IP Hardphones)
VoIP Telephony	Yes, via Multi-Tech MultiVoIP and Developer Connection Program	Yes, via Multi-Tech MultiVoIP and Developer Connection Program	Yes

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Conferencing	PARTNER ACS	MERLIN MAGIX	IP Office
Conference	5 parties (2 external, 2 internal, + originator)	5 parties (2 external, 2 internal, + originator)	IP403/406: up to 64 parties. IP412: up to 2 independent 64 parties. Any mix up to 64 is also allowed. Max of 2 analog lines in a conference call.
Meet-me Conference Bridge	No	No	Yes, IP403/406: up to 64-party. IP412: up to 2 x 64-party.
Security			
E911	No	Yes	Yes
Integral Firewall	No	Yes	Yes