

VOICE PROCESSING

VP 100

INSTALLATION & MAINTENANCE MANUAL

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Toshiba VP 100 *Installation & Maintenance Manual*

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1 HARDWARE

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INTRODUCTION

The **HARDWARE** chapter discusses the VP 100 hardware architecture.

In this chapter, you will find the following:

- Quick Reference Guide containing the system specifications for the VP 100.
- Overview of the VP 100 hardware.
- Diagram of the front view of the VP 100 cabinet.
- Description of the VP 100 subsystems.

Quick Reference Guide

Hardware

VP 100 System Specifications

Mailboxes	Up to 500 per cabinet, depending on call traffic and volume, and duration of calls.
Messages	Maximum number: 32 per mailbox – configurable by COS Maximum length: 3.0 hours – configurable by COS
System Capacity (per cabinet)	
Voice Storage	11 hours per cabinet; 110 hours per system
Storage	
Ports	2-8
Port Increments	2
Maximum Cabinets per System	10
Classes of Service	128
Cabinet Dimensions	Height: 19.5 inches (49.5 cm.) Width: 12.75 inches (32.5 cm.) Depth: 5.75 inches (14.5 cm.)
Cabinet Weight	30-40 pounds (13-18 kg) maximum, depending on configuration.
Electrical Requirements	110-240V; 50 Watts maximum. Meets IEEE-587-1980 power disturbance immunity specifications.
Remote Alarm	Automatic call out to configured number Additional alarm indicators: Red LED, relay closure.
Environmental Requirements	Temperature: 65-80 F (18-27 C). System sends alarm when it reaches 105F and shuts down at 113F. Humidity: 20%-85% (non-condensing). Flooring: Suitable for office or equipment room environment. Dust: No visible accumulation within 24 hours. Corrosive Gasses: Less than 10 PPM. Electrostatic Discharge: Withstand up to 25 KV.

Quick Reference Guide

Hardware

VP 100 System Specifications

Cabinet Placement	Wall-mounted.
Heat Dissipation	Maximum 200 BTU/hr. per cabinet, cooled with one 3" fan.
PBX Interface	Ports: 2 – 8; 2500-type lines (RJ11) for each cabinet.
Direct Terminal Access	Serial Port Data: RS-232C: auto-baud select up to 38,400 baud.
Remote Terminal Access	Modem: integral, toll quality, auto-answer, 300/1200 baud; one each per cabinet, accessible through any port.
Time of Day Clock	Located on the main board. When the main power is not applied, maintains real time for up to 40 days by using battery backup.
Registrations	
FCC	Complies with FCC part 68 – EQ99TB-60697-VM-T.
DOC	DOC Certification number (Canada) – 8833440A.
UL File Number	E82470.
Safety Approvals	UL, CSA, and TUV approved.
EMI Emissions	Complies with FCC part 15, class A, VDE class B.

1.1 VP 100 HARDWARE DESCRIPTION

This section provides an overview of the VP 100 hardware. The VP 100 cabinet viewed from the front with the plastic case removed and the metal enclosure opened is shown in Figure 1-1.

■ VP 100 Cabinet

The VP 100 is contained in a two-part enclosure:

Outer Enclosure

The outer enclosure is a plastic case. The case is intended as a cosmetic enclosure. It hinges at the top and rotates down over the metal enclosure. The plastic case locks at the bottom. On the inside of the plastic case, a storage place is provided for a configuration diskette and one spare fuse.

Each VP 100 cabinet is shipped fully assembled. The cabinet specifications are as follows:

Height:	19.5 inches (49.5 cm.)
Width:	12.75 inches (32.5 cm.)
Depth:	5.75 inches (14.5 cm.)
Weight:	30-40 pounds (13-18 kg.)

Inner Structure

The inner structure is a metal enclosure. The function of the metal enclosure is to provide good mechanical support for all the internal subassemblies. This enclosure also provides an EMI and ESD shield.

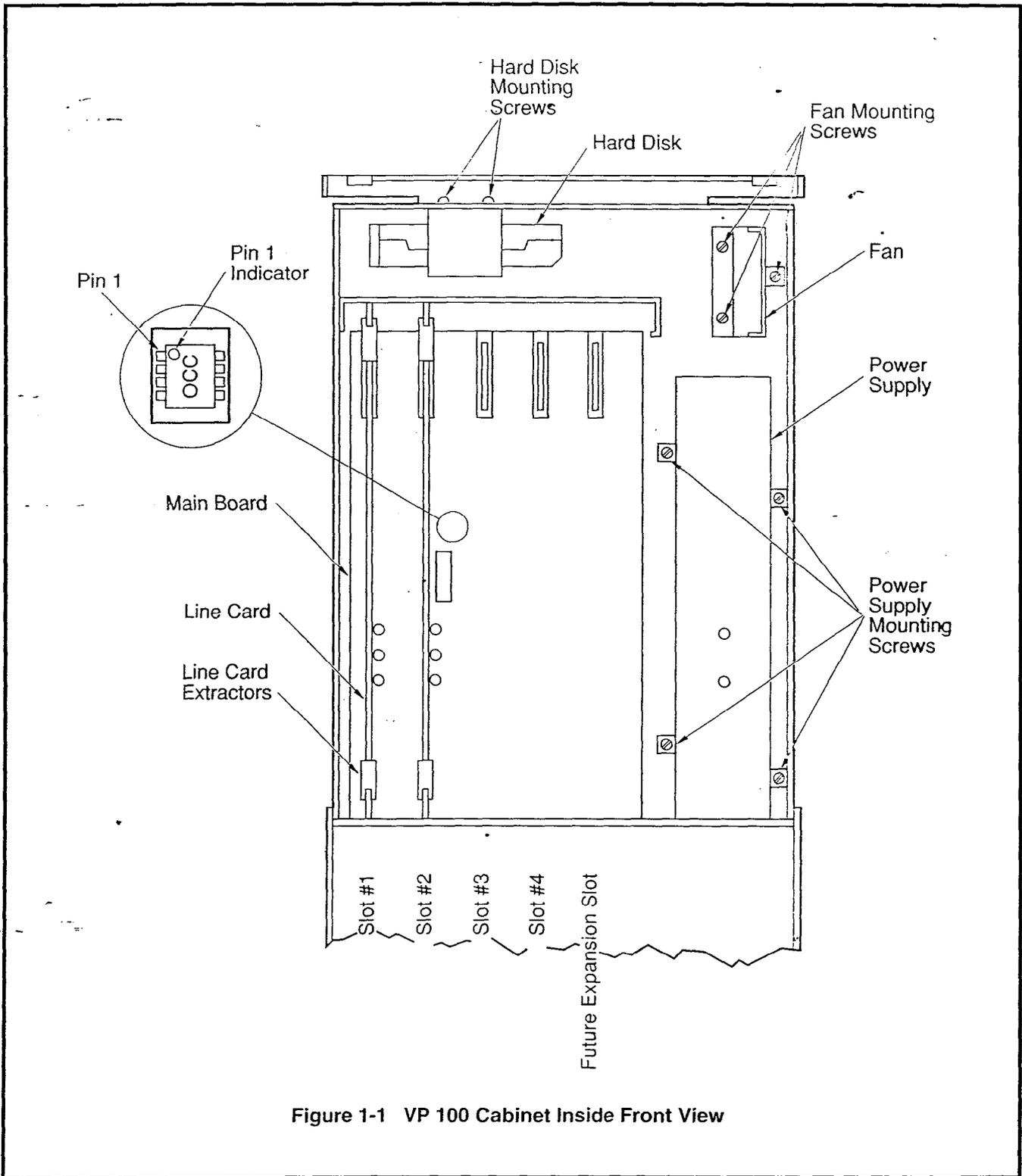


Figure 1-1 VP 100 Cabinet Inside Front View

■ Subsystems

Table 1-1 lists each VP 100 subsystem name, abbreviation, part number, and a brief description.

Subsystem (Abrev)	Part Number	Description
Main Board (MB)	200-0147-001	Single processor, 300/1200 baud modem, 1 Meg RAM, 4 LIC slots, 1 expansion slot. Supports one disk drive only. The Option Control Chip (OCC) is located on the Main Board. Two serial I/O ports.
Power Supply (PS)	200-0144-011	110 VAC – 240 VAC, & 40 VDC – 55 VDC. No adjustments necessary. Power switch, IEC connector, fuse and fuse holder are built into the PS.
Hard Disk Drive (HD) 2.5 hour 6 hour 11 hour	200-0143-001 200-0143-002 726-0124-001	SCSI hard disk drives for storage of voice messages, prompts, system configuration data, and system software. No separate disk controller board.
Hard Disk Drive 6 hour	200-0143-002	No separate disk controller board.
Line Interface Card (LIC) 2-Port	100-0055-001	A two-wire loopstart, 2500 set telephone line interface card.
Fan	200-0156-001	Internal fan improves the cooling in high temperature environments, such as telephone system rooms. The fan is intended to operate 24 hours a day, as long as the unit has power.

All of the field replaceable parts are designed to be removed and replaced without fully removing any screws:

- The LIC slides out.
- The PS is removed by loosening four screws and sliding it out.
- The HD is removed by loosening four screws and sliding it out.
- The fan is removed by loosening three screws and sliding it out.
- The metal enclosure cover hinges at the bottom and rotates down after loosening the four screws.

■ Main Board (MB)

The Main Board (MB) is the master control unit for the VP 100. The MB contains a microprocessor with ROM (Read Only Memory) and 1 Megabyte RAM (Random Access Memory), and two serial I/O ports.

The MB contains the system time-of-day clock which is backed-up by battery. The battery maintains the correct time through power loss for up to 40 days.

The main features of the MB are:

- Microprocessor.
- 1 Meg RAM.
- 4 line card slots.
- 1 expansion slot.
- 300/1200 baud modem.

The VP 100 is provided with an internal 300/1200 baud modem, which is used for remote testing and maintenance. You may communicate with the VP 100 through the internal modem by using a 103A or 212A compatible modem-equipped terminal. The modem can be accessed through any of the line ports on the VP 100.

■ Option Control Chip (OCC)

The Option Control Chip (OCC) is a non-volatile RAM component that stores optional features. This component retains memory permanently, even in the case of power interruptions. The OCC is programmed by Toshiba when the system is configured for shipment. All optional features are added and removed remotely by Toshiba. The OCC is located on the Main Board.

The OCC must always remain with the system it was purchased for. If the Main Board requires replacement, the OCC must be transferred from the old Main Board to the replacement Main Board. Refer to MAINTENANCE, Option Control Chip Replacement, in this manual.

■ Power Supply (PS)

The Power Supply (PS) provides all the DC voltage requirements for a maximum configured system. The supply input voltage range is:

- 100VAC – 240VAC.
- 48VDC.

There are no straps or jumpers to be changed to select the different input ranges. The power switch, IEC connector, and fuse are built into the power supply. The power supply has two LEDs with the following functions:

- | | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green | <ul style="list-style-type: none">• If ON, power is on.• If OFF, there is no power. |
| Red | <ul style="list-style-type: none">• ON during power up BOOT ROM diagnostic testing or when hardware errors have occurred.• Flashing slowly during auto-baud detect.• If the red LED is ON during normal operation, it indicates an alarm condition.• OFF when system is functioning and no hardware errors have been detected. |

■ Hard Disk (HD)

The VP 100 uses a specially formatted 40, 80 or 120 megabyte embedded SCSI hard disk. There is no separate disk controller board. The VP 100 supports one disk only.

■ Line Interface Card (LIC)

The Line Interface Card (LIC) provides a microprocessor-controlled interface to the PBX extensions. Each LIC has two ports which connect to PBX extensions via line cords. The LIC contains necessary circuitry for ring detection, dial tone detection, and signal power measurement allowing up to 30dB of gain for recording messages. There is one DTMF receiver for each port.

The LIC is a two-port standard 2500 set interface with three LEDs on the card. The LED functions are:

- | | |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red | <ul style="list-style-type: none">• If ON, card is RESET or BAD.• If OFF, card is OK. |
| Yellow | <ul style="list-style-type: none">• There is one yellow LED for each channel.• The LED is ON when the channel is in use.• The upper yellow LEDs are for the odd numbered ports: 1, 3, 5, and 7.• The lower yellow LEDs are for the even numbered ports: 2, 4, 6, and 8. |

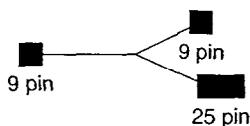
1.2 ADDITIONAL SUBSYSTEMS

The following describes other hardware aspects of the VP 100.

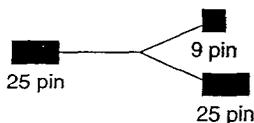
■ Terminal Ports

There are two terminal ports, TERM 1 and TERM 2, which are used for terminal access and RS-232C integration, respectively. The two interface cables Toshiba provides for connection to these ports are the:

- Laptop Interface cable



- Terminal Interface cable



Both cables are forked; the single end connects to the laptop for the Laptop interface cable, or to a terminal for the Terminal interface cable. The forked end connects to a VP 100.

■ TERM 1

Terminal Port 1, TERM 1, on the VP 100 can connect to a 103A/212A-compatible modem or provide an RS-232C serial connection. It supports EIA standard RS-232C serial, asynchronous (ASCII) data with 7 data bits, 1 stop bit, and even parity at the following baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400.

■ TERM 2

Terminal Port 2 is used for special applications involving PBX integration. If a terminal is attached to this port by mistake, the VP 100 responds with:

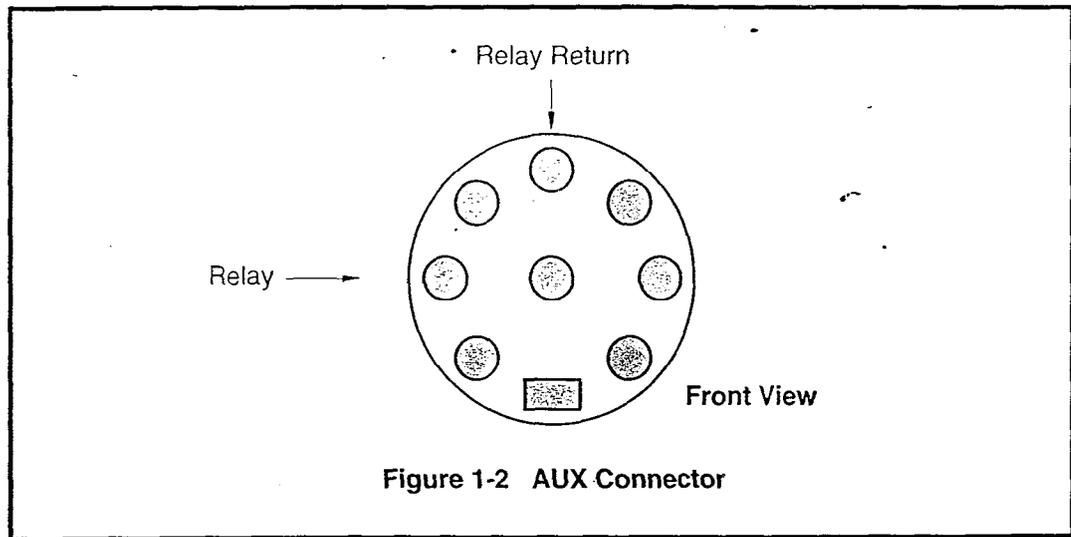
PLEASE USE CONNECTOR FOR TERMINAL #1.

Refer to INSTALLATION, for RS-232C pinouts and cables, and CONFIGURATION APPLICATIONS TERMINAL, in this manual.

■ Auxiliary Connector (AUX)

The VP 100 uses an 8-pin circular DIN-type connector for alarm relay connection and future enhancements. The AUX connector allows additional signals to be transmitted to and from the

VP 100. Currently, the only supported function is the alarm relay. The other pins on the AUX connector are reserved for future applications.



■ Alarm Relay Operation

The following table lists all possible states of the contacts on the alarm relay.

Table 1-2 Alarm Relay Operation	
State	Action
Normal, Power ON	Contacts open
Power Failure	Contacts closed
System Reset	Contacts stay closed momentarily, then open
Hardware Error Detected	Contacts closed (contacts reopen when hardware error is cleared)
Test Alarm (command)	Contacts closed (contacts reopen when hardware error is cleared)

■ Alarm Relay Electrical Requirements

The following are the alarm relay electrical requirements.

- Maximum Voltage — 48 VDC or 50 VAC.
- Maximum Current — 1 amp.

1. Screw head not to be more than .35". Be sure you have everything necessary if molly-bolts are required to mount the VP 100 cabinet.

PREPARING THE PHONE SYSTEM

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INTRODUCTION

The VP 100 works with PBXs, Centrex, most hybrids, and some key systems. For convenience, this manual uses the terms "phone system" and "PBX" to refer to any telephone system that works with the VP 100. The terms "extension" and "station" are used interchangeably.

This chapter discusses the VP 100's connection to the phone system, the changes required, and how to order them. It assumes familiarity with some PBX concepts.

Changes need to be made to the phone system for the VP 100. Some are changes to the PBX, others are done in the Central Office (CO). This may require lead time. Work with the client to determine who will make the changes and how long they will take. Prepare a schedule so everyone knows who is doing what and the date each item is required.

2.1 HOW THE VP 100 WORKS WITH THE PHONE SYSTEM

Connections to the phone system vary depending on whether the installation is interfaced or integrated. The following describes the various options.

■ Interfaced Installations

Each VP 100 port is connected to a 2500-type single-line, touchtone PBX extension. A standard four-conductor modular line cord connects the RJ11 jack on the VP 100 line card to the PBX extension RJ11 jack. A PBX extension connected to a VP 100 port is referred to as a port extension.

In order for the VP 100 to extend calls correctly, each port extension must be configured in the PBX to receive calls, place them on hold, initiate, transfer, and reconnect calls.

A VP 100 port is in use during the entire time it takes to answer a call, dial the extension the caller entered, and connect the caller to the requested extension. When the called party answers, the VP 100 connects the caller to that extension and drops out of the connection. The VP 100 port is then free to handle another call. When the called extension is busy or does not answer, the VP 100 port remains occupied while calling another extension or taking a message. A VP 100 port is in use when employees are listening to or sending messages.

Port extensions answering with the same company greeting and answering mode are placed in a hunting arrangement within the PBX. The hunt group may be circular or linear (terminal) according to the requirements of each particular PBX. This assures that callers are answered by the first available port.

The mode (AX, CX, or MX) of the VP 100 port determines how calls are answered by the VP 100. Refer to the *Configuration* manual — PORTS.

■ Integrated Installations

Different methods are used to integrate a telephone system with the VP 100. In some cases, a combination of these methods may be used for full integration.

Integration is the ability of the telephone system, when the call is not answered by the VP 100, to route or forward a call with information that identifies the extension number the call was intended for, and in some cases, the extension number of the person initiating the call.

■ In-band Integration

In-band integration is the ability for a telephone system to send DTMF tones that identify the extension number for a forwarded call to the port extension answering the call. In-band signalling may include the condition (busy, ring-no-answer, or direct) for the call. In

certain installations, DTMF may be used to turn ON or OFF message waiting indicators when messages are left or when the mailbox is entered.

■ RS-232C Integrations

RS-232C integrations are similar to the Bell Operating Company's (BOC) Simplified Message Desk Interface (SMDI). The SMDI or RS-232C interface provides the directory number, or PBX extension number of the called extension from which an incoming call was forwarded, to the message desk. If the call originated in the same CO or PBX, the directory number or extension number is sent to the message desk.

The condition or reason the call was forwarded to the message desk, as well as the port or member of the hunt group the call is being sent to, is included in the protocol. Message waiting indication may be turned ON or OFF over RS-232C connections for most installations.

■ Answering Incoming Calls

The VP 100 can answer all or a portion of a company's incoming calls. Trunks can be directed to the VP 100 hunt group instead of the operator through a PBX feature. This feature, often called DIL (Direct In Lines), allows trunks to be directed to a specific extension or hunt group instead of the console.

The PBX may be set up to direct all or only some incoming trunks to the VP 100. For example, the main company number may go to the attendant, while a second trunk group, with a different listed directory number, can be directed to the VP 100. Ports answering incoming calls are configured in AX mode.

Figure 2-1 is a block diagram of the VP 100 connected to the phone system where all incoming lines are directed to it. Arrows denote hunting.

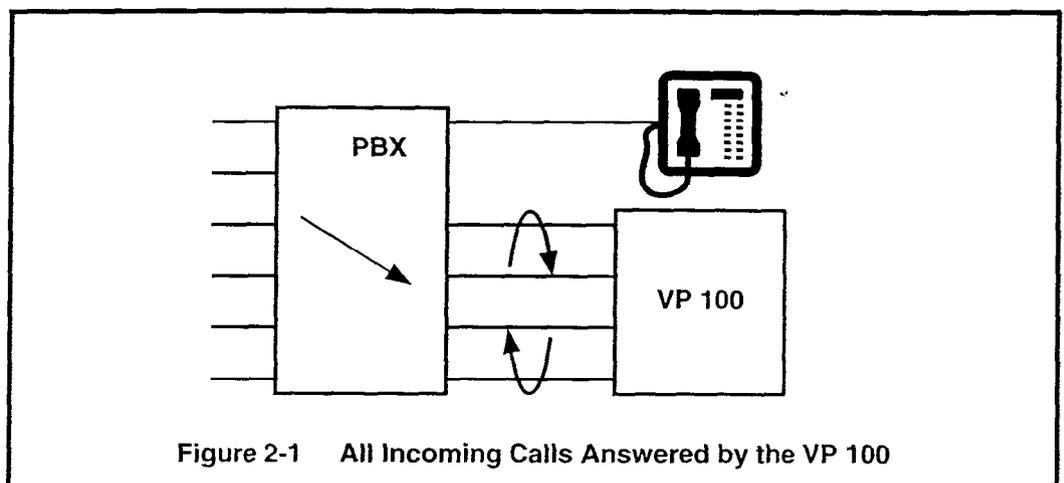
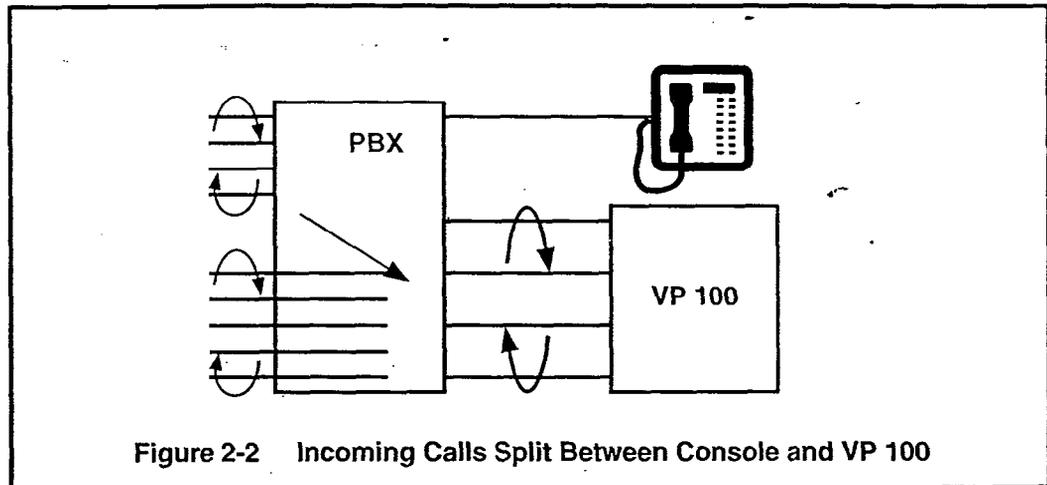


Figure 2-2 is a block diagram of the VP 100 connected to a phone system that has incoming lines split between the console and the VP 100. Arrows denote hunting.



■ Acting as a Message Center

The VP 100 can also be set up to answer forwarded calls and act as a message center. For example, a company with Centrex service already has a means of getting calls directly to a station. When the station is busy or does not answer, the station can be forwarded to a VP 100 hunt group to take a message. Ports receiving forwarded calls are configured in CX mode. The VP 100 does not attempt to call the extension number entered by the caller but immediately goes to that extension's mailbox and offers to take a message.

The attendant may also extend callers to a VP 100 port to allow them to leave a voice message. This port is configured as MX mode. As with CX mode, it does not call the extension number entered but goes to that extension's mailbox and offers to take a message.

2.2 DETERMINING NECESSARY CHANGES

A survey of the existing phone system is done during the initial phase of the implementation process. From the descriptions of the application(s), decisions are made about how the VP 100 should be used. Refer to the *Product Description* manual — IMPLEMENTATION for a list of questions to ask during the survey.

Use the results of the survey and the type of application to determine the necessary changes. Schedule and track these changes using the checklist found in the INSTALLATION chapter. Testing the Installation and Telephone Changes.

For convenience, we separated CO trunk changes from PBX changes. The following sections discuss changes that may be required and guidelines for ordering the changes for both CO trunking and the PBX.

2.3 CHANGES TO CENTRAL OFFICE TRUNKING

Central Office (CO) changes may be needed to:

- Add trunking capability.
- Change the order of trunk hunting.
- Create new trunk hunting groups.
- Add, change, or delete InWATS (1-800) services.
- Add, change, or delete DID or Centrex services.
- Split the hunt group (directory listed number), allowing some trunks to be directed to the console and some to the VP 100.

■ Additional Trunking

The specific number of PBX lines and trunks depends upon the number of VP 100 ports and the desired trunking arrangement.

Although the VP 100 port drops off after it transfers a call, the CO trunk is still occupied during the entire call. When you decide how many trunks to direct to the VP 100, remember each trunk is occupied from the time the call is placed until the caller hangs up. As a result, the VP 100 can answer incoming calls from more trunks than it has ports.

Determine how many trunks to direct to the VP 100 by using PBX traffic data and the traffic engineering tables. The tables are designed to help decide how to use the VP 100 most effectively for a given situation. After collecting the traffic data, it may be necessary to order changes from the telephone company to add or alter the number of trunks.

■ Splitting Trunk Groups

If one two-way trunk group will be separated into two or more groups, the rotary hunting of the trunks must be changed.

The VP 100 only handles incoming calls. If the trunks the VP 100 answers are two-way trunks, (also used for outgoing calls) make sure that sufficient trunks are available for both incoming and outgoing calls. Additional trunks or changes to the type of trunks may be advisable.

■ Ordering CO Trunking Changes

Contact the customer about making arrangements for changes in trunking. Typically, these changes require significant lead time. The CO requires an agency letter from the customer authorizing you to act on their behalf.

Figure 2-3 is a sample agency letter you may want to use.

DATE:

TO: All concerned operating telephone companies and other common carriers

ATTENTION: Supervisor

On this date we have entered into a contractual agreement with **(the VP 100 supplier)** to be our communications representative relating to all voice grade telecommunication needs. This agreement is for an indefinite period.

(The VP 100 supplier) may order connection and disconnection of telephone-company provided services and equipment. We hereby acknowledge that **(the VP 100 supplier)** may obligate us for installation and other charges that may appear on our telephone bill.

This authorization does not preclude our ability to act on our own behalf as necessary.

Please contact **(contact name)** of **(the VP 100 supplier)** at **(address, phone number, and extension)** if you have any questions.

(CUSTOMER'S NAME)
(TITLE)
(COMPANY)

Figure 2-3 Sample Agency Letter for CO Changes

2.4 CHANGES TO THE PHONE SYSTEM

Changes may be required to the following:

- The VP 100 port extensions.
- Called extensions.
- Trunks.
 - Redirection.
 - Selection.

Additional equipment may be required before these changes can be made. Most changes are to the PBX database.

■ The VP 100 Port Extensions

Connect and configure the port extensions using the following steps:

1. Designate one 2500-type, single-line, touchtone extension for each VP 100 port. Additional PBX line circuits may be required.
2. Terminate each of these extensions on an RJ11 or equivalent jack. Clearly mark each jack with the extension number.
3. Assign a PBX class of service to these extensions permitting them to:
 - Initiate calls.
 - Receive (incoming) calls.
 - Place calls on hold.
 - Transfer calls.
 - Forward calls.
4. Remove any type of call waiting features from the VP 100 port extensions.
 - ☞ If configuring ports for outcalling to network locations for off-site message notification or for off-site alarm calls, make sure the port extensions are **not restricted** from making calls to these locations (e.g., toll restriction).
5. Set up a hunt group for each group of port extensions configured to answer in the same way (company greeting, intercept position, mode). Where possible, make these circular hunt groups.

- ☞ In cases where the PBX queues calls to a busy hunt group and no overflow position can be defined, you may want to set up a “terminal” hunt group with the attendant, if possible, or other intercept position as the last member of the hunt. When all the VP 100 ports are busy, calls hunt to this last member of the group for answer.

Record the pilot number for each hunt group. Depending on the PBX type, the pilot number may be either:

- A phantom number with no actual extension appearance.
- The first extension of the hunt group.

Make the hunt group number easy to dial and easy to remember, since employees use this number to access the VP 100. Some phone systems permit single-digit access to hunt groups. For example, employees need only dial **5** to reach the VP 100.

6. Determine how to set up a fail-safe answering position based upon features available for the PBX type. This may be either programmed in the PBX as an overflow situation or by call forwarding the hunt group pilot or member extensions. If none of these are permitted, refer to item 5 (above).

■ Called Extensions

Because the VP 100 provides call coverage for busy stations, any type of call waiting¹ feature provided by the PBX is not required. Remove this feature from the PBX configuration for extensions called through the VP 100. PBX call waiting can mislead the second caller who hears that the extension doesn't answer instead of hearing the true busy status.

Remove any system call forwarding for call coverage (to a message center, etc.).

■ Trunks

Possible changes to the PBX trunk programming include redirecting trunks to the VP 100 and assuring any trunking changes do not affect the selection of trunks for outgoing calls. No changes need to be made to the DID trunking or programming in the PBX.

■ Trunk Redirection

Trunks are directed to the VP 100 via a PBX feature. Many PBX manufacturers call this feature DIL, Direct In Lines, or DIT, Direct In Trunks. If the phone system does not provide a DIL — type feature, refer to Implementing the VP 100 on PBXs Without DIL Feature in this chapter. If you are trying to determine the appropriate feature, first look for DIL, the most commonly used name.

1. When a busy station receives a second call, notification of the second call is given by a tone that indicates a call is waiting. The busy station may ignore the tone or place the first call on hold to answer the second. The notification tone is only heard by the called person and the caller hears ringing instead of a busy tone.

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If you can talk with someone familiar with the phone system, describe the feature (i.e., "ability to direct a trunk or group of trunks to a specific extension or hunt group rather than being directed to an attendant console for answer"). They should be able to supply the name of the feature for that phone system.

■ Trunk Selection

With some phone systems, incoming calls hunt from the beginning of a trunk group (trunk 1, trunk 2,...) for an available trunk, while outgoing calls hunt in reverse order (trunk 10, trunk 9, ...). Others specify the first and second preference trunk groups for both incoming and outgoing calls. If a large two way trunk group is to be split, re-examine the PBX programming for outgoing trunk selection and determine the trunk group to use for outgoing calls.

■ Ordering Phone System Changes

If your company is not the PBX provider, order changes from the PBX vendor on behalf of the customer. Provide a Service Provider Letter (Figure 2-4) to the PBX vendor indicating the changes needed to the PBX for the VP 100, and schedule the changes. If possible, try to use that PBX's terminology when requesting these changes. You may also want to provide them with information from this chapter. Review the previous sections of this chapter for information to fill in the blanks. Read over the letter and in particular, the footnotes. Depending upon the application, portions of the letter may need to be expanded upon or deleted.

Dear (PBX-Vendor Name):

This is to confirm the service order(s) that needs to be placed for our mutual customer, (company name) to prepare for the installation of their VP 100 System.²

The following items are pertinent to the order(s):

1. Extension changes. These changes need to be completed by (date). The (manufacturer/model type switch) is to be configured as follows:
 - a. Terminate (number) single-line stations on (number) in the telephone equipment room.³ Be sure the customer has enough spare ports on station card(s) to support these. Please mark and identify these jacks with the assigned extension numbers.
 - b. The single-line extensions are to have the following class of service (COS) features:
 - Extensions must be able to initiate, receive, transfer, and forward calls.
 - There should not be any call waiting features associated with these extensions.
 - There should be no toll restriction on (all/specified) extensions.⁴
 - c. The single line extensions should be placed in a circular hunt group.⁵ Please make the pilot number easy to dial and to remember.
 - d. When all members of the hunt group are busy, subsequent calls should be overflowed to (PBX console attendant/defined extension).⁶ Define the last hunt number as an overflow extension.
2. Trunk redirection. The following (or attached) list of trunks need to be directed via the (name of DIL feature) of the (manufacturer name) PBX to the VP 100 hunt group pilot number.⁷

Cut-over of these trunks to the VP 100 will begin at (time am/pm) on (date). Any programming of the (name of DIL feature) will need to be ready by this time.⁸

Thank you for your cooperation. If you have any questions, please feel free to call me at (phone number and extension).

Sincerely,

(NAME)
(TITLE)

Figure 2-4 Service Provider Letter

Footnotes on the following page.

-
2. The vendor, especially for CO Centrex, may ask for the VP 100's registration:

FCC Registration	EQ99TB-60697-VM-T
Ringer Equivalence	0.3A
PBX Interface	RJ11C or RJ11W
Line card	meets FCC Part 68
The VP 100 unit	meets FCC Part 15, Class A
UL Registration	E82470(S)

3. Or other location where the VP 100 unit will be placed. Refer to the environmental requirements in INSTALLATION, Installation Requirements, in this manual.

4. For ports that are used for networking, off-site message notification or off-site alarm call.

5. If more than one hunt group is required, specify the number of extensions for each hunt group.

For example:	hunt group #1	6 extensions
	hunt group #2	2 extensions

6. May not be available for all PBXs. If possible and desired, include this item.

7. If there is more than one group of trunks, specify the trunks for each hunt group:

Hunt group #1	Trunks:	Hunt group #2	1-800-337-1100
	555-3700		1-800-337-1101
	555-3701		
	555-3702		
	555-3703		

8. Tailor this section to the customer's needs. If trunk cut-over is staggered, include schedule in this letter. If a PBX representative needs to be on-site for this cut-over, arrange a mutually convenient time with the PBX vendor.

2.5 IMPLEMENTING THE VP 100 ON PBXS WITHOUT DIL FEATURE

You may encounter a PBX with an older feature package that does not provide the DIL feature. The PBXs most frequently encountered without DIL are AT&T Dimension PBXs with Feature Packages (FP) 2, 3, 4, 5, and 7.

- ☛ This feature on the Dimension is called DDC for Direct Department Calling. It is only available on feature packages (FP) 8, 10, 12, and 15.

If the customer's Dimension does not have FP8 or later or it is a phone system that does not have a DIL feature, there are several alternatives for getting trunks to the VP 100 ports for answer:

- Upgrade the PBX to a feature package offering the DIL feature.
- Use DID numbers.
- Place the console in night mode.
- Use call diverters to switch calls to the VP 100 ports.

Not all these alternatives may be feasible for a given situation. The following discusses each in detail.

■ Upgrade the PBX to a Feature Package Offering the DIL Feature

Depending upon the customer's current version, this may not be economically feasible. This is the most straightforward solution, but possibly not the most practical.

■ Use DID Numbers

Some customers may already have a block of DID numbers but do not wish to pay for DID numbers and trunks for all employees. Callers may be given a number that is a DID extension answered by the VP 100. This is especially suitable where a second number (not the main company number) is to be established for company employees, friends, family and frequent callers to call to reach extensions or receive information.

Again, in this way the VP 100 can answer a DID number. However, InWATS or main company numbers cannot be answered this way. Due to the cost of installing DID, this may only be attractive to companies that already have DID. DID is used only to get calls to the VP 100 extensions.

■ Place the Console in Night Mode

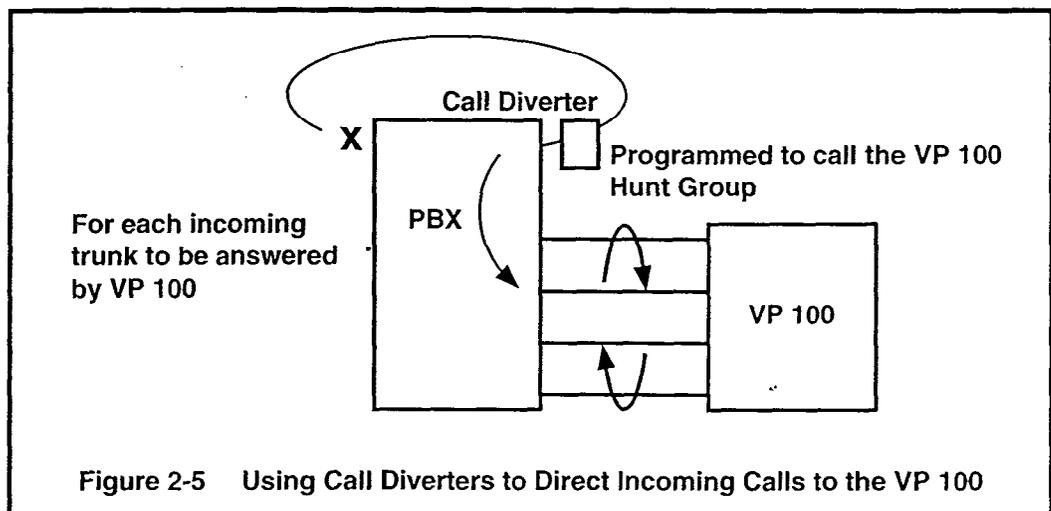
Even if the PBX does not have the DIL feature, placing the console in night mode usually may be used to direct **all** incoming trunks to a certain extension (such as the VP 100 hunt group). However, once the console has been placed in night mode, it may not be used. Direct callers requiring assistance (through the VP 100) to a multi-button key set for answering. This solution therefore, is most practical for:

- Smaller companies having a single console and willing to direct all trunks to the VP 100.
- Companies using the VP 100 only to answer after hours and on weekends.

Since the console cannot be used, callers who are toll restricted cannot get an outside line from the operator.

■ Arrange for Trunks to Call Divert to the VP 100 Ports

When only some trunks are to be answered by the VP 100 (ruling out Console Night Mode), these trunks can be removed from the PBX and terminated on call diverters that are connected to PBX extensions. See Figure 2-5. These call diverters are programmed to call the VP 100 hunt group. The call diverter answers the trunk and calls (through the PBX) the VP 100 hunt group number. The appropriate number of VP 100 ports, as well as one additional extension per trunk to be diverted to the VP 100, are required.



The call diverter that operates satisfactorily in this situation is the BUSCOM 2008-RD manufactured by MetroTel. Because this diverter ordinarily allows remote turn-off by pressing a  key, it requires a modification. When ordering from MetroTel, (408/988-5200) specify the "OPCOM/Toshiba VP inhibit remote turn-off modification."

3

CONFIGURATION APPLICATIONS TERMINAL

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INTRODUCTION

This chapter explains how to set up a PC for use as the VP Configuration Application Terminal (CAT). Setup and basic operation of the CAT are explained in this chapter. For information about DOS and DOS commands, refer to the manuals that were provided with your PC, or contact your PC vendor.

The CAT is used to initiate the procedures described in this chapter. The CAT is an IBM compatible PC with a floppy drive and an internal hard disk drive.

- The CAT floppy drive is used to transfer programs and files to and from the CAT hard disk drive.
- The CAT hard disk drive is used to store the CAT program, VP 100 system software, prompts, and backed up system configurations. It is also used when transferring programs and files to and from the VP 100.

Most standard ASCII data terminals that meet EIA RS-232C specifications can be used to communicate with the VP 100. These ASCII terminals can be used to access all configuration, reporting, and diagnostic programs on the VP 100.

The CAT is used with multiple VP products. If the CAT hard disk drive contains information for more than one product type, the following screen appears when the CAT is first turned ON. It does not appear if only one product type is installed. This screen allows you to select the VP product being used.

Use **↑** and **↓** to move selector and **ENTER** to make selection

Select Product Type

VMXworks

VMX 100

CAT

C o n f i g u r a t i o n A p p l i c a t i o n s T e r m i n a l

VMX CAT version XXX

(c) 1989, 1990 by VMX, Inc.

CONVENTIONS:

To indicate the difference between the text in this chapter, the following conventions are followed.

Text This is normal text in this chapter.

VP 100 and DOS system prompts

The VP 100 system prompts and DOS prompts are represented in this type:

```
C:\VMXCAT>
```

VP 100 screen sample

The VP 100 screens are represented in the following type face and are surrounded by gray shading:

```
-----SYSTEM SOFTWARE  RELEASE A.X.X.X. (MM/DD/YY)-----  
DAY MM/DD HH:MM:SS YYYY NAME ID:XXXXXX S/N:XXXXXX PBX:XX
```

User entries within VP 100 screens

The VP 100 system commands and DOS commands that you type are represented in this type:

```
.M USER
```

```
.M USER
```

```
Enter current MAILBOX number.
```

```
:500
```

```
Enter each user's MAILBOX and COS.Enter as:
```

```
Mailbox,COS (Mailbox=1-8 digits, COS=0-127)
```

```
User's EXTENSION will be set to match MAILBOX.
```

```
MOD:500,0
```

CAT Menus

The names of CAT Menus are represented in this type:

Terminal Menu

 The various screens described in this chapter appear **ONLY** when using the CAT.

Quick Reference Guide

Configuration Applications Terminal

Tips and Notes

Starting the CAT

The CAT program starts automatically each time the PC's power is turned ON.

Restarting the PC

If for any reason the CAT program becomes inoperative, the CAT can be reset by holding down the following keys simultaneously. This reset is similar to turning the PC's power OFF then ON.

Starting the VMX CAT Program from DOS

Move into the VP CAT Directory.

Type: `CD \`

From the C:\> prompt, type: `CD VMXCAT`

The C:\VMXCAT> prompt is displayed.

From the C:\VMXCAT> prompt, type: `CAT [options]`

where [options] can be /T1600 (Toshiba), /Z286 (Zenith), or /COM2 (modem).

 The VP CAT starts with the **Select System** screen displayed.

Starting with log file closed

To start the CAT program with the log file closed, use the CAT/LOGOFF command line option.

Clearing the Screen

To clear the CAT screen without affecting the VP 100:

1. Enter the **Terminal Menu** (T).
2. Select **Clear Screen** from the menu choices.
3. Press .

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Commonly Used DOS Prompts

DOS provides a prompt to indicate when it is ready to receive and process commands. The following are examples of DOS prompt information:

Prompt	Description
C:>	DOS prompt, not indicating what directory is selected. Most likely, the VP CAT software has not been installed or the PC was not rebooted after VP CAT software was installed.
C:\>	DOS prompt with the root directory selected.
C:\VMXCAT>	DOS prompt with the VP CAT directory selected.

Moving from the "Select System" screen to the CAT menus

- Press the **Escape** key.
 - Hold down the **Alt** key and press the **H** key. The CAT menu appears with the Help option selected.
 - Use the left and right arrow keys to select the desired menu option.
-

Moving from the VP 100 screen to the VP CAT menus

Hold down the **Alt** key and press the first letter of the VP CAT menu item you wish to select. The menu bar appears at the top of the screen with that menu item highlighted:

Alt H	Help.
Alt E or Alt X	Exit the CAT program and return to the DOS prompt.
Alt T	Terminal (VP CAT activities).
Alt B	Backup information from the VP 100.
Alt R	Restore information to the VP 100.
Alt U	Update the VP 100 system software.

3.1 VP CAT OVERVIEW

The Configuration Applications Terminal (referred to as CAT) is a computer that combines Toshiba approved IBM PC compatible hardware and Toshiba supplied CAT software.

► WARNING ◀

The hardware component of the CAT should be dedicated exclusively to installing and maintaining Toshiba products. Any application software, programs, or files present on the PC hard disk drive or in RAM (memory) are not recommended by Toshiba and they may interfere with VP 100 operation and CAT software. Do not modify any programs or files supplied by Toshiba as this will result in unpredictable operation of the CAT and/or the VP 100.

■ DOS Information

To operate correctly, the CAT program requires DOS version 3.3 or later to be installed on the PC hard disk drive in a subdirectory named "DOS." This must be done during the PC setup and configuration, and prior to installing CAT or VP 100 system software.

Complete step-by-step procedures for all CAT operations that use DOS are provided in this chapter. However, efficient use of the CAT requires a working knowledge of DOS commands. DOS knowledge is necessary to be able to manage log files (captured during a communication session with a VP 100), and to archive, recover, or delete VP 100 system configurations from the PC hard disk drive. The DOS manual supplied with your PC is an excellent source of information, as well as various PC books written for new users. Specifically, you should have a working knowledge in the following areas:

- PC root directory and subdirectories.
- Moving between directories on the hard disk.
- Operation of files with extensions .EXE, .COM, and .BAT.
- DOS conventions for command options.
- Purpose and use of AUTOEXEC.BAT and CONFIG.SYS files.
- PC keyboard and keystroke entry.

■ VP CAT Program Description

The CAT has two major functions:

- Perform terminal emulation for communication with the VP 100.
- Provide a method to perform the following operations:
 - Backup and Restore VP 100 System Configuration.

- Backup and Restore VP 100 Greetings, Names, Script, and Sequential Messages.
- Archive and Recover VP 100 System from floppy diskette.
- Update VP 100 System Software.
- Beginning with Rel. 6.1, add a prompt set in a second language to the VP 100.

CAT Terminal Emulation

Terminal emulation allows the CAT to communicate with the VP 100 directly through a cabled connection or remotely through a modem. Characters typed on the CAT keyboard are sent to the VP 100, and information from the VP 100 is displayed on the CAT monitor. The only time the CAT is not performing terminal emulation is when menus are displayed. At this time, communication with the VP 100 is temporarily suspended because the menus control the terminal.

Data Transfer Operations

The CAT uses a proprietary packet-based, error-correcting data transfer protocol at speeds up to 38400 baud, to pass information between the VP 100 and the CAT. Data transfer is initiated by a menu selection of the Backup, Restore, or Update programs. The Backup options transfer data from the VP 100 to the CAT hard disk drive. The Restore and Update options transfer data from the CAT hard disk drive to the VP 100.

Program Utilities and Other Features

The CAT program includes utilities to manage individual VP 100 systems. Systems can be added, deleted, and modified. Backed up system configurations can be archived to and recovered from a floppy diskette.

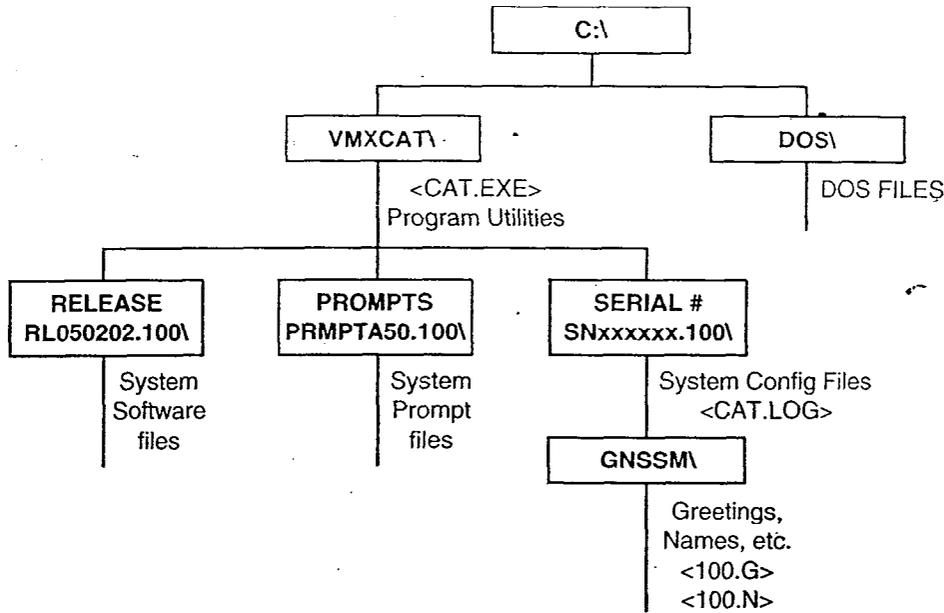
The CAT program also includes utilities to manage log files, which capture communication sessions from the VP 100. Multiple log files can be stored, displayed, printed, and deleted for each VP 100 defined within the CAT program.

■ VP 100 Software Package Description

The VP 100 PC software package consists of:

- CAT software, terminal emulation, data transfer program, and program utilities (1 diskette).
- VP 100 System Software (1 diskette).
- VP 100 System Prompts (multiple diskettes).

The following diagram illustrates the directory structure of the PC hard disk after the VP 100 Software Package has been installed. A file is indicated by <file name> and a directory is followed with a \ (backslash).



The following describes the VP 100 Software Package programs, directories, and files, and explains how they are organized on the PC hard disk.

- VMXCAT** Directory used to store the executable CAT program and all CAT program utilities. Various subdirectories within VMXCAT\ are used to store VP 100 system software, VP 100 system prompts, individual system configuration, and log file (session) information.
- CAT.EXE** The executable CAT software program file.
- RLxyyyzz.100** For each release of VP 100 software installed on the PC hard disk drive, there is a subdirectory below VMXCAT\ named RLxyyyzz.100 (for Release A.xx.yy.zz.) For example, Release A.06.01.02 has a subdirectory RL060102.100.
- PRMxxxxx.100** For each version of VP 100 prompts installed on the PC hard disk drive, there is a subdirectory below VMXCAT\ named PRMxyz.100 (xxx = language, y = system release level, z = prompt revision level.). For example, English Prompts 6K are stored in subdirectory PRMENG6K.100.
- SNxxxxxx.100** For each system that has been added, a subdirectory is automatically created below VMXCAT\, and is named SNxxxxxx.100, where xxxxxx is the serial number of the system. For example, a system with the Serial Number 000246 would have a subdirectory SN000246.100. This subdirectory is used to store configuration backup files and the CAT.LOG file(s) for the specified system.

GNSSM	There is one subdirectory below every SNxxxxxx.100 named GNSSM. This subdirectory is used to backup Greetings, Names, Scripted, and Sequential Messages.
CAT.LOG	File used to store a communication session with a selected VP 100 on the CAT hard disk drive. This text file can be saved, deleted, viewed and printed. The file is automatically created and/or updated (appended) before each communication session with a selected VP 100 system. Logging to this file can be turned ON and OFF as required. Refer to PROCEDURES, Session Review And File Maintenance, in this manual for complete details.

► **WARNING** ◀

Unauthorized changes to data in any file stored in the VMXCAT\ directory or its subdirectories may result in complete failure of the VP 100.

- ☛ If the selected system was <NONE>, then the CAT.LOG log file is created and stored within the VMXCAT\ subdirectory. Refer to PROCEDURES, Select System Screen, in this manual for more information.

■ PC Hardware Requirements

The hardware component of the CAT is an IBM compatible PC and must meet the following list of characteristics in order to be used with the CAT program:

- Operates with MS-DOS version 3.3 or higher.
- RS-232C serial communication port(s) with NS16C550 UART or compatible.
- Support of baud rates 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400.
- 3.5 inch high density floppy disk drive (1.44 megabyte).
- 20 megabyte (internal) hard disk drive (minimum capacity).
- 80C286 processor.
- 640 kilobytes internal RAM.
- Self contained, battery operated with removable, rechargeable batteries and portable for field service use (optional).
- Parallel printer port (optional).
- Internal modem (optional) for remote VP 100 access recommended. Example: Hayes compatible (Bell standard type 212 or 103), 300 and 1200 baud.

Refer to the Laptop PC Description and Setup section in this chapter for Laptop PC hardware descriptions and setup information for use as the CAT.

■ Terminal Conventions

The following are the basic conventions and terminology used with the VP CAT. For further details, refer to the operating manual provided with your PC. For a summary of the DOS commands, refer to Appendix A.

Arrow Keys Use the arrow keys on the keyboard to move the cursor or highlight the various menu screens.

ALT Keys Press any **Alt** key combination shown below to activate the pop-up menus while in the CAT terminal emulation mode.

To enter an **Alt** key combination, hold down the PC key labeled **Alt** while pressing the first letter of the option menu you wish to select (use either upper or lower case letters). The selected menu appears at the top of the screen. The CAT returns to terminal emulation after exiting from a menu, or by pressing the **Escape** key.

Valid ALT key Combinations:

Alt H	On-Line Help menu
Alt E or Alt X	Exit the CAT program and return to DOS prompt
Alt T	Terminal menu
Alt B	Backup menu
Alt R	Restore menu
Alt U	Update menu

Control Keys The **Control** key is used together with other keys for various purposes. While communicating with the VP 100 or when viewing a log file; press:

Control S to stop display scrolling.

Control Q to start display scrolling.

Escape (ESC) Key Press the **Escape** key to exit any menu and return to terminal emulation. The **Escape** key is also used to interrupt and terminate any data transfer operation currently executing.

Enter Key **Enter** is generally used to begin an operation or confirm a selection. Press **Enter** to execute a menu selection, to select a system, or to execute a command while in DOS.

Function Keys **F1** displays the on-line **Help** screen.

F2 is used when in the **Select System** screen in order to modify an existing System Name, ID, Serial Number, or Release of system software number.

F5 is used to obtain a directory of all mailboxes backed up on the CAT hard disk while in the **Restore Greetings, Names, Scripted, and Sequential Messages** menu.

Reverse Video

The term “reverse video” refers to the appearance of characters on the screen. Reverse video is when the color normally used to display text is used as the background color, and the color normally used to display background is used to display text. Reverse video is used to indicate which menu is active, as well as where the cursor is within that menu. The menu cursor and the bottom line of the screen are always displayed in reverse video.

Program Status Line A program status line is always present (in reverse video) in the lower section of the screen whenever the CAT program is operating. The status line is divided into five fields that are defined as follows:

	Baud 19200	Press ALT H for Help	SysS/N:123456	Log File: CAT.LOG
Displays various characters when the CAT and VP 100 are communicating. T = Transmit R = Receive	Displays the current Baud rate setting for the CAT.	Displays Press ALT-H for Help when in the Terminal emulation mode, otherwise displays Press ESC to Exit Menu.	Displays system serial number of the current (selected) system, or <NONE> for no system.	Displays the Log File Status. If a session is being logged to disk, displays file name Log File: CAT.LOG otherwise shows Log File: Closed.

3.2 LAPTOP PC DESCRIPTION AND SETUP

This section provides information on laptop PC preparation. It is essential that the PC be set up correctly before proceeding with the installation and operation of the CAT software. Consult the PC owner's manual for specific setup and installation procedures.

■ Initial Setup

Most PCs provide a setup program for configuring memory usage, disk format, display characteristics, and I/O and communication capabilities. The PC owner's manual should provide information and instructions for getting started.

The set up parameters for the PC should include the following.

Memory

Total base	640 KB (minimum required)
------------	---------------------------

Ports

Serial	COM1
Built-in modem	COM2
Parallel	LPT1

Display

Type	Enhanced Color, EGA, or monochrome display
------	--------------------------------------------

■ DOS Setup

The PC being used must be properly set up with DOS prior to CAT software installation. Refer to the DOS Information section, and to the PC owner's manual for detailed instructions.

In addition, DOS version 3.3 or later operating system must be installed in a subdirectory named /DOS.

The root directory (C:\) should contain **CONFIG.SYS** and **AUTOEXEC.BAT**. These files contain the following information after the CAT program is installed.

CONFIG.SYS

```
files=24
buffers=24
device=c:\dos\ansi.sys
shell=c:\dos\command.com/p/e:1024
```

AUTOEXEC.BAT

```
set comspec=c:\dos\command.com
set path=c:\dos
prompt Sp$g
```

For more information about these files, consult your PC user's manual.

3.3 VP 100 SOFTWARE PACKAGE INSTALLATION

This section explains how to install the CAT software and VP 100 system software onto the PC hard disk drive. Information on floppy diskette write protection is also included in this section. All programs and files are stored in subdirectories as described in the Software Description section in this chapter. If the CAT software is an update to an earlier release, the old version is deleted and replaced with the new version. If the VP 100 software is a new release, the old software release is retained on the CAT hard disk drive. The new software release is stored separately in a new subdirectory.

- ☞ **Do not remove** any subdirectory containing an old VP 100 system software release on the CAT hard disk drive unless directed to do so by an update notice or by your technical support center. The old software may be needed to allow the UPDATE program to function properly or to support systems already installed.

The following steps must be followed to assure proper software installation.

1. Install VP CAT Software.
2. Install VP 100 System Software.
3. Install VP 100 System Prompts.
4. Reboot the PC.

■ INSTALL VP CAT SOFTWARE

The CAT software is supplied by Toshiba on 3.5 inch double-sided, high-density (DS-HD) floppy diskettes. Verify that the diskette is write protected prior to installation. Refer to Figure 3-1.

To install the CAT software, perform the following steps:

1. Turn on the PC (boot) and obtain the DOS command prompt (C:\>).
☞ If the CAT program is already installed and you want to reinstall, exit the CAT program by pressing **[Alt] E**. You are returned to the following DOS prompt: \C:\VMXCAT.
2. Insert the diskette into the floppy drive. The diskette is labeled:

VMX CAT SOFTWARE VERSION X.X DISK 1 OF 1 DATE: MM/DD/YY COPYRIGHT VMX

- At the C:> prompt, type:

A:INSTALL -M

- M is optional. It will adjust the terminal display.

A window menu appears. Select the PC type to be used. The following screens lead you through the remainder of the install.

- If this is the first time the CAT program is being installed, the install utility gives a choice to modify the AUTOEXEC.BAT and CONFIG.SYS files so the CAT program will automatically start when the PC is turned on. These changes can be accepted or example files can be created, or it can be bypassed.

If the CAT program is already installed and a later version is then installed, the choices described above are not shown.

■ VP 100 System Software Installation

The VP 100 System Software is supplied by Toshiba on a 3.5 inch DS-HD floppy diskette. Insure the diskette is write-protected prior to installation.

- Obtain the DOS command prompt (C:\>).
- Insert the VP 100 Software diskette into the CAT floppy drive. The diskette is labeled:

<p>VMX 100 SOFTWARE RELEASE A.XX.XX.XX DISK 1 OF 1</p> <p>DATE: MM/DD/YY COPYRIGHT VMX</p>

- At the C:> prompt, type.

A:INSTALL -M

- M is optional. It will adjust the terminal display.

A window menu appears, showing the release number of the VP 100 software that is being installed. The first choice that is highlighted is the default. The highlighted choice is described in a window directly below. Press to choose or use the up and down keys to move to another choice.

The installation takes 10 - 20 minutes to complete. When it is completed, a message appears stating that the install is done.

- When VP 100 system software is installed, a new directory for that release is created and files are copied into it. If the same release is installed again, the existing files for that release are replaced.

When a new (different) release is installed, other releases previously installed are not affected, except to provide update procedures to the new release. A new directory is created for the new release and files are copied into it.

■ VP 100 System Prompts Installation

The VP 100 System Prompts are supplied by Toshiba on 3.5 inch DS-HD floppy disks. Insure the diskettes are write protected prior to installation. Refer to Figure 3-1.

1. Obtain the DOS command prompt (C:\>).
2. Insert the diskette labeled *VP 100 PROMPTS, DISK 1 of X* into the floppy drive. The diskette is labeled:

```
VP 100 Prompts
DISK 1 of X
DATE: MM/DD/YY
COPYRIGHT VMX
```

3. At the C:> prompt, type:

```
A:INSTALL -M 
```

The installation program displays the version of the system prompts being installed. Press to install the prompts. Toshiba System prompts consist of multiple disks.

4. When prompted, insert the requested diskette and press .

■ Reboot the PC

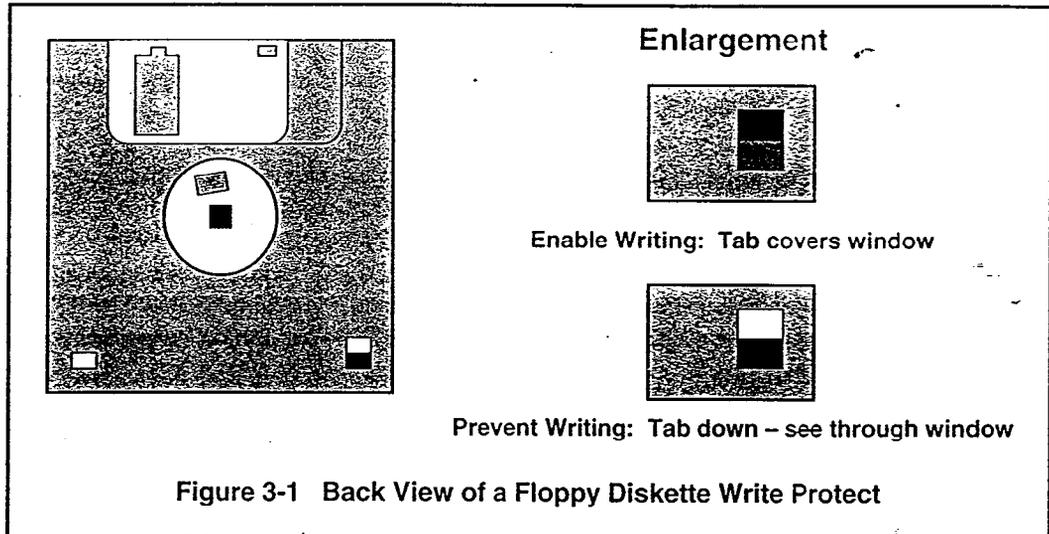
After the software installation is complete, reboot the PC. Hold down the keys simultaneously.

If CAT is part of the AUTOEXEC.BAT file, when the PC has completed the boot process, the CAT program automatically starts and the **Select System** screen appears.

- ☛ If a problem occurs (such as a read error) while installing the above software, repeat the installation procedure (starting with diskette #1 for prompts). If the installation continues to fail, the diskette is probably damaged and must be replaced.

■ Floppy Diskette Write Protection

The 3.5 inch floppy diskettes have a square hole with a plastic tab in the lower left-hand corner of the front of the diskette. **Write protect** the diskette by sliding the plastic tab on the back of the diskette toward the bottom edge of the diskette until it clicks. When you look at this hole from the front of the diskette, the **plastic tab** should **not** be visible through the hole.



3.4 COMMUNICATION WITH THE VP 100

Terminal port 1 on the VP 100 supports.

- EIA standard RS-232C serial.
- Asynchronous (ASCII) data with 7 data bits.
- 1 stop bit.
- Even parity at the following baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400.

The internal modem of the VP 100 is Bell 212/103 compatible and supports the same data format as terminal port 1 at 300 or 1200 baud only.

To establish communication with the VP 100, connect a null-modem cable between the CAT (or terminal) and the terminal port 1 connector on the VP 100, or establish a remote connection with the internal modem. Refer to the INSTALLATION chapter in this manual for details.

The terminal port 2 connector is used for special applications involving PBX integration. If a terminal is attached to this port by mistake, the VP 100 responds with:

PLEASE USE CONNECTOR FOR TERMINAL #1.

■ Connecting to the VP 100

Follow the steps below to connect the PC to the VP 100.

1. Connect the cable.

Connect one end of the 9 pin-to-9 pin null modem cable to the back of the PC. Connect the other end to the TERM 1 connector of the VP 100. Refer to INSTALLATION in this manual for cable details.

2. Add system to the CAT database.

Refer to the PROCEDURES chapter, Select System Screen section, in this manual.

Turn the PC power ON and wait for the Select System screen to appear.

Move the highlight bar to **Select this line to add another system** by using the up and down arrow keys; then press .

Enter the information describing the VP 100 system you are connected to. Use the key to move to the next field.

☛ You must have already installed VP 100 System Software and Prompts on the PC hard disk to be able to add a system by using the Select System screen.

After the **Prompts** field is entered, the screen is cleared and the VP CAT is ready to communicate with the VP 100.

3. Communicating with the VP 100

Turn the power ON to the VP 100 your CAT is connected with.

While the red alarm LED is flashing, hold down the key until the VP 100 system header appears.

(This is the autobaud detect process of the VP 100. The VP 100 automatically matches the baud rate set in the VP CAT.)

The @ prompt from the VP 100 indicates that it is ready for you to proceed with the install process by using the VP 100 **INSTALL** and **UPDATE** programs.

☞ If the VP 100 has a password installed, the password must be entered before the @ prompt appears.

■ Port Connection

There are two ways to access the VP 100:

- Via the terminal port 1 connector.
- Via the 300/1200 baud internal modem.

The internal modem is automatically disabled during a data transfer sequence (Backup/Restore/Update) initiated from the Local Terminal Port 1, and when the local terminal is in the **UPDATE** or **INSTALL** programs (e.g. the @ prompt is not displayed). The internal modem can also be selectively disabled (**MOD DISABLE**) or enabled (**MOD ENABLE**) at the @ prompt.

If a session has been established on Terminal Port 1 with the @ prompt displayed and a call comes in through the internal modem, the internal modem connects and takes over access to and control of the system (the local terminal is disabled).

If a session has been established with the internal modem, the terminal port is locked out until modem communications are terminated.

■ Establishing Communication (Autobaud Detect)

When the VP 100 power is first turned ON and whenever a CAT or terminal is connected (or reconnected), use the following procedures to obtain the system header.

1. Set the desired baud rate on the CAT or terminal.
2. Establish a connection with the VP 100.

3. Press repeatedly at a fast rate (or hold down the key) until the system header, shown below, appears (this may take several seconds).

```
-----SYSTEM SOFTWARE RELEASE A.X.X.X (MM/DD/YY)-----  
DAY MM/DD HH:MM:SS YYYY NAME ID:XXXXXX S/N:XXXXX PBX:XX
```

```
(MODEM ENABLED) LAST LOGON: MM/DD HH:MM  
PASSWORD:
```

■ Changing the Baud Rate

To change the baud rate after connection to the VP 100 has been established, change the baud rate on the VP 100 first, then change the baud rate on the CAT. Otherwise, the VP 100 will not be accessible to change the baud rate. You cannot change the baud rate on the modem.

1. At the @ prompt, type:

```
BAUD XXXXX 
```

(Where XXXXX indicates the valid baud rate desired).

The VP 100 responds with:

```
Change terminal to XXXXX Baud and press Enter
```

2. Press T for **Terminal** menu Options.
3. Using the up and down arrow keys, select **Change Baud Rate** from the menu choices and press .
4. From this menu, select the same baud rate entered in step 1 above and press .

The new baud rate is now in effect and is displayed in the communication status line.

APPENDIX A

CONFIGURATION APPLICATIONS TERMINAL

DOS COMMANDS

The following guide is a summary of the most commonly used DOS commands. Refer to your DOS users guide for complete details on how to use these commands.

BACKUP	Allows files to be copied from a hard disk drive to a floppy diskette. The way data is stored on the floppy diskette is unique for each version of DOS to allow maximum use of disk space. This DOS command is used by the SYS_BACK batch file when archiving a VP 100 system to floppy diskette. The DOS BACKUP command should not be confused with the VP CAT Backup procedure, which transfers VP 100 system information from the VP 100 to the PC hard disk drive.
CHDIR or CD	The Change Directory command is used to move from the current (working) directory into another directory, specified by the directory name and path.
CHKDSK	This command scans the disk of a specified drive, checking for errors. This command also displays the amount of storage, in bytes, available on the disk.
CLS	Used to clear the monitor screen without any other effect.
COPY	This command copies one or more files to another disk. To copy all files in a directory the wild card *.* is used. For example, the following command means "copy all the files from the diskette in drive A to drive C:" Copy A:*.* C:
DATE	Displays or sets the date.
DEL or ERASE	Deletes (erases) the specified file(s).
DIR	Lists all files in a directory.
DISKCOMP	This command compares the data of two floppy diskettes to determine if they are different.
DISKCOPY	Allows an exact copy of a diskette to be made.
FORMAT	Formats a disk to accept files. Diskettes used to archive a VP 100 system to a floppy must first be formatted.

LABEL	Creates, changes, or deletes the volume identification label on a disk.
MKDIR or MD	The Make Directory command adds a new directory to the PC hard disk drive.
PATH	Sets a command search path. Tells the computer where to look for files or programs.
PRINT	Prints a text file on a printer while you are processing other MS-DOS commands.
PROMPT	Changes the MS-DOS command prompt displayed on the monitor screen. This DOS command should not be confused with the term PROMPTS, which specifies recorded voice prompts used in the VP 100 system.
RECOVER	Recovers a file or disk containing bad sectors. This DOS command must not be confused with the Recover procedure used to move a VP 100 system from floppy diskette back onto the PC hard disk drive.
RENAME or REN	Changes the name of a file.
RESTORE	Restores files that were backed up by using the BACKUP command. Allows files to be copied from floppy diskette back to the PC hard disk drive. This DOS command is used by the SYS_REST batch file when recovering a VP 100 system from floppy diskette. The DOS RESTORE command should not be confused with the VP CAT Restore procedure, which transfers VP 100 system information from the PC hard disk drive to the VP 100.
RMDIR or RD	The remove directory command deletes a directory from the PC hard disk drive.
TIME	Displays or sets the time.
TREE	Displays the path (and optionally, lists the contents) of each directory and sub-directory on the drive.
TYPE	Displays the contents of a file on the screen.
VER	Displays the MS-DOS version number.
VOL	Displays the volume label or volume ID (if it exists).
XCOPY	Copies files and directories.

INSTALLATION

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INTRODUCTION

This chapter provides detailed instructions and procedures for installing a VP 100. The procedures covered in this chapter assume the installation site meets the electrical and environmental requirements for the VP 100, as described in the Installation Requirements section of this chapter.

Included in this chapter are the following sections:

- Receiving the equipment.
- Installation requirements.
- PBX preparation.
- Terminal Communications.
- Hardware installation.
- Configuration requirement.
- Testing.

Diagrams of the VP 100 cabinet are also included in this chapter.

4.1 RECEIVING THE VP 100

This section provides the procedures for unpacking, inspecting, and reshipping the VP 100.

Each cabinet is shipped in a double-walled carton. The inner walls have foam pads glued to the sides to insulate the VP 100. The items in the carton are as follows:

- Fully assembled VP 100 cabinet.
- Plastic bag containing power cable and keys.
- Paper template used to mount the VP 100 cabinet on the wall.

Each VP 100 cabinet has space for any hardware needed for its growth. At maximum configuration, each cabinet weighs less than 40 pounds (18 kg).

■ Inspecting for Shipping Damage

Before accepting delivery of a VP 100 from the carrier, inspect the packaging for external damage. If damage is indicated or found, note it on the waybill and require that the delivery agent sign the waybill. Take some photographs from different angles of the specific damage received during shipment. Notify the carrier immediately and submit a damage report to the carrier and to your company. In the event of equipment damage, negotiate claims directly with the carrier.

■ Unpacking the Cabinet

Remove and save the carton. Visually inspect the cabinet for dents or damage.

1. Open the top of the carton.
2. Remove the VP 100 from the inner carton. Save the shipping container as it is reusable.
3. Untape the plastic bag from the bottom of the carton. Remove the keys and power cable from the bag.

■ Inspecting the Internal Hardware

Before proceeding with the inspection of the cabinet and its contents, attach the wrist ground strap.

► WARNING ◀

Use of a wrist grounding strap prevents damage to sensitive electronic components. Before handling any electronic equipment, including the power supply and cables, attach one end of the strap around your wrist and the other end to any unpainted surface of the VP 100 metal cabinet.

Check and tighten, if necessary, the power supply and hard disk mounting screws. Verify that the DC power cables to the hard disk, Main Board, fan, and power supply are securely fastened.

The following are the instructions to inspect the components installed within the VP 100. Figure 4-2 shows the placement of the hardware components. Specific instructions for replacing hardware components are in the MAINTENANCE chapter.

1. Unlock and remove the plastic cover. The plastic cover swings up and is removed at the hinges.
2. Loosen the four screws at the sides of the VP 100 metal case and swing the metal cover down.
3. Verify that all LIC PCAs are fully inserted. If PCAs are not inserted correctly, **do not force into position**.
4. Replace any assemblies removed during inspection. Close the lid of the metal enclosure and tighten the retaining screws.

■ Reshipping Procedures

If the VP 100 is to be shipped from your location, use the original shipping carton.

1. Tighten the lid retaining screws on the metal enclosure.
2. Place the power cable and keys into a plastic bag. Tape the bag to the bottom of the carton.
3. Place the VP 100 in the carton and close the inner lid.
4. Close and secure the lid of the upper compartment.

■ Moving the Equipment On-site

Before moving the equipment, verify the status of the new site.

- Is the AC or DC power ready?
- Is the installation location ready?
- Are the telephone extensions installed on the RJ11 jacks?

Be careful and always remember that the VP 100 is sophisticated electronic equipment.

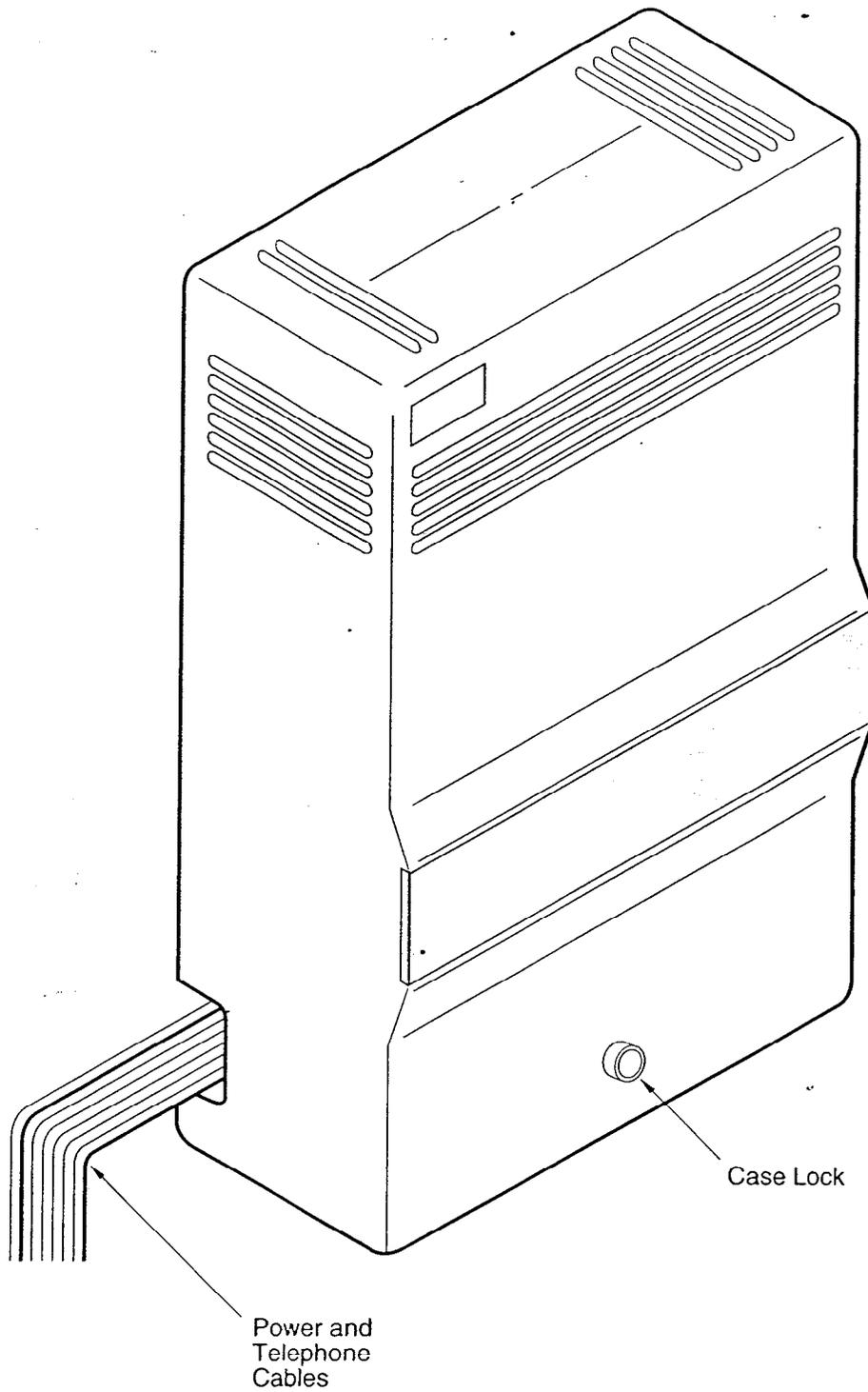


Figure 4-1 The VP 100 Cabinet Front View

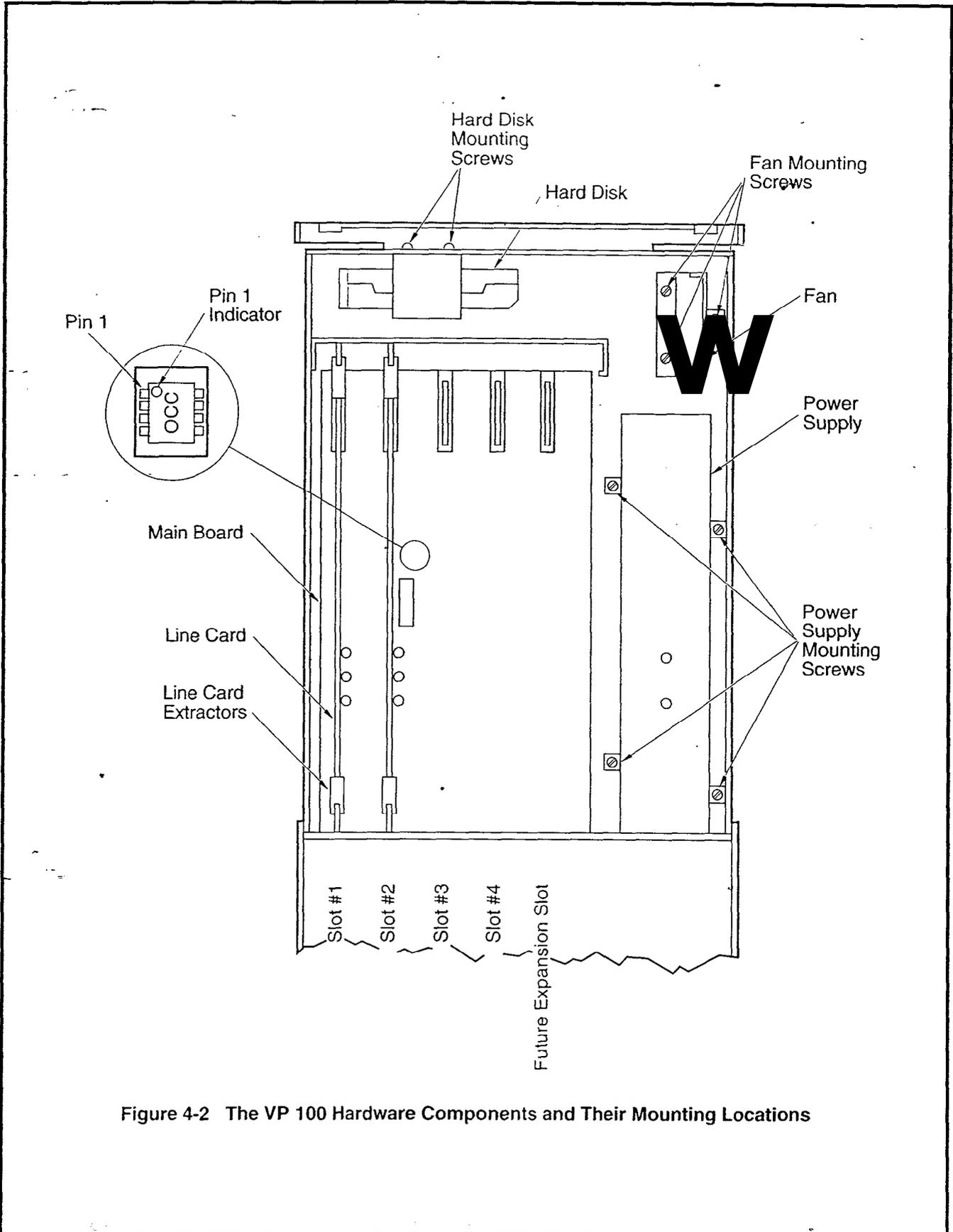


Figure 4-2 The VP 100 Hardware Components and Their Mounting Locations

4.2 INSTALLATION REQUIREMENTS

The VP 100 installation involves:

- Mounting the VP 100 cabinet.
- Connecting PBX extensions to the VP 100 ports.
- Connecting power to the cabinet.
- Installing the configuration database.
- Updating the data base for both the VP 100 and the PBX.
- Dedicating trunks in the PBX to the VP 100 hunt or distribution group (for primary answer).
- Testing.

Installation personnel should be familiar with the data format and change procedures of the PBX. For further explanation, refer to the PREPARING THE PHONE SYSTEM chapter in this manual.

Site Requirements Install the VP 100 cabinet in a dust free location. Keep it separated from other equipment that may produce heat or generate strong magnetic fields. If space and environment permit, install the VP 100 in the telephone equipment room.

Power Requirements No adjustments to the VP 100 power supply are necessary. The system automatically detects whether power is AC or DC. The VP 100 is polarity insensitive.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

To conform to the safety agency grounding requirements use the power cord provided. This power cord complies with the following UL requirement:

“An equipment grounding conductor that is not smaller in size than the ungrounded branch-circuit supply conductors, is to be installed as part of the circuit that supplies the product or system. Bare, covered or insulated grounding conductors are acceptable. Individually covered or insulated equipment grounding conductors shall have a continuous outer finish that is either green, or green with one or more yellow stripes. The equipment grounding conductor is to be connected to ground at the service equipment.”

Verify that the wall power outlet conforms to the following UL requirement:

“The attachment-plug receptacles in the vicinity of the product or system are all to be of a grounding type, and the equipment grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.”

AC Power Requirements

It is best to power the system from a dedicated, separate circuit. If this is not possible, make sure the circuit is free of large motorized equipment, such as copy machines, and that it is protected by a fuse or breaker. Make sure the power receptacle is grounded and within five feet of the cabinet.

Plug one end of the AC power cord into the VP 100 IEC connector and the other end into the AC receptacle. Turn ON input power.

DC Power Requirements

The VP 100 may be powered from a 48 volt DC power source. The installer must provide a power cable which plugs into the VP 100 IEC connector and connects to the customer's DC power source. A 16 AWG cable, no longer than 10 feet (3 meters), is recommended.

Other Required Equipment

Each VP 100 port is connected via a modular line cord to a standard modular telephone jack connected to a PBX extension (station). Supply one line cord with RJ11 connectors (male-male) at each end for each port. Each line cord must be of sufficient length to reach between the VP 100's line cord and PBX extension jack without undue stretching or tension.

A terminal, used for configuration installation and update, must be available at the customer site. A Configuration Applications Terminal (CAT) is recommended. A printer should be available for making a hard copy of the software configuration. In addition, an RS-232C null modem cable is required to connect the terminal to the VP 100. Refer to the TERMINAL COMMUNICATIONS section of this chapter for more details. The following is a list of required equipment.

Item	Quantity
Modular line cords, male-male, 4 wire	1 cord/port
RJ11 (or equivalent) modular line jacks	1 jack/port
ASCII terminal (CAT, CRT and printer, or hardcopy terminal.)	1
RS-232C null modem cable for terminal or printer	1
#8 x 1" pan head screws for wall-mounting ¹	4
#1 Phillips type screw driver	1

Refer to Table 4-5 for additional equipment needed for testing.

1. Screw head not to be more than .35". Be sure you have everything necessary if molly-bolts are required to mount the VP 100 cabinet.

4.3 PBX PREPARATION

Instructions for preparing the PBX for the installation of the VP 100 are covered in PREPARING THE PHONE SYSTEM in this manual. Refer to that chapter for:

- PBX database changes.
- Setting up hunt groups.
- Directing trunks to the VP 100.

Before continuing with the installation, be sure that the appropriate PBX changes have been made and tested.

4.4 TERMINAL COMMUNICATIONS

The VP 100 is designed to communicate with the Configuration Application Terminal (CAT) or with any standard ASCII terminal. Within this section, the word "terminal" is used to refer to the actual machine used to communicate with the VP 100.

■ Terminal Installation

The terminal is connected to the VP 100 using an RS-232C Null modem cable. Attach the 9-pin connector to the jack labelled "Term 1" on the VP 100.

A standard ASCII terminal should be setup as follows:

- EVEN parity.
- 7 data bits, 1 stop bit.
- X-ON/X-OFF handshaking protocol.
- Valid baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400.

☞ A terminal does **not** have to be connected for normal operation. Once the VP 100 has initially been installed and configured, it continues to operate without requiring any user intervention over a terminal. This includes rebooting after a power outage.

■ Toshiba Recommended ASCII Terminals

The following are ASCII terminals that can be used with the VP 100.

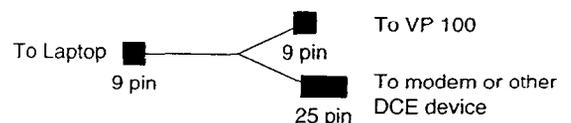
- | | |
|------------------------------------------|---------------------------------|
| • TI Silent 700 or 703. | • Hazeltine Model 1410. |
| • Hewlett Packard Models 2621A/P, 2631A. | • Lear Siegler Model ADM-3A. |
| • Wyse Model WY-50. | • TeleVideo Terminal Model 950. |
| • Panasonic DXD-11. | • Falco 5500e, 500e. |

Two laptops that can be used with the VP 100 are Toshiba T1600, and Zenith SupersPort Z286.

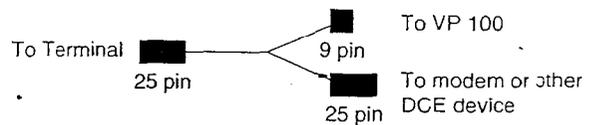
■ RS-232C Pinouts and Cables

Toshiba provides two interface cables for the VP 100:

- Laptop Interface cable
Part Number 510-0326-001



- Terminal Interface cable
Part number 510-0327-001



Both cables are forked; the single end connects to the laptop for the Laptop interface cable, or to a terminal for the Terminal interface cable. The 9-pin forked end connects to Term 1 of the VP 100. The 25-pin forked end connects to a modem or other DCE device.

There are two connectors for communicating with the VP 100:

- TERM 1 Terminal Access.
- TERM 2 RS-232C Integration.

The following table and figure show the complete RS-232C cable pinouts for connecting terminals, laptop PCs or external modems to the VP 100. It is recommended that the length of the RS-232C cable between the VP 100 and the other device be no greater than 50 feet.

Table 4-2 RS-232C Pinouts for a 9 Pin Connector		
DB-9 Pin Number	Signal Name	Signal Function
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator (not used)

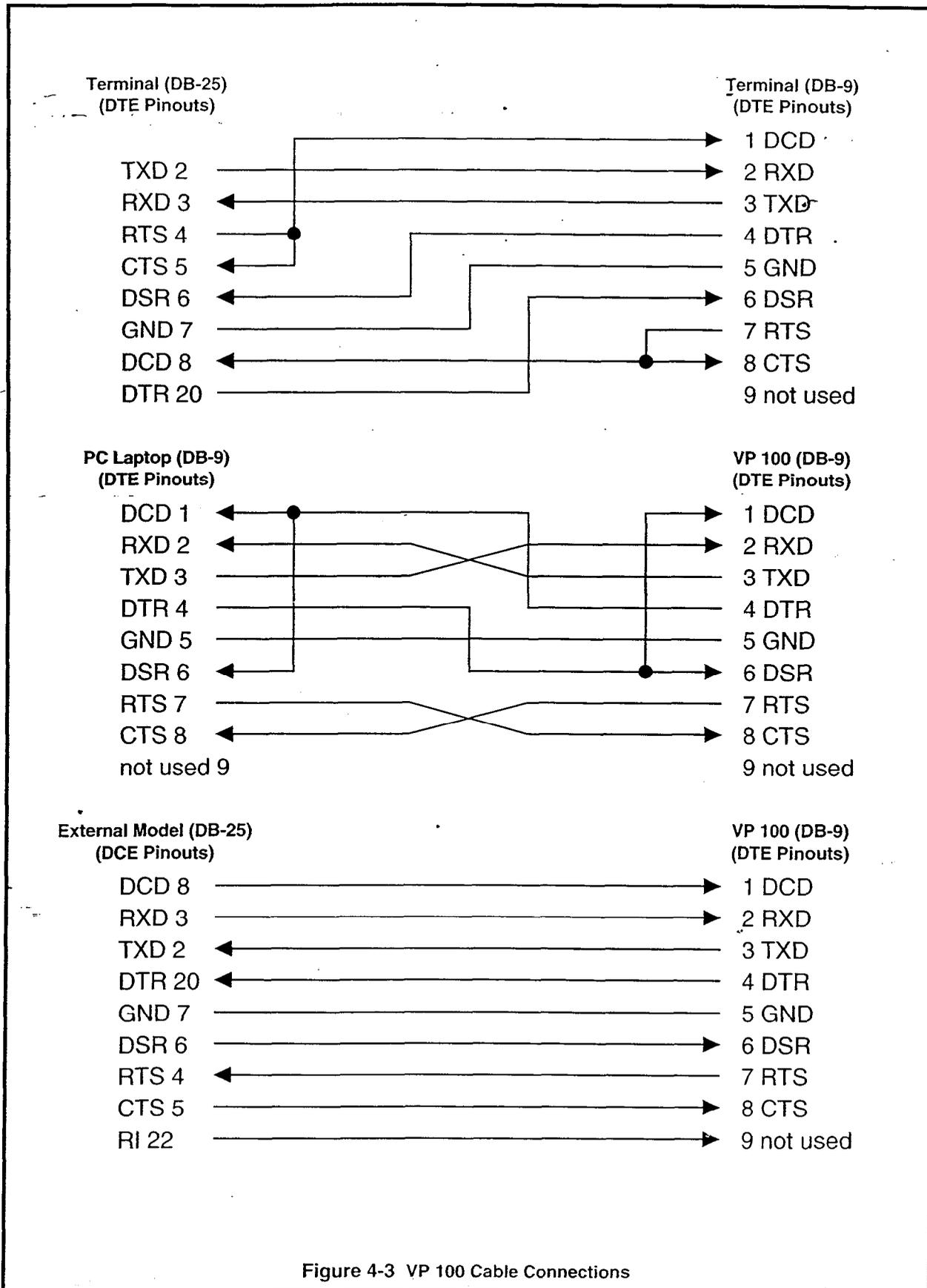


Figure 4-3 VP 100 Cable Connections

4.5 ESTABLISHING COMMUNICATIONS

The VP 100 is designed to automatically detect the baud rate of the terminal. As described in SYSTEM STARTUP within the previous section of this chapter, the VP 100 looks for an character during the automatic baud rate detect phase of the system startup process.

Once the VP 100 correctly determines and adjusts to the baud rate of the terminal, it continues to communicate at that baud rate until the Baud command is used to tell it to change to another baud rate, or until the RS-232C cable is disconnected from the Term 1 connector of the VP 100.

If the RS-232C cable is removed and re-inserted, from the Term 1 connector of the VP 100, communications with the VP 100 must be re-established. To do this, hold down the key on the terminal until the VP 100 system header message is displayed. (On some terminals, the key is labelled .)

```

-----SYSTEM SOFTWARE RELEASE A.X.X.X (MM/DD/YY)-----
DAY MM/DD HH:MM:SS 1992 ID XXXXXX S/N:0000000 PBX:
(MODEM ENABLED) LAST LOGON:
@PASSWORD:

```

The VP 100 system software indicates it is ready to receive commands or other input by displaying a prompt character. The actual prompt character that is displayed indicates whether the system is at the operating system level or within the INSTALL or UPDATE programs. The prompt characters are as follows:

Prompt	System Level	Action
@	Operating System	Ready to accept commands.
:	INSTALL program	Waiting for input
.	UPDATE program	Waiting for input

■ Using the Internal Modem

The VP 100 is provided with an internal 300/1200 baud modem. You may communicate with the VP 100 through the internal modem by using a 103A or 212A compatible modem-equipped terminal. It can be accessed through any of the line ports on the VP 100.

To connect to the internal modem:

1. Switch the modem-equipped terminal to 300 or 1200 baud.
2. Call the VP 100.
3. When the company greeting plays, press - 4. Enter the modem connect command. As an example, if a Hayes-compatible modem is being used, this can be done by entering ATD on the terminal.
- 5. Hang up the receiver on the telephone.

6. Wait for the VP 100 to detect carrier from the modem and to display the system header message.
7. Press on the terminal to get the PASSWORD prompt.
8. Type the password and press to reach the @ prompt.

To provide increased security for the VP 100, disable the internal modem. At the @ prompt, enter:

MOD DISABLE This blocks access to the VP 100. Once the modem is disabled, if logon is attempted by pressing , the caller receives the error message "That command is not allowed."

To re-enable the internal modem, at the @ prompt, enter:

MOD ENABLE This restores access to the VP 100 via the internal modem.

Although the internal modem may be accessed through any of the line ports on the VP 100, only one caller may use the modem at any given time. If the internal modem is already in use or if a terminal is connected **without** the @ prompt displayed (e.g. in UPDATE or during a backup procedure), and logon is attempted by pressing , the caller receives the error message: "That mailbox does not exist."

■ Remote Connection to the Internal Modem Using the CAT Program

The following describes how to establish a remote connection with the internal modem of the VP 100 using the VP CAT program and the built in (or external) PC modem. A modem connection is necessary to perform any remote backup.

Prerequisites All Toshiba-supplied software must be properly installed on the PC being used (VP CAT, VP 100 software, and VP 100 Prompts). Refer to CONFIGURATION APPLICATIONS TERMINAL in this manual.

 It is assumed the CAT has been used successfully to backup a VP 100 system over a local (cabled) connection using COM PORT #1 (or serial port A) and that the hardware and software are operating correctly.

Hardware Requirements The modem used with the PC must be Hayes compatible (Bell standard type 212 or 103) and operate at 1200 and/or 300 baud. The PC can have an internal or built-in modem, however an external modem (with appropriate cable) can be used. The modem phone line may be a single line extension from a PBX or a dedicated loop start telephone line supplied by the local phone company. Finally, a standard 2500 touchtone telephone set and associated line cords may also be required.

Internal Modem Internal modems built into PCs must be configured using the setup program and procedures provided with the computer. Refer to CONFIGURATION APPLICATIONS TERMINAL in this manual.

- External Modem** When using an external modem, attach a cable between COM PORT #1 (or serial port A) and the modem (Refer to the modem owners manual for specific information about any jumper and/or switch settings.) Start the CAT program as change the baud rate to 1200 baud. Refer to the CONFIGURATION APPLICATIONS TERMINAL, Changing the Baud Rate, for further instructions.
- Phone Line Connection** Attach one end of a line cord to the connector labeled LINE on the modem and the other end to the telephone line RJ11 block. Attach the 2500 set to the modem connector labeled PHONE. Lift the receiver and verify dial tone is present. If the phone line is a PBX extension, note the access number for an outside line (e.g. dial 9 followed by the phone number).
- CAT Start Up Procedures** The following procedures explain how to start the CAT program when using a modem on COM PORT #2.
1. Turn ON the PC and allow the CAT program to start automatically.
 2. Select NO SYSTEM from the select system menu.
 3. Exit the program: E. The DOS prompt C:\VMXCAT> is displayed.
 4. Restart the CAT program as follows:

For Toshiba T1600 type: CAT/COM2/T1600

For Zenith SupersPort: CAT/COM2/Z286

For all other PC's type: CAT/COM2
- The switch "/COM2" instructs the CAT program to communicate with the device attached to COM port #2. The default (with no switch specified) is to communicate with COM port #1.
- Testing the Modem** With the CAT program started, select (or add) the desired VP 100 system using the Select System screen. Make sure the communication speed is 1200 baud (observe the status line at the bottom of the CAT screen). The following steps explain how to change the baud rate of the CAT program before you are connected to the VP 100.
1. Type T to pop-up the terminal menu.
 2. Choose baud rate, then select 1200.

Once in the terminal emulation mode, modem communication is enabled.
 3. Type: ATZ .

The modem should respond with "OK." If not, recheck the setup options described above.

Establishing a Remote Connection

There are two methods of dialing a phone number using a Hayes compatible modem and connecting with a remote VP 100 system: automatic dial and manual dial.

Automatic Dial Method

There is an industry standard set of commands for controlling and communicating with a Hayes compatible modem. The following is a subset of these commands intended to quickly establish a remote connection with a VP 100. The instructions below assume the VP 100 is in the primary answer mode and will automatically answer an incoming phone call placed to a predetermined number. For secondary answering, refer to the manual dialing method.

1. Type AT The modem must respond with "OK."
2. Type ATZ The modem must respond with "OK."
This command resets the modem to default factory settings.
3. Type ATDTxxxxxyyyyyy,,,###5 followed by , where xxx is the area code and yyyyyyy the phone number of the VP 100. The comma (,) introduces a delay to allow the network time to connect and the VP 100 to answer before the "###5" tones are issued.

If the phone line is a PBX extension, the prefix code must be entered for an outside line (e.g. 9) before the area code and phone number of the VP 100. Comma (,) characters might need to be inserted or deleted to allow the proper time period to connect with the internal modem of the VP 100. Each comma (,) represents a delay of two seconds.

4. The call was successful if the word CONNECT appears and the VP 100 system header is displayed on the screen. Logon to the VP 100 at maintenance level and proceed with a remote configuration changes or backup (B), as described in PROCEDURES in this manual.

Manual Dialing Method

If the automatic dialing method is unsuccessful, or when a VP 100 is not setup for primary answer, use the following method.

1. Type AT The modem must respond with "OK."
2. Type ATZ The modem must respond with "OK."
This command resets the modem to default factory settings.

3. Type ATX The modem must respond with "OK."
This command instructs the modem to ignore dial tone detection.
4. Type ATD - yet. Do not press - yet.
5. Dial remote VP 100 When the VP 100 answers:
6. Press (On the touchtone phone.) The VP 100 modem tone should be heard.
7. Press , hang up The modem and the VP 100 modem should now connect and the VP 100 system header should appear.
8. Logon to the VP 100 (At maintenance level) Perform a remote configuration change or backup (B).

Terminating the Remote Connection

When all activities with the VP 100 have been completed and the @ prompt is displayed, the remote connection may be terminated. The default escape sequence for a Hayes compatible modem is three + signs. Type the following:

1. Type +++ Wait approximately one second. The modem responds with "OK" indicating the command mode has been entered.
2. Type ATH Hangs up the modem and terminates the call. The modem is now ready to call another system.

■ Using an External Modem

The VP 100 may be connected to an external modem in place of a directly connected terminal to achieve greater speed than 1200 baud. The external modem must be connected to the VP 100 via a normal RS-232C modem cable with pinouts as shown in Figure 4-4. The cable should be inserted into the DB-9 jack labelled "TERM 1." In addition, the external modem may have to be configured to properly handle the following.

The modem should always be ready to answer a call, and should not depend upon the DTR signal from the VP 100. Failure to configure the modem in this way can result in the modem never auto-answering calls.

The modem should not assert the DCD signal into the VP 100 unless it is actually detecting carrier from the telephone line (or other DCE device). Failure to configure the modem in this way can result in the VP 100 not detecting that a subsequent call has come in through the external modem.

Although some modems have external switches to configure these options, most recently manufactured modems use "software switches" that can be changed by connecting a terminal into the modem through an RS-232C cable and then sending commands directly to the modem. Consult the user's guide provided with the modem to determine the means by which it may be configured.

Once the external modem is connected properly, use it to communicate with the VP 100 in the same way as if a directly-connected terminal is connected, except that the baud rate may not be changed.

☞ An external modem normally is not required, since the VP 100 contains an internal modem.

4.6

VP 100 INSTALLATION

■ Mounting the VP 100

The VP 100 is designed to be wall mounted. This optimizes air flow around and through the system, as well as making best use of floor and wall space in the switch room.

✎ For proper ventilation and to allow the plastic cover to swing open upwards, the VP 100 requires 24" horizontally and 32" vertically of wall space. The 32" vertical measurement allows enough space for the metal case to hang down when it is opened for system maintenance. The total spacing also allows for 6" on all four sides of the system when the plastic cover is closed.

Use the template (enclosed with each unit) to transfer screw spacings to the wall. Four screws (or molly-bolts) are required to actually mount the VP 100 on the wall. These are not provided with the VP 100 as shipped.

To mount the VP 100, follow these steps:

1. Locate the mounting template supplied with the VP 100. Position the template on the wall and mark all four screw locations.
2. Remove the template and partially screw in the top two screws or molly-bolts (not supplied).
3. Remove the plastic cover and hang the VP 100 from the top two mounting screws.
4. Screw in the two lower mounting screws.
5. Tighten all four mounting screws.

The following illustration indicates the mounting locations on the VP 100.

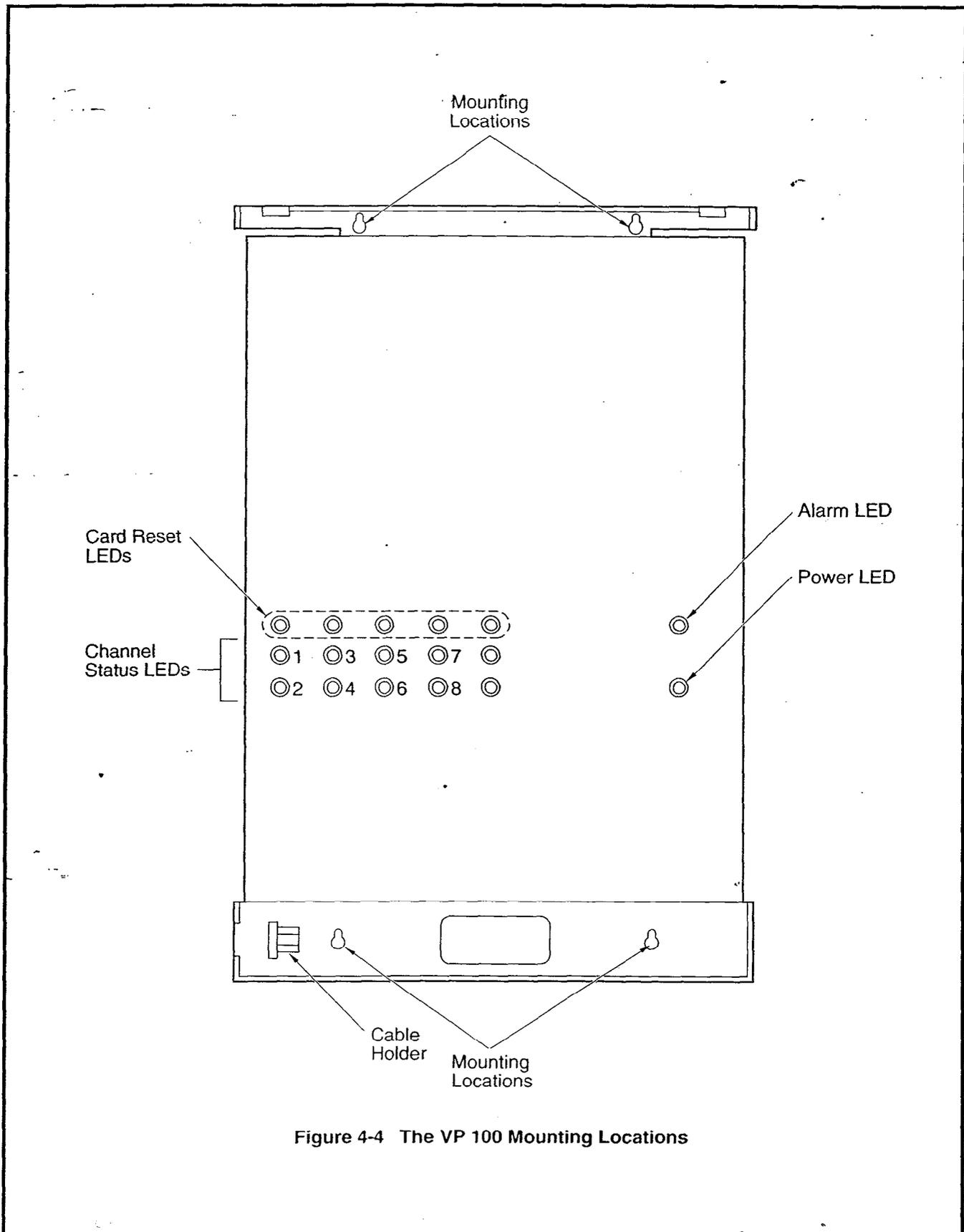


Figure 4-4 The VP 100 Mounting Locations

■ System Startup

During the entire VP 100 physical installation process, it is highly recommended that you observe the messages displayed by the VP 100 during its startup process. To do this, use the CAT and log your session so it may be printed out later, or use an ASCII terminal equipped with hardcopy printout.

The previous section within this chapter, **TERMINAL COMMUNICATIONS**, describes how to connect an ASCII terminal to the VP 100. The rest of this section describes the manner in which the VP 100 starts up after input power is applied. Be sure to read and understand these two sections before powering up the system.

As a safety precaution, always make sure that the cover of the metal case is securely closed before powering up the system. The input power cable can then be safely plugged into the dedicated power source and the input power switch turned ON.

After input power is applied, the VP 100 undergoes the following phases before the system software becomes fully operational:

- Automatic baud rate detect.
- Diagnostic tests.
- System software boot.
- System initialization.

Each of these phases are described in detail in the next few pages followed by an example of the full startup process.

Automatic Baud Rate Detect

The VP 100 can communicate with terminals at a variety of baud rates. During the automatic baud rate detect phase, it automatically determines the terminal baud rate by looking at each of the available baud rates for an character. If the VP 100 does not detect an character at any of the available baud rates, no messages are displayed during the entire startup process.

The VP 100 starts performing automatic baud rate detect within a few seconds after input power is applied. During the automatic baud rate detect phase, the red alarm LED flashes ON and OFF at a slow rate. This phase lasts for approximately 16 seconds; then the red alarm LED is steady ON. (The alarm LED is visible in the upper right corner of the window in the plastic cover.)

If the VP 100 detects an character during this time, it adjusts to the terminal baud rate, and proceeds to the diagnostic tests phase. A startup message is displayed on the terminal.

If the VP 100 detects no characters during this phase, messages are not displayed during the entire startup process:

To get the VP 100 to automatically adjust to the terminal baud rate :

1. Connect the RS-232C cable between your terminal and the VP 100. Be sure to insert the cable into the DB-9 jack labelled "TERM 1."
2. Set the terminal baud rate to one of the following baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400.
3. Turn ON power to the VP 100.
4. Press the terminal key repeatedly at a fast rate until the VP 100 startup message is displayed. To be sure that the VP 100 does not miss detecting the characters, it is recommended that the key is pressed at a rate of, at least, three times per second.

If the VP 100 does not seem to be detecting the characters, do the following:

- Verify terminal cable wiring (Figure 4-4).
- Check that the terminal cable is securely plugged in at both ends.
- Check the terminal setup. Refer to the Terminal Installation section in this chapter.

If everything appears to be setup properly and the startup message does not appear, turn the VP 100 OFF for several seconds and then back ON. Within a few seconds, the red alarm LED should flash to indicate that the VP 100 is in the automatic baud rate detect phase. If the red alarm LED does not flash but stays on solid, or does not go on at all, the problem is with the VP 100. In this case, either the power supply or the Main Board must be replaced. First replace the power supply. If the problem persists, replace the Main Board.

Diagnostic Tests

After the automatic baud rate detect phase ends, the VP 100 begins performing extensive diagnostic tests to verify that the hardware is working properly. These tests are designed to detect problems with the processor, the system memory, the hard disk, and all of the related support circuitry located on the Main Board.

The diagnostic test phase begins by displaying a startup message:

DIAGNOSTIC (MM/DD/YY)
TESTING HARDWARE...

If no errors are detected during the diagnostic test phase, the VP 100 displays the following message and then proceeds immediately to the system software boot phase:

TEST COMPLETE

If errors are detected, the VP 100 attempts to determine the probable cause of the error as being either the Main Board, the hard disk, or the power supply. The VP 100 displays an error message and then resets itself, at which point the startup process begins all over again. Refer to the MAINTENANCE chapter in this manual for complete procedures for replacing components in the VP 100.

The error messages and the required actions are listed as follows.

Error Message	Required Action
ERROR 1. PROBABLE CAUSE: MAIN BOARD	Replace the Main Board.
ERROR 2. PROBABLE CAUSE: HARD DISK	Replaced the Hard Disk.
ERROR 3. PROBABLE CAUSE: DISK DATA	Restore System Software or restart the procedure that was aborted.
*** POWER FAIL ***	Ignore if power was turned OFF. Otherwise, replace the power supply.

System Software Boot

During the system software boot phase, the VP 100 loads the operating system software from the hard disk and then passes control to the system software. The VP 100 begins this phase by displaying the following message:

BOOTING FROM HARD DISK

If no errors are detected during the system software boot phase, the VP 100 will have successfully booted itself, and will pass control to the system software, which displays the following system header:

— SYSTEM SOFTWARE RELEASE A.X.X.X (MM/DD/YY) —
 DAY MM/DD HH:MM:SS YYYY NAME ID:XXXXXX S/N:XXXXXX PBX:XX
 (MODEM ENABLED) LAST LOGON: MM/DD HH:MM
 @

If errors are detected, the VP 100 attempts to determine the probable cause of the error as being either the Main Board, the hard disk, or the power supply. The VP 100 displays an error message and then resets, at which point it begins the startup process all over again.

The error messages and the required actions are the same as those displayed from within the diagnostic test phase, as shown above.

System Initialization Once the system software takes control of the VP 100, initialization begins. This includes making sure that the hard disk is ready for full system operation, reading in all of the system configuration tables, verifying that all of the mailboxes and messages are consistent with each other, and initializing the line ports.

During the system initialization, the VP 100 displays messages as follows:

```
PREPARING DISK TO READ DATA
DISK READY
RUNNING DISK REBUILD... DONE
INITIALIZING PORTS... DONE
```

After system initialization has completed, the VP 100 can begin accepting commands from the terminal. After the database is configured, the VP 100 can begin answering calls.

If the VP 100 is unable to complete its initialization due to an unrecoverable error, it displays the following error message:

```
FATAL ERROR DETECTED, SYSTEM INITIALIZATION SUSPENDED!
```

At this point, list the Hardware Error Table to determine the cause of the fatal error. Refer to MAINTENANCE, Hardware Errors in this manual.

☞ There may be a considerable delay while the VP 100 is running the DISK REBUILD program, which has the task of verifying the consistency of the mailboxes and messages, and also while it is initializing the line ports.

■ Full Startup Process

The following provides an example of the full startup process. When the process is complete, enter your password and then begin typing commands into the VP 100.

Table 4-4 Full Startup Process	
Description	Messages displayed by the VP 100.
Turn ON input power	Alarm LED turns ON
Autot-baud-rate detect begins	Alarm LED flashes
Press <input type="button" value="Enter"/> repeatedly	
system detects baud rate	Alarm LED stays on
Diagnostic tests begin: A startup message is displayed:	DIAGNOSTIC (MM/DD/YY) TESTING HARDWARE
If OK, message is displayed:	TEST COMPLETE
System software boot begins:	BOOTING FROM HARD DISK
If OK, alarm relay closes, and system software takes over.	Alarm LED turns off
System header is displayed:	--- SYSTEM SOFTWARE RELEASE A.X.XX (MM/DD/YY) --- DAY MM/DD HH:MM:SS YYYY NAME ID:XXXX S/N:XXXX PRX:XX (MODEM ENEABLED) LAS LOGON: MM/DD HH:MM
System prompt displayed, but the system has some more initialization to do:	@PREPARING DISK TO READ DATA DISK READY RUNNING DISK REBUILD ... DONE
System initialization done:	INITIALING PORTS ... DONE
Press <input type="button" value="Enter"/> :	PASSWORD:
Type password, press <input type="button" value="Enter"/> :	@

4.7 SOFTWARE INSTALLATION

System parameters and customer-provided information are entered into system memory using a two-part configuration program. The INSTALL program is used to enter information for new installations. The UPDATE program is used for verification and to change the configuration database.

This section is an overview of the configuration installation. Detailed directions for all the steps are in the *Configuration* manual.

Using INSTALL

Using INSTALL to Configure the Database

After the operating system has been loaded and the system initialization has completed, the VP 100 is ready for you to enter the password. Refer to MAINTENANCE, Miscellaneous Commands in this manual, on how to set passwords and the various password levels. After a valid password is entered, begin the INSTALL program. At the @ prompt type:

```
IN 
```

When prompted by the colon, enter data as described in the *Configuration* manual — INSTALL, to define the database.

To back up the data, refer to the PROCEDURES chapter in this manual.

Using UPDATE

Entering UPDATE to Verify and Modify the Database

After the system configuration is complete, the terminal again displays the @ prompt. To get a printout of the database, enter the UPDATE program. At the @ prompt type:

```
UP 
```

The terminal displays the dot (.) prompt. At the dot, type:

```
L ALL
```

Check the printout with the configuration forms and verify that the data is correct. If correct, to exit from the program, type:

```
E
```

If any of the data is incorrect, follow the instructions in the *Configuration* manual — UPDATE. When any changes are made in the configuration database, it is advisable to save the information to the hard disk of the CAT.

The UPDATE program is used to LIST, MODIFY, ADD, or DELETE information. The system expects a verb-noun-modifier combination as a command string.

Verb The action word to be used. It can be LIST, ADD, DELETE, or MODIFY. Type in the entire word or type in from one to three characters.

Noun The name of the configuration table to be used. Type in from one to six characters, depending upon the table name.

Modifier An element within a table. It is usually one character.

Occasionally a command may allow an extension after the modifier; this extension is usually one or two characters long.

Examples of the commands are provided in the *Configuration* manual — UPDATE. Press after typing each command string. This key may be labeled on some terminals.

4.8 CONNECTING THE PHONE SYSTEM WITH THE VP 100

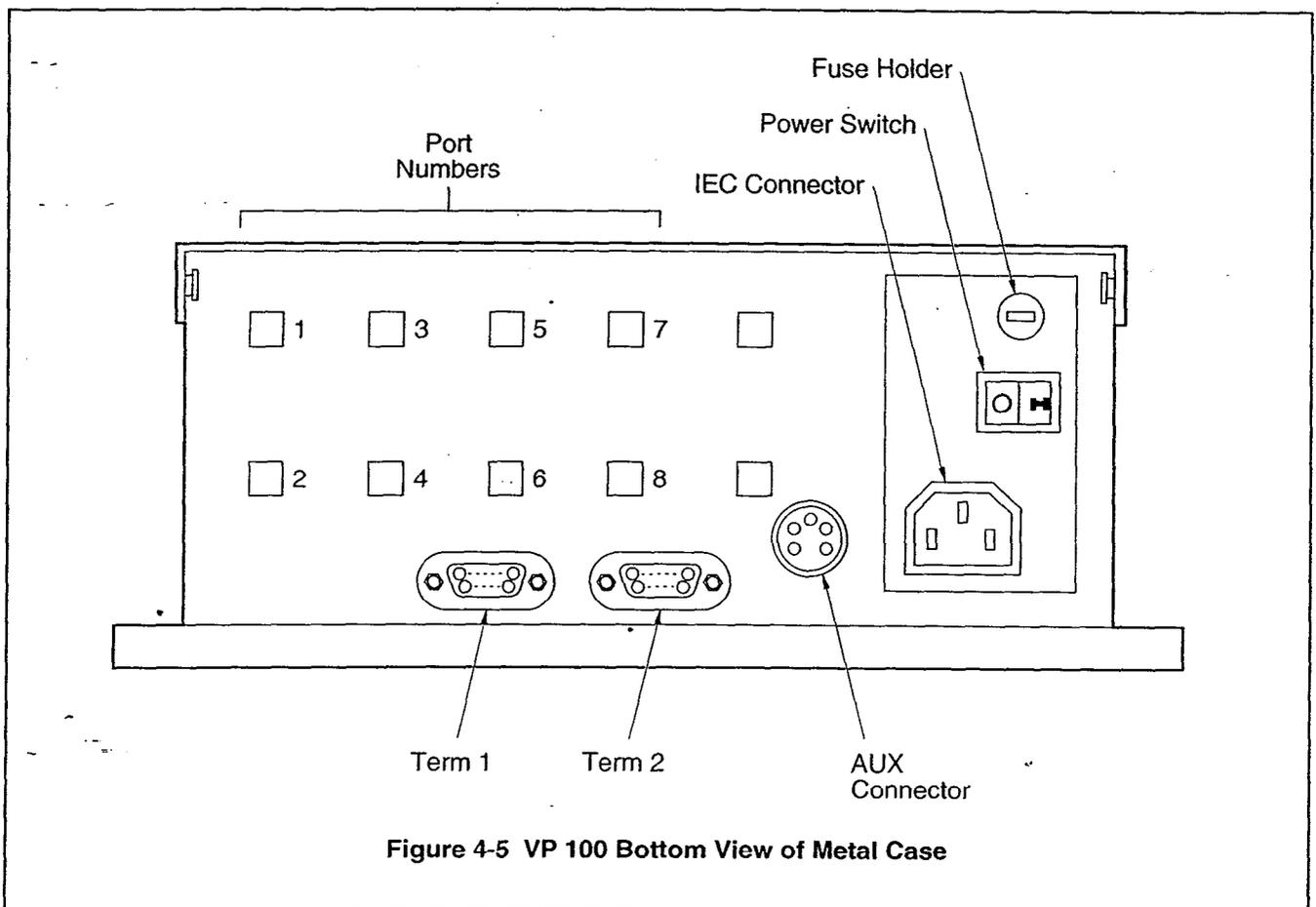
After completing the software installation procedures, connect the VP 100 to the PBX.

Verifying the Equipment

Be sure the appropriate number of RJ11 jacks are installed. Make sure enough modular line cords of sufficient length are available to make the connections. One line cord for each VP 100 port is required.

Making the Connections

Plug the RJ11 jacks into the port openings at the bottom of the VP 100. Refer to Figure 4-5 for the location. A black plastic cable holder is located on the left bottom of the cabinet. The line cords and power cord can be secured by the cable holder.



4.9 VP 100 TESTING

The VP 100 should always be checked for proper operation after the configuration database is installed or changes are made. In addition to the system test, other tests should be made before the VP 100 is connected. These tests are described in this section. The tests require the following equipment:

Quantity	Description
3	2500-type (single line touchtone) telephones.
1	Terminal directly connected to VP 100 TERM 1, via RS-232C cable.
1	Hard copy of the Configuration database.
2	Extensions for testing, connected to RJ11 jacks (in addition to VP 100 extensions).

☞ These tests assume no other calls are being made into the VP 100. If calls are received, the port status becomes confused and invalidates the test results.

1. PRE-VP 100 OPERATIONAL TEST

Verify that dial tone is present on each PBX extension associated with the VP 100.

- A. Connect a 2500-type single line telephone to the first PBX extension RJ11 jack connecting to a VP 100 port.
- B. Go off-hook. Is dial tone present?
 - YES ▶ Continue for all extensions and go to Step 2.
 - NO ▶ Determine the cause and correct the problem before continuing.

2. EXTENSION NUMBER CHECK

Verify that the PBX extension numbers match the VP 100 PORTS Table.

- A. Refer to the configuration database listing, and specifically to the PORTS Table.
- B. Connect the telephone labeled B to the RJ11 jack connected to Port 1.
- C. Connect the telephone labeled A to a test telephone RJ11 jack.
- D. From telephone A, dial the extension number associated with telephone B.
- E. Does telephone B ring?

YES ▶ Answer the call, verify the circuit quality, and move Telephone B to the next VP 100 RJ11. Continue the procedure until all extensions are tested, then go to Step 3.

NO ▶ Determine the cause and correct the problem before continuing.

3. PBX FUNCTIONAL TEST

Verify that each VP 100 port extension can initiate a transfer by doing a hookswitch flash and a transfer code or just a hookswitch flash, before dialing an extension number. Also, verify that you can reconnect to the caller when the extension called is not answered or busy.

A. Connect telephone B to the RJ11 jack associated with port 1 of the VP 100.

B. Connect telephone C to a test RJ11 jack.

C. From telephone A, call the extension number associated with telephone B.

D. Answer telephone B and perform a hookswitch flash.

E. Does the PBX provide stutter or solid dial tone after the hookswitch flash?

YES ▶ If either tone is present, dial the extension number associated with telephone C.

NO ▶ Stop and correct the problem before continuing.

F. Dial the transfer initiate code, if any; then dial the extension number associated with telephone C.

G. After several ringbacks have occurred, perform a hookswitch flash and reconnect code, if required, to reconnect to telephone A.

H. Did telephone C stop ringing? Did you get reconnected to telephone A which was on hold?

YES ▶ Connect telephone B to the next VP 100 port extension and continue until the extensions for each port has been tested.

NO ▶ Determine the cause and correct the problem before continuing.

I. Make telephone C busy by taking it off-hook. Then repeat the test starting with step A and calling a busy extension instead of the ring no answer extension.

☞ The extension number connected to telephone C should start with the same first digit as those configured in the USER Table.

4. CALLS TO THE INTERCEPT EXTENSION (ATTENDANT)

Verify each extension can transfer a call to the intercept extension (attendant).

A. Connect telephone B to the RJ11 jack associated with port 1 of the VP 100.

B. From telephone A, call the extension number associated with telephone B.

- C. Answer telephone B and perform a hookswitch flash and dial the transfer code, if required, then dial 0 (or the attendant's extension number), then hang-up telephone B.
- D. Did telephone A get connected to the Operator?
- YES ▶ Continue test for all extensions, then proceed with Step 5.
- NO ▶ Determine the cause and correct the problem before continuing.
- ☞ Some PBXs do not allow a blind (unscreened) transfer to the attendant. If this is the case, do not assign Attribute 15 — TRANSFER TO A RINGING EXTENSION to the COS for this mailbox.

When all VP 100 port extensions pass these tests, proceed by connecting the modular line cords from the RJ11 jacks to the VP 100 ports and test the system for standard operation. Label the modular line cords with the PBX extension number for easy reference. The VP 100 must initialize each of the PBX ports. To verify that all the ports are initialized, at the @ prompt, type PS.

All ports should return IDL.

5. CALLING A RING-NO-ANSWER EXTENSION

- ☞ The extension to be called must have a valid first digit (a mailbox with this first digit must already exist in the USER Table) or be entered in the USER Table as a mailbox (mailbox number same as the extension number and a COS).

Verify that the VP 100 properly handles a ring-no-answer (RNA) call:

- A. From telephone A, call the extension associated with port 1.
- B. Did the VP 100 answer with the correct company greeting (a custom greeting or the generic greeting)?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- C. Enter the extension number for telephone C.
- D. Did the VP 100 respond with the prompt: *"Thank you. Just a moment..."* (Primary Answer Mode example).
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- E. After a predetermined interval (defined by the entry in the INFORMATION Table for ringbacks before no answer) does the system reconnect and speak the prompt: *"Extension XXX doesn't answer. Please leave a private message at the tone, dial another Extension number or dial zero for assistance."*
- ☞ If the mailbox has not been entered in the USER Table, the VP 100 does not offer to take a message.

YES ▶ Press then hang up.

NO ▶ Determine the cause and correct the problem before continuing.

F. Repeat the test for each VP 100 port.

6. CALLING A BUSY EXTENSION

Verify that the VP 100 properly handles a call directed to a busy extension:

A. From telephone A, call the extension associated with port 1.

B. Did the VP 100 answer with the correct company greeting?

YES ▶ Continue.

NO ▶ Determine the cause and correct the problem before continuing.

C. Make sure telephone C is busy by taking it off-hook. Enter the extension number for telephone C.

D. Did the VP 100 respond with the prompt: *"Thank you just a moment..."* (Primary Answer Mode Example).

YES ▶ Continue.

NO ▶ Determine the cause and correct the problem before continuing.

E. After a short interval, does the system reconnect and speak the prompt *"Extension XXX is busy. Please leave a private message at the tone, dial another extension number or dial zero for assistance"*.

YES ▶ Press then hang up.

NO ▶ Determine the cause and correct the problem before continuing.

F. Repeat the test for each VP 100 port.

7. HUNT GROUP OPERATION TEST

Verify the hunting sequence

☞ The terminal command PS displays the current status of each VP 100 port. A three-character abbreviation denotes the state of each port. Refer to the MAINTENANCE chapter for more information on using the PS command and the meaning of the states.

A. From the system level @ prompt, type PS.

B. Does the port status show all ports in the IDL (idle) state? If not, determine the cause and correct the problem before continuing.

☞ Some ports may be in the TST (test) state momentarily due to on-line diagnostics. If a port is in the TST state, you should enter PS several times before deciding if the port is in trouble or if self-test is running. Self-test runs every five minutes and if a problem is encountered, it is entered in the Hardware Error Table.

If other calls are being made into VP 100, all ports may not be idle. If they are not all idle, check to see if anyone else is calling.

If the terminal is connected remotely, one of the ports shows the modem as MOD.

- C. From telephone A, dial the extension number or access code associated with the VP 100 hunt group.
- D. Does the VP 100 answer properly? If no, determine the cause and correct the problem before continuing.
- E. From the terminal, enter PS.

☞ Port status should show the port in WFD (Wait For Digits) state when an incoming call is answered.

- F. Did the correct port answer, based upon how the PBX is programmed for hunting groups?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct the problem before continuing.
- G. From telephone A, press and hang up after the system says "good-bye."
- H. Busy out the PBX extension identified in Step F above.
- I. Continue the process from Step C until all ports have been busied out.

8. TESTING FAIL-SAFE OPERATION

All Ports Busy

- A. While all ports are busied out, use telephone A to dial the extension number or access code of the hunt group.
- B. Does the call overflow to the correct answering extension as determined for fail-safe operation?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct the problem before continuing.
- ☞ Some PBXs may not support hunt group overflow, in which case the caller may experience a ring no-answer condition until a port is available to accept the call.
- C. Remove the busy condition from all VP 100 port PBX extensions.

Port Ring-No-Answer

- D. Disconnect all modular line cords associated with VP 100 ports.
- E. From telephone A, dial the hunt group extension number or access code associated with the extensions connected to the VP 100.
- F. Does the call divert to the correct alternate answer point when the VP 100 does not answer?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct before continuing.
- G. Reconnect the modular line cords.
- H. From the terminal, type TE C 1. The VP 100 should respond showing each port forwarded (PORT X FORWARDED) until all ports have been forwarded.
- I. Type PS to verify all ports are in the FWD (forwarded) state.
- J. From telephone A, dial the hunt group extension number or access code.
- K. Does the call forward to the correct position as specified in the call forwarding string (System Parameter 45)?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct before continuing.
- L. From the terminal, type TE C 2 to cancel call forwarding. The VP 100 should respond with ALL PORTS INITIALIZED.
- M. From telephone A, dial the hunt group extension number or access code.
- N. Does the VP 100 answer correctly?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct before continuing.
- O. Type PS at the terminal.
- P. Verify that all ports are in the IDL state and that the cancel forwarding string (System Parameter 46) is correct. If any ports still show FWD, use TE C 2 x, where x is the port number, to cancel forwarding. If cancel forwarding does not work, determine the cause and correct before continuing.

9. VERIFYING TRUNK TO VP 100 OPERATION

- A. From the terminal enter the PS command.
- B. Does the port status show all ports in the IDL state?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct the problem before continuing.
- C. From telephone A, call outside of the PBX and back in on trunks dedicated to the hunt group.

- D. Does the VP 100 answer properly?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- E. From the terminal, enter the PS command.
- F. Does the port that answered show WFD state?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- G. From telephone A, enter the extension number associated with telephone C. The VP 100 should respond with *"Thank you. Just a moment."*
- H. Does telephone C ring?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- I. Enter the PS command. Port status should show port 1 in the AIC (Assisted Incoming Call/Automated Attendant) state.
- J. Answer telephone C. Does the VP 100 say *"Beep, beep, beep...Connecting"* and transfer the incoming trunk to telephone C?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- K. From the terminal, enter the PS command and verify the port state is IDL.
- L. Busy out the port that answered.
- M. Repeat the procedure from step C for all ports until all ports are busied out. Verify calls can be placed through the VP 100 from each port.
- N. From telephone A, call out and back in on a trunk dedicated to the hunt group.
- O. Does the call overflow to the correct destination?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- ☞ Some PBXs may not support overflow in which case a ring-no-answer condition may be encountered.
- P. Remove the busy condition from all VP 100 port extensions.
- Q. Repeat steps C through M substituting calling a station that answers with calling a station that does not answer and then repeat by calling a busy station.

10. VERIFYING TRUNKS

- A. From telephone A, call outside the PBX and back in on the first trunk dedicated to the VP 100.
- B. Does the VP 100 answer properly?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct the problem before continuing.
- C. Repeat the procedure from step A for each trunk until all hunts have been tested. Verify that each trunk is answered by the VP 100 with the correct greeting.

☞ 1-800 (InWATS) lines can be tested individually, even if they are bands from other areas, by using the "plant test" number. Get these from the CO if you do not already know them.

11. CALLS TO THE INTERCEPT EXTENSION

Verify that the VP 100 can transfer a call to the intercept position (attendant) when the caller does nothing or dials [0].

- A. From telephone A, call the extension associated with port 1.
- B. Does the VP 100 answer correctly?
- C. Listen to the complete company greeting. Do nothing and let the VP 100 time-out and transfer the call to the attendant.
- D. Did you reach the attendant?
 - YES ▶ Continue for all ports.
 - NO ▶ Determine the cause and correct the problem before continuing.
- E. Repeat the procedure by dialing [0] instead of waiting for time-out.
- F. From telephone A, call out and back in on a trunk dedicated to the hunt group. When the VP 100 answers, let the system time out (do not enter any digits).
- G. Does the VP 100 transfer the call to the intercept position?
 - YES ▶ Continue.
 - NO ▶ Determine the cause and correct the problem before continuing.

12. MESSAGE WAITING

- A. From telephone A, call out and back in on a trunk dedicated to a VP 100 port.
- B. Does the VP 100 answer properly?
 - YES ▶ Continue.

- NO ▶ Determine the cause and correct the problem before continuing.
- C. Make sure telephone C is busy by taking it off-hook. Enter the extension number associated with telephone C.
- D. After a predetermined interval, the VP 100 should reconnect, and at telephone A you should hear, "*Extension XXX is busy. Please leave a message at the tone, dial another extension number, or dial zero for assistance.*"
- E. Leave a test message for telephone C.
- ☞ A message is not delivered to a mailbox unless it is at least 4.5 seconds in length. The mailbox must be entered in the USER Table for the VP 100 to offer to take a message.
- F. The VP 100 should now initiate a message waiting notification call (ASAP message waiting) to the extension associated with telephone C.
- ☞ If all ports equipped are allowed to make outcalls, the call is not attempted when — or more of the ports are being used. Also, for message waiting, INFORMATION Table, Index 21 — MESSAGE WAITING NOTIFICATION, must be set to "Y" (Yes).
- G. Does the VP 100 call the extension associated with Telephone C?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- H. Answer telephone C. The VP 100 should respond with: "*Extension XXX has X messages. Ready,*" or "*Extension XXX has X messages. Please enter your security code.*"
- I. Enter the security code if asked, and press **5** to listen to the test message.
- J. Does the message sound clear?
- YES ▶ Continue.
- NO ▶ Determine the cause and correct the problem before continuing.
- K. Press **3** to Erase the message, then press **9** to exit the mailbox. Does the VP 100 respond with "*X messages will be erased*" ?
- YES ▶ Press **3** to exit the system. The VP 100 should respond with "*good-bye.*"
- NO ▶ Determine the cause and correct the problem before continuing.

4.10 TESTING THE INSTALLATION AND TELEPHONE CHANGES

The following checklist is intended to help track the installation and telephone changes.

- The "See Chapter" column refers to the appropriate chapter in this manual for further information.
- The "Person Responsible" column is for your use to track who is responsible for the item.
- The "Scheduled" column indicates when the item is to be completed.
- The "Completed" column is for the date of final completion for that item.

	See Chapter	Person Responsible	Scheduled	Completed
Receiving the Equipment <input type="checkbox"/> Inspect for Damage <input type="checkbox"/> Carton <input type="checkbox"/> Cabinet <input type="checkbox"/> AC/DC Cables Secure <input type="checkbox"/> Printed Circuit Cards <input type="checkbox"/> Reshipping Procedures	INSTALLATION			
Pre-Installation <input type="checkbox"/> Environment <input type="checkbox"/> Dust Free (Y/N) <input type="checkbox"/> Away from Large Motors (Y/N) <input type="checkbox"/> Cabinet Accessible (Y/N) <input type="checkbox"/> Power <input type="checkbox"/> Dedicated Fuse or Breaker <input type="checkbox"/> Dedicated 115V 60 hz AC Receptacle <input type="checkbox"/> Other Required Equipment <input type="checkbox"/> Modular Line Cord <input type="checkbox"/> RJ11 Jacks/Equivalent <input type="checkbox"/> CAT or Other ASCII Terminal <input type="checkbox"/> Screwdriver <input type="checkbox"/> RS-232C Interface Cable	INSTALLATION			

	See Chapter	Person Responsible	Scheduled	Completed
PBX Preparation <input type="checkbox"/> Survey Phone System (Y/N) <input type="checkbox"/> Additional 2500-type Extensions (as required) <input type="checkbox"/> Install and label the VP 100 port extensions with RJ11 jacks <input type="checkbox"/> PBX COS changes for the VP 100 port extensions <input type="checkbox"/> Forwarding <input type="checkbox"/> Offsite calls, no call restriction <input type="checkbox"/> Remove call waiting features <input type="checkbox"/> Permitted to transfer, hold, reconnect <input type="checkbox"/> Overflow for RNA/Busy <input type="checkbox"/> Hunt Group 1 <input type="checkbox"/> Hunt Group 2 <input type="checkbox"/> Hunt Group 3	PREPARING THE PHONE SYSTEM			
Hardware Installation <input type="checkbox"/> Communicating with the System <input type="checkbox"/> VP 100 Installation <input type="checkbox"/> Configuration Installation <input type="checkbox"/> Connecting the PBX to the VP 100	INSTALLATION			
Testing <input type="checkbox"/> Proper Tools <input type="checkbox"/> Three 2500-type single line telephones <input type="checkbox"/> CAT or other ASCII Terminal/Teleprinter <input type="checkbox"/> Database Hardcopy <input type="checkbox"/> Two Test Extensions	INSTALLATION			

	See Chapter	Person Responsible	Scheduled	Completed
<p>Pass/Fail</p> <p>Step Description</p> <p>___ 1 Pre-VP 100 Operational Test</p> <p>___ 2 Extension Number Check</p> <p>___ 3 PBX Functional Test</p> <p>___ 4 Call to Intercept/Attendant PBX</p> <p>___ 5 Ring-No-Answer Extension</p> <p>___ 6 Busy Extension</p> <p>___ 7 Hunt Group Operation</p> <p>___ 8 Fail-Safe Operation</p> <p>___ 9 Trunk to the VP 100 Operation</p> <p>___ 10 Verifying Trunks</p> <p>___ 11 Intercept Extension (the VP 100)</p> <p>___ 12 Message Waiting</p>	<p>INSTALLATION</p>			
<p>Trunks</p> <p>___ Quantity to the VP 100</p> <p>___ Dedicate to Hunt Group(s)</p> <p> ___ Group 1</p> <p> ___ Group 2</p> <p> ___ Group 3</p> <p>___ No Station Restriction, if applicable</p> <p>___ Trunk to Trunk Capability (Y/N)</p> <p>___ Trunk Queuing? (Y/N)</p> <p> ___ Incoming Only</p> <p> ___ Two-Way</p> <p>___ Central Office Changes</p> <p>___ Hunt Group</p> <p> ___ Contains the VP 100 Extension</p> <p> ___ Circular Hunting</p> <p> ___ Overflow (Y/N)</p> <p> ___ Trunks Dedicated DDC, UCD, DIL, DEDICATED (Circle one)</p>	<p>PREPARING THE PHONE SYSTEM</p>			

5 REPORTS

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INTRODUCTION

Reports provide statistics on the operation and usage of the VP 100 and give system owners the ability to monitor various operational aspects of the VP 100. Reports may be accessed at any time through the systems administration terminal.

The following reports are available:

System Performance This report provides system-wide call processing and messaging statistics. It details the number of calls to busy and not answered extensions, calls to attendant/intercept positions, and messages left under various conditions.

Network Traffic Report This report shows the details of calls and messages sent to various network locations. It reports on the total number of messages sent and completed to network locations. The report features complete monitoring of all network routes.

User Message Statistics Report This report features a detailed list of messaging activity for individual mailboxes. Each line of the report shows data for a single mailbox.

User Calling Statistics Report This report lists the total number of incoming calls, the amount answered, not answered, busy, and greeting played. It also lists the total number of subsequent calls, and the number of calls to the attendant and to extensions.

User Status Detail Report This report features a detailed list of status information on mailbox access and the time durations associated with individual mailbox usage.

Mailbox Usage Summary Report This report provides information detailing individual mailbox usage. It shows the amount of time a port was used for each mailbox, measured in two ways: Logon Time and Access Time.

Disk Usage Report This report provides the percentage of disk storage currently used, as well as the amount of storage remaining.

Port Statistics Report This report contains information for each port configured in the system.

Refer to the *Configuration* manual — COS, for the COS Profile.

Quick Reference Guide

Reports

	Command	Additional Information
List Report	@L R	Shows reports that can be listed. Individual reports are shown below. System Parameter 72 determines maximum lines per page for reports.
Clear Report	@C R	Produces a listing of reports that can be cleared. Options are: 1 = System Performance and Port Statistic 2 = Network Traffic 3 = User Message, User Calling and Mailbox Usage Also clears User Status Detail

INDIVIDUAL REPORTS

System Performance	1	When clearing this report, the Traffic Peg Count Table is set to zero. The Port Statistics are cleared as well. Information pertains to INCOMING CALLS, SUBSEQUENT ACTIONS, PROGRESS OF CALLS, and MAILBOX information.
Network Traffic	2	For co-located and networked systems. Information pertains to ROUTE STATISTICS, MESSAGE DELIVERY, NETWORK ACCESS TOTALS, and FEATURE USE.
User Message Statistics	3	Includes CURRENT MESSAGES, MESSAGES LEFT AFTER various conditions. LOGONS, and DATE CLEARED.
User Calling Statistics	4	Includes INCOMING CALLS, SUBSEQUENT CALLS, CALLS ABANDONED, and DATE CLEARED.
Disk Usage	5	Provides statistics about the amount of voice message storage currently used on the system. Beginning with Rel. 6.0, this statistic includes the Total Purchased Minutes.
Port Statistics	6	Information pertains to INDIVIDUAL, GROUP, and ALL PORT STATISTICS. This report is cleared when the System Performance report is cleared.
Mailbox Usage	7	Shows mailbox usage time. Usage includes logon time and access time.

Quick Reference Guide

Reports

	Command	Additional Information
User Status Detail	8	Shows status information on mailbox access and time durations associated with individual mailbox usage.

5.1 LISTING AND CLEARING REPORTS

The VP 100 offers reports that provide both system-wide and mailbox statistics.

Information is collected and stored in various internal tables. The information accumulates until the report is cleared. Reports can be listed without affecting the accumulated data. Once the command to clear a report is entered, the values are reset to zero and resume accumulating.

Most reports show only the date they are run. At the top of reports 1, 2 and 6 are two dates. The "from" date and time indicates when the table was last cleared. The "to" date and time indicates when the report was last printed. It is recommended reports be listed and cleared on a regular basis. If the tables are not cleared frequently, some fields may exceed the maximum. The reports can display individual values up to 65535. The field shows *** if the value exceeds the maximum.

■ Listing a Report

Reports are listed by typing at the @ prompt.

LIST REPORT, or L R

@L R

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

SELECT REPORT TO BE LISTED. (1 - 8, EMPTY LINE =EXIT)

:

Select the number of the report you wish to list. The prompts displayed after selecting a specific report (i.e., 1 thru 8) vary slightly as shown in the following sections.

■ Listing User Statistics (Selections 3 or 4)

Once a User Statistics, Mailbox Usage, or User Status Detail report has been selected, the VP 100 prompts:

ENTER DIGIT PATTERN ("?" FOR HELP):
CHECKING USER MAILBOXES...DONE.
READY PRINTER, THEN PRESS RETURN...

If ? is entered for help, the VP 100 displays:

Enter one of the following to select one or more mailboxes:

"ALL" - ALL MAILBOXES.
1-8 DIGITS - ONLY MAILBOXES BEGINNING WITH THIS DIGIT PATTERN.
EMPTY LINE - ABORT WITHOUT ACTION.

If ALL is entered, all mailboxes in the USER Table are printed.

If 1-8 digits are entered, the list displays the mailboxes beginning with the digit(s) entered. In this example the first digit is 5 and mailboxes are three digits long:

<u>Entered Digits</u>	<u>Mailboxes Displayed</u>
5	All mailboxes beginning with 5
56	All mailboxes beginning with 56
567	Only mailbox 567

User Statistics, Mailbox Usage and User Status Detail reports are sorted by first digit. For example, if mailboxes in the 2000 and 300 series are used, 2000 lists first.

If an invalid number is entered, the program displays the prompt:

"NO MATCH ON DIGIT PATTERN."

■ Clearing A Report

To clear reports, at the @ prompt type:

C R (short for CLEAR REPORT)

@C R

After this command is entered, the VP 100 prompts:

1. SYSTEM PERFORMANCE (IN TRAFFIC PEGS) AND PORT STATISTICS.
2. NETWORK TRAFFIC.
3. USER MESSAGE, USER CALLING AND MAILBOX USAGE.

SELECT REPORT TO BE CLEARED.(1 - 3, EMPTY LINE = EXIT)

Select the number of the report you wish to clear. The prompts displayed after selecting a report are specific to that report.

When option 3 — User Call and Message Statistics, is chosen, the following reports are cleared:

- User Message Statistics.
- User Calling Statistics.
- Mailbox Usage.
- User Status Detail.

☞ The Disk Usage report cannot be cleared. It always reflects current information.

5.2 SYSTEM PERFORMANCE REPORT

- ▶ 1. SYSTEM PERFORMANCE.
- 2. NETWORK TRAFFIC.
- 3. USER MESSAGE STATISTICS.
- 4. USER CALLING STATISTICS.
- 5. DISK USAGE.
- 6. PORT STATISTICS.
- 7. MAILBOX USAGE.
- 8. USER STATUS DETAIL.

The System Performance report provides system-wide call and message statistics. Individual call and message statistics are displayed in the User reports.

▶ WARNING ◀

The System Performance report is based upon the Traffic Peg Count Table (see MAINTENANCE, Traffic Peg Count Table). Clearing the System Performance report clears the Traffic Peg counts and vice versa. If you want both the System Performance report and the Traffic Pegs, list both before clearing.

An example of a System Performance report is shown on the next page.

— SYSTEM PERFORMANCE REPORT FOR (SYSTEM NAME) —
 FROM: MM/DD HH:MM AM
 TO: MM/DD HH:MM PM YYYY PAGE 1 OF 1

* INCOMING CALL SUMMARY *

CALLER'S-INITIAL ACTION:

DIALED EXTENSION OR DIGITS	764
DEFAULTED TO ASSISTANCE	136
DIALED "0" FOR ASSISTANCE	59
LEFT A MESSAGE AT THE TONE	0
PRESSED "#" TO LOG-ON	955
**" TO MAKE A QUICK MESSAGE	12
CALLER WAS A NETWORK UNIT	1099
CALLER WAS A DID/E&M UNIT	0
OTHER	<u>7</u>
TOTAL CALLS INTO SYSTEM	3032

SUBSEQUENT ACTIONS:

DIALED EXTENSION OR DIGITS	445
SENT TO ASSISTANCE	3
DIALED "0" FOR ASSISTANCE	117
LEFT A MESSAGE AT THE TONE	370
PRESSED "#" TO LOG-ON	243
**" TO MAKE A QUICK MESSAGE	4
TRANSFERRED CALL TO NETWORK	111

PROGRESS OF CALLS TO EXTENSIONS:

ANSWERED	459
RING-NO-ANSWER	104
BUSY	153
GREETING PLAYED (NO CALL)	784
VACANT NUMBER	<u>24</u>
TOTAL TO EXTENSIONS	1524

NUMBER OF TIMES USERS LOGGED-ON:	1249
NUMBER OF USER MAILBOXES:	30
NUMBER OF PORTS CONFIGURED:	4
ALL PORTS BUSY (SECONDS):	0

* MESSAGE SUMMARY *

MESSAGES CREATED:

AFTER BUSY OR NO-ANSWER	83
AFTER GREETING PLAYED	287
RECEIVED FROM NETWORK	976
BY QUICK MESSAGE	14
BY LOGGED-ON USERS	<u>632</u>
TOTAL MESSAGES CREATED	1992

MESSAGES CURRENTLY STORED:

GREETING MESSAGES	14
NAME MESSAGES	8
USER MESSAGES	<u>68</u>
TOTAL MESSAGES STORED	90

DISK USAGE:

AVG. USER MESSAGE LENGTH (MINUTES)	0.7
STORAGE CURRENTLY USED	37%
APPROXIMATE MINUTES OF STORAGE	150

■ Call Summary

The Call Summary portion of the System Performance report shows the stages of calls and actions of callers into the VP 100. The calls include:

- Callers attempting to reach extensions.
- People calling into mailboxes.
- Other calls answered (such as calls from other network locations).

Information is reported in three stages:

- Caller's initial action.
- Caller's subsequent actions.
- Progress of calls to extensions.

The following sections describe the activities reported within each of the three stages. Also included are the Traffic Peg(s) used as the source for each field.

■ Caller's Initial Action

This section displays caller's initial action upon reaching the VP 100. If a category relates to a Traffic Peg, the peg is indicated in parentheses.

- | | |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>DIALED EXTENSION OR DIGITS
(Peg 129)</p> | <ul style="list-style-type: none"> • Number of times callers dialed a defined first digit from 1 to 8. • Number of times callers were sent directly to Next Mailbox without dialing. • With Adaptive Integration, every time a call is forwarded to the VP 100. • Number of times callers dialed an account code. • Number of times callers dialed extensions or digits to call out on the network. |
| <p>DEFAULTED TO ASSISTANCE
(Peg 138)</p> | <p>Number of times callers did nothing (e.g. rotary dial) and were transferred to attendant or intercept position.</p> |
| <p>DIALED [0] FOR ASSISTANCE
(Peg 127)</p> | <p>Number of times callers pressed [0] and were transferred to attendant or intercept position.</p> |

**LEFT A MESSAGE
AT THE TONE**
(Peg 140)

Number of times callers left a message as an initial action. This also includes instances where Next Mailbox gives the caller a greeting and takes a message without the caller entering any digits.

**PRESSED #
TO LOG ON**
(Peg 131)

Number of times callers pressed # to enter a mailbox (includes successful and unsuccessful logons).

*** TO MAKE A
QUICK MESSAGE**
(Peg 133)

Number of times callers pressed * to make a Quick Message.

**CALLER WAS A
NETWORK UNIT**
(Peg 135)

Number of times caller identified itself as a Network system. That is, the call was from another network location.

OTHER

Miscellaneous category including:

- Caller dialed .
- A VP 100 port called a CX port (extension forwarded to the VP 100).
- Caller dialed invalid first digit (e.g.,).
- Caller disconnected (detected hang-up events or from DID Interface).
- Caller has not taken initial action.
- With Adaptive Integration:
 - Direct call into the VP 100 where caller hangs up or dials .
 - Direct internal call into the VP 100 where caller accesses Quick Greeting Activation.

 Numbers within the Other category may fluctuate as new calls come in and as current callers make an initial action.

**TOTAL CALLS
INTO SYSTEM**
(Peg 1)

Total calls answered by the VP 100.

 If the System Performance report or Traffic Pegs were last cleared while calls were in progress, this value may be larger than peg 1. However, the value printed in the System Performance report always reflects the correct value.

■ Subsequent Actions

After completing their initial action. (i.e., caller left a message at the tone), another action is taken. Subsequent actions are described below.

- DIALED EXTENSION OR DIGITS**
(Peg 130)
- Number of times callers dialed a defined first digit from 1 to 8.
 - Number of times callers went to Next Mailbox.
 - Number of times callers dialed an extension or digit to stay in queue.
- SENT TO ASSISTANCE**
(Peg 139)
- Number of times callers were transferred to attendant or intercept position after dialing too many invalid extensions.
 - Number of callers that remain on the line for assistance, whether or not a message was left, with Adaptive Integration, when System Parameter 77 — PBX PROVIDES MOMENTARY DISCONNECT is set to YES.
 - Number of network calls sent to assistance.
 - Autotransfer to assistance (includes Personal Assistant).
- DIALED 0 FOR ASSISTANCE**
(Peg 128)
- Number of times callers pressed 0 and were transferred to attendant/intercept position or Personal Assistant.
- LEFT A MESSAGE AT THE TONE**
(Peg 141)
- Number of times callers left message after busy/no answer/greeting.
- PRESSED # TO LOG ON**
(Peg 132)
- Number of times callers pressed # to enter a mailbox (includes successful and unsuccessful logons).
- PRESSED * TO MAKE A QUICK MESSAGE**
(Peg 134)
- Number of times callers pressed * to make a Quick Message.
- TRANSFERRED CALL TO NETWORK**
(Peg 137)
- Number of times callers transferred out onto the network.

■ Progress of Calls to Extensions

If the initial or subsequent action taken by the caller requires the VP 100 to place a call, responses to that call are detailed below. Also included is the number of logon requests that were successfully completed.

ANSWERED (Peg 46)

- Number of answered calls placed by the VP 100.
- With Adaptive Integration, COS Attribute 15 →TRANSFER TO A RINGING EXTENSION, pegs as ANSWERED when the call is transferred.

RING-NO-ANSWER (Peg 35)

Number of calls placed by the VP 100 that were not answered, including:

- Number of normal calls to a station resulting in ring-no-answer, including first caller to a FIFO queue extension.
- Number of times the VP 100 attempted to place a call but did not get dial tone at the port.

BUSY (Peg 134)

Number of calls placed by the VP 100 to busy extensions, including:

- Number of normal calls to a busy station, including first caller to a FIFO queue extension.
- Number of PBX integration calls that forward on busy. (This applies to PBXs that provide information on why the call forwarded.)

GREETING PLAYED (NO CALL) (Pegs 144, 39, 98, and 162)

- Number of times a personal mailbox greeting was played and no call was placed (normal greeting operation). Also included in this category are calls to unavailable extensions, and calls to stations that forward back to a VP 100 Secondary Answering mode port and PBX integration calls which forward on the "all forward" condition.
- Number of times Scripted Prompt greeting mailbox was called (without COS Attribute 6 — CALL FIRST BEFORE PLAYING GREETING).
- Number of times a valid account code was entered.
- Number of times callers with FIFO queue position of two or greater dialed digits to enter or stay in queue, or when maximum queuing limit was reached, before going to Next Mailbox.
- Number of times error greeting (Custom Prompt) played.

- Number of PBX integration calls that forward on the All Forward condition, or from PBXs which do not provide information on why the call forwarded.

VACANT NUMBER (Peg 38) Number of calls placed by the VP 100 to vacant number (fast busy).

TOTAL TO EXTENSIONS (Peg 46, 34, 35, 38, 39, 98, 144, and 162) Total calls placed to extensions by the VP 100.

NUMBER OF TIMES USERS LOGGED ON (Peg 9) Number of times a mailbox was successfully logged onto.

NUMBER OF USER MAILBOXES Number of mailboxes in the USERS Table.

NUMBER OF PORTS CONFIGURED Number of ports configured.

ALL PORTS BUSY (SECONDS) (Peg 24) Number of seconds during which all the VP 100 ports were busy and therefore unavailable.

■ Message Summary

The Message Summary section details the number of messages created and on what conditions, number of messages currently stored, and disk usage.

Totals for stored messages include disk space used for storing a forwarded message and all comments attached to it.

- ☞ Messages are only stored once and addressed to mailboxes as required. Therefore, User Statistics for messages do not equal total storage used or remaining for system statistics. Personal greetings and names are not included for individual mailboxes in the User Messaging report; they are included in the System Summary report.

A description of the Message Summary fields follows.

■ Messages Created

Messages may be created by callers responding to prompts or by mailbox owners using IntraMessaging features. The following summarizes both types.

AFTER BUSY OR NO-ANSWER (Peg 14)	Number of messages left after call to an extension received busy or no answer.
AFTER GREETING PLAYED (Peg 142)	Number of messages left after greeting played.
RECEIVED FROM NETWORK (Peg 143)	Number of valid messages received from network.
BY QUICK MESSAGE (Peg 2)	Number of times a Quick Message was left.
BY LOGGED-ON USERS	Number of messages sent from mailboxes.
TOTAL MESSAGES CREATED	Number of valid voice messages created.

■ Messages Currently Stored

Messages are generally created by callers or by mailbox owners. Recorded names and greetings created using the Insert/Swap feature are also considered to be messages. System totals for each of these categories are reflected below.

GREETING MESSAGES	Number of greeting messages currently stored in mailboxes.
NAME MESSAGES	Number of name messages currently stored in mailboxes.
USER MESSAGES	Number of messages currently stored. All messages in mailboxes are counted, except multiple copies. When a message is delivered to several mailboxes, it is counted only once.
TOTAL MESSAGES STORED	Sum of messages, greeting, name, and owner.

■ Disk Usage

The following provides information about the total disk storage and the percentage of that storage currently utilized.

AVG. USER MESSAGE LENGTH	Average length in minutes of the messages currently stored. (Minutes divided by number of messages.)
---------------------------------	------------------------------------------------------------------------------------------------------

**STORAGE
CURRENTLY USED**

Percentage of total storage currently used.

**APPROXIMATE
MINUTES OF
STORAGE**

Maximum minutes of message storage that would be available if no voice messages (names, greetings, or messages) were stored.

The exact minutes of storage may vary due to factors including:

- The disk itself.
- Manufacturer of the disk.
- Accumulated bad sectors on the disk.

5.3 NETWORK TRAFFIC REPORT

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

The Network Traffic report provides traffic information for each location (multi-cabinet and remote-location) configured in the network. All configured locations are listed in the report. Traffic information accumulates until the report is cleared. For each location, the report lists:

- Route Choices.
- Feature Use Totals.
- Message Delivery.
- Network Access Totals.

An example of a Network Traffic report is shown on the following page.

```

NETWORK TRAFFIC REPORT FOR SYSTEM NAME
FROM: 9MM/DD HH:SS AM TO: MM/DD HH:MM PM YYYY
*****
TO LOCATION << DPLA >>
ROUTE CHOICE-> 1. TODL02
CALLS TRIED : 213
ROUTE BUSY : 0
ROUTE FAIL : 0
LINEQUAL FAIL : 0
DATA SUCCESS% : 100
MSG-MIN DAY : 105
MSG-MIN NIGHT : 15
MESSAGE DELIVERY
CALLS TRIED 95
CALLS FAILED 0
MSGS RETRY 0
SENT NIGHT 11
SENT DAY 101
DISK FULL 0
NETWORK ACCESS TOTALS
CALLS TRIED 213
CALLS FAILED 1
ALLPRT BSY/NA 1
ALLRTE FAILED 0
FEATURE USE TOTALS
AUTO ATTN 62
QUICK MSG 6
USER LOGON 50
IMMED. CALL 0
*****

```

```

TO LOCATION << TLCORP >>
ROUTE CHOICE-> 1. WATS5 2. DDD
CALLS TRIED : 25 6
ROUTE BUSY : 8 0
ROUTE FAIL : 0 0
LINEQUAL FAIL : 0 0
DATA SUCCESS% : 100 100
MSG-MIN DAY : 11 0
MSG-MIN NIGHT : 1 0
MESSAGE DELIVERY
CALLS TRIED 14
CALLS FAILED 5
MSGS RETRY 0
SENT NIGHT 2
SENT DAY 9
DISK FULL 0
NETWORK ACCESS TOTALS
CALLS TRIED 31
CALLS FAILED 14
ALLPRT BSY/NA 6
ALLRTE FAILED 0
FEATURE USE TOTALS
AUTO ATTN 11
QUICK MSG 0
USER LOGON 0
IMMED. CALL 0

```

■ To Location

For each location name, information is reported for a maximum of three possible route choices. For each route choice, the following accumulates:

- CALLS TRIED** Number of calls attempted to this location by this route.
- ROUTE BUSY** Encountered busy trying to reach this location.
- ROUTE FAIL** Failed to access this location. Could be due to no route dial tone.

LINEQUAL FAIL	Line test failed. Could be due to low signal or high noise level.
DATA SUCCESS %	The percentage of data commands successfully sent. This value is an indicator of potential data failures that may result in messages returned to sender or uncompleted calls.
MSG-MIN DAY	Minutes of messages sent during the day.
MSG-MIN NIGHT	Minutes of messages sent during the night.

■ Message Delivery

Information for each location includes:

CALLS TRIED	Message delivery calls attempted.
CALLS FAILED	Message delivery calls that failed to transfer at least one message. May be due to no answer, more than 3/4 of the ports busy, or line quality problems. A second attempt is made at a later time.
MSGS RETRY	Messages in the process of being sent but failed. May be due to the line being dropped. The VP 100 automatically retries at a later time. This is an indication of potential line problems.
SENT NIGHT	Messages sent during the night. The night hours are defined by System Parameter 62 — NET: NIGHT DELIVERY START TIME and System Parameter 63 — NET: NIGHT DELIVERY END TIME.
SENT DAY	Messages sent during all hours not defined by System Parameters 62 and 63.
DISK FULL	The disk at this location was full and the message was not delivered. These messages are sent back to the sender's mailbox.

■ Network Access Totals

Summary of network access for each location:

CALLS TRIED	Number of calls attempted to this location.
CALLS FAILED	Calls tried that were not successful. Could be due to all ports busy, route busy, route failure, or line quality problems.

ALLPRT BSY/NA Calls tried but not answered by the VP 100 at this location due to all ports busy or the system being unavailable.

ALLRTE FAILED Calls failed due to route busy, failure, or line quality, with no routes to advance to.

■ **Feature Use Totals**

Caller feature usage for each location:

AUTO ATTEN Calls transferred through the network to an extension at this location using the automated attendant.

QUICK MSG Quick Messages left at this location through the network.

USER LOGON Mailbox logged onto at this location through the network.

IMMED CALL Immediate call feature used to call an extension at this location through the network.

5.4 USER STATISTIC REPORTS

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
- ▶ 3. USER MESSAGE STATISTICS.
- ▶ 4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

Two reports give detailed mailbox statistics:

- User Message Statistics.
- User Calling Statistics.

The User Message Statistics report and User Calling Statistics report each provide a detailed list of call and messaging activity for individual mailboxes. Each line within the report displays data for a single mailbox. User Message statistics contain the number of current messages, total messages, logon dates and when the statistics were last cleared for each mailbox. User Calling Statistics contain the number of incoming calls, subsequent calls, abandoned calls, and date statistics were last cleared for each mailbox.

The two reports share the same tables and increment from the time they are first cleared until the next time cleared. When either report is cleared, the tables are cleared for both reports, as well as for the User Status Detail report.

5.5 USER MESSAGE STATISTICS

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

The User Message Statistics report lists the following information:

- Total number of messages.
- The average seconds.
- Total seconds.
- Date of the oldest message.
- Number of messages left after busy, not answered.
- Greeting ON.
- Other.
- Total number of times the mailbox was logged onto.
- Date last logged on.
- Date the statistics were last cleared.

Headings read across the page, and the mailbox numbers read down.

Example of a User Messaging report:

* MESSAGING STATISTICS *

MM/DD HH:MM P.M. YYYY	←-CURRENT MESSAGES→ → ←-MESSAGES LEFT AFTER→ ←-LOGON→									DATE	
MAILBOX	TOTAL	AVGSC	TOTSC	OLDST	BUSY	NOANS	GREET	OTHER	TOTAL	LAST	CLEAR
300	2	19	39	9/03	0	3	64	4	60	9/21	7/27
301	6	71	430	9/17	12	29	3	85	183	9/17	7/27
304	3	60	180	8/31	95	64	128	336	582	9/23	7/27
305	0	0	0	—	34	119	5	119	230	9/23	7/27
306	0	0	0	—	28	57	0	43	339	9/23	7/27
307	0	0	0	—	0	0	0	0	2	9/23	1/01
310	1	16	16	9/23	18	68	16	118	304	9/22	7/27
311	0	0	0	—	2	80	0	62	133	9/23	7/27

■ Messaging Statistics

Provides statistics about messages currently stored in each mailbox. Also shows the date data for each mailbox was last cleared (from a terminal) by using the command CLEAR REPORTS (choosing option 3 to clear selected or all mailboxes).

■ Current Messages

Numbers are given for:

TOTAL	Total number of messages currently stored.
AVGSC	Average seconds per message, based on the total seconds and total number.
TOTSC	Total seconds of current messages stored.
OLDST	Date of the oldest message stored.

■ Messages Left After

Total number of messages left after the caller encountered any of these conditions:

BUSY	Extension called was busy.
NO ANSWER	Extension called did not answer.
GREETING	Personal greeting was turned ON and played.
OTHER	Messages left by: New Message, Quick Message, Forward, Reply, Return Receipt, Broadcast, Distribution List.

■ Logon

Mailbox was entered by dialing and mailbox number (and security code). This field provides:

TOTAL	Number of times mailbox was entered.
LAST	Date when mailbox was last entered.

5.6 USER CALLING STATISTICS

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
- ▶ 4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

The User Calling Statistics report lists the following information:

- Total number of incoming calls.
- Number of incoming calls answered, not answered, busy, and greeting played.
- Total number of subsequent calls.
- Number of subsequent calls to attendant, and to extensions.
- Total number of calls abandoned.
- Date the statistics were last cleared.

Headings read across the page, and the mailbox numbers read down.

Example of a User Calling Statistics report:

* CALL PROCESSING STATISTICS *

MM/DD HH:MM P.M. YYYY PAGE 1-

MAILBOX	← INCOMING CALLS →					← SUBSEQ. CALLS →			CALLS ABAND	DATE CLEAR
	TOTAL	ANSWD	NOANS	BUSY	GREET	TOTAL	ATTEN	EXTNS		
301	27	1	6	7	13	15	2	13	11	9/01
303	36	20	16	0	0	7	2	5	4	9/01
304	7	3	0	0	4	2	0	2	2	9/01
305	38	14	19	5	0	5	5	0	5	9/01
307	1	0	0	1	0	0	0	0	1	9/01
308	2	0	2	0	0	1	1	0	1	9/01
309	1	0	1	0	0	0	0	0	1	9/01
310	6	1	4	0	0	0	0	0	5	9/01

■ Call Processing Statistics

Provides statistics about calls to each mailbox. Also shows the date data for each mailbox was last cleared (from a terminal) by using the command CLEAR REPORTS (choosing option 3 to clear selected or all mailboxes).

■ Incoming Calls

Provides the following information for calls directed to the mailbox/extension.

TOTAL	Total number of calls placed by the VP 100.
ANSWD	Number of calls answered.
NO ANSWD	Number of calls not answered. Includes PBX integration calls that forward on the ring-no-answer condition.
BUSY	Number of calls placed to a busy extension. Includes PBX integration calls that forward on the busy condition.
GREET	Number of calls placed to mailbox when: <ul style="list-style-type: none">• Greeting is ON.• Extension is unavailable or vacant.• Call is placed to a station which forwards back to a VP 100 CX/MX mode port.• Calls to Personal Assistance resulting in RNA or busy.• PBX integration calls which forward on the "all forward" condition.

■ Subsequent Calls

Provides information about what a caller did after their initial call to a mailbox or extension that was not answered.

TOTAL	Total number of subsequent calls.
ATTEN	Number of times the caller entered <input type="checkbox"/> after entering an extension or mailbox.
EXTNS	Number of times caller entered another mailbox or extension.
CALLS ABAND	Number of calls disconnected after reaching an unavailable extension without leaving a message, calling another extension or the operator. Included are calls to scripted prompt mailboxes during which the caller hangs up before completing responses (in situations where COS Attribute 33 — WILL SEND SCRIPTED MESSAGES WITHOUT CONFIRMATION, is not assigned to the scripted prompt COS).

5.7 DISK USAGE REPORT

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. **DISK USAGE.**
6. PORT STATISTICS.
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

The Disk Usage report provides statistics about the amount of voice message storage currently used on the system. There are two sections of this report:

- System Message Storage.
- Percent of System Storage.

Example Disk Usage report:

```

* DISK USAGE REPORT FOR (SYSTEM NAME) *
MM/DD HH/MM P.M. YYYY
SYSTEM MESSAGE STORAGE:
  STORAGE CURRENTLY USED          0.1%
  MINUTES OF STORAGE              387
PERCENTAGE OF SYSTEM MESSAGE STORAGE:
  MAILBOX MESSAGES                0.1%
  GREETING MESSAGES              0.0%
  NAME MESSAGES                   0.0%
  ALL MESSAGES                    0.1%

```

■ Total System Message Storage

Storage Currently Used Total percentage of message storage used.

Minutes of Storage Message storage capacity (in minutes).

The exact minutes of storage may vary due to factors including:

- The disk itself — any bad sectors on the disk are not used, and the available storage is reduced accordingly.
- Manufacturer of the disk.

■ Percent of Total System Message Storage

Message Type	Percentage of total system message storage used by each of three message types (Mailbox, Greeting, and Names messages), and total messages.
Mailbox Messages	Includes User Messages stored in mailboxes. Also includes messages addressed to a network location until they have been delivered.
Greeting Messages	Includes Mailbox Greetings, Company Greetings, Information Greetings, Scripted Prompts, and Alternate Greetings.
Name Messages	Includes all Names associated with mailboxes.
Total Usage	Sum of Mailbox, Greeting, and Name percentages.

☞ Individual percentages and their sums are each rounded separately to the nearest 0.1% before they are shown. Thus, the individual percentages, when summed from the values actually shown, are not guaranteed to be exactly equal to the Total percentages as shown.

5.8 PORT STATISTICS

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. DISK USAGE.
6. **PORT STATISTICS.**
7. MAILBOX USAGE.
8. USER STATUS DETAIL.

This report contains information for each port configured in the PORTS Table. There are three sections of this report:

- Individual Port Statistics.
- Port Group Statistics.
- All Port Statistics.

An example of a Port Usage report follows.

```

* PORT USAGE REPORT FOR (SYSTEM NAME) *
FROM: MM/DD HH:MM AM
TO:   MM/DD HH:MM PM   YYYY
-----
* INDIVIDUAL PORT STATISTICS *
-----
PORT  INCOMING  OUTGOING  SECONDS  SELFTST
NUMBER COS   CALLS    CALLS    BUSY     FAILED
-----
1     127     48       37       3810     0
2     127     47       40       2781     0
-----
* PORT GROUP STATISTICS *
-----
COS:      127
PORTS:    1 2
NUMBER OF INCOMING CALLS: 95
NUMBER OF OUTGOING CALLS: 77
NUMBER OF PORTS SIMULTANEOUSLY BUSY:
1 PORT   FOR   4591   SECONDS
2 PORTS  FOR   1000   SECONDS
-----
* ALL PORT STATISTICS *
-----
TOTAL NUMBER OF INCOMING CALLS: 95
TOTAL NUMBER OF OUTGOING CALLS: 77
SECONDS TOO MANY PORTS BUSY TO MAKE OUTCALLS: 0
NUMBER OF PORTS SIMULTANEOUSLY BUSY:
1 PORT   FOR   4591   SECONDS
2 PORTS  FOR   1000   SECONDS

```

■ Individual Port Statistics

Information in this section includes the number of incoming and outgoing calls for each port, the number of seconds each port was busy, and the number of seconds each port was busy because it failed selftest.

PORT NUMBER	The number associated with each port in the PORTS Table.
COS	The Class of Service assigned to each port.
INCOMING CALLS	[Pegs 51-58] The number of incoming calls to each port for the period of time shown in the header of the report.
OUTGOING CALLS	The number of outgoing calls made on each port. Includes on-site and off-site message waiting, network messages sent, alarm calls, and test network.
NUMBER OF SECONDS BUSY	The number of seconds each port was busy.
SELFTEST FAILED	The number of seconds the port was out of service because selftest failed. Selftest fails when an error has occurred during diagnostics causing the port to be taken out of service.

■ Port Group Statistics

Information in this section is grouped by COS. For each COS used in the PORTS Table, there is a listing of each port, by number, included in that COS, as well as a total of the number of incoming and outgoing calls. Below that, there is an indication of how many ports are simultaneously busy for the listed number of seconds.

COS	The Class of Service of the port group.
PORTS	The number associated with each port extension having this COS in the PORTS Table.
NUMBER OF INCOMING CALLS	The total number of calls to all ports using this COS.
NUMBER OF OUTGOING CALLS	The total number of calls from all ports using this COS. Includes on site and off-site message waiting, network messages sent, alarm calls, and test network.

NUMBER OF PORTS SIMULTANEOUSLY BUSY The number of ports using this COS that are busy at the same time and the total number of seconds during the reporting period for which that number of ports were busy.

■ All Port Statistics

Information in this section includes the total number of incoming and outgoing calls for the system, the number of seconds "n" ports were busy, and the number of seconds message waiting could not call because too many ports were busy.

TOTAL NUMBER OF INCOMING CALLS The total number of all incoming calls to the system for the period of time shown in the header of the report.

TOTAL NUMBER OF OUTGOING CALLS The total number of all outgoing calls from the system for the period of time shown in the header of the report. This includes on-site and off-site message waiting, network messages sent, alarm calls, and test network.

SECONDS TOO MANY PORTS BUSY TO MAKE OUTCALLS If all ports make outcalls — the total number of seconds 3/4 or more of the ports were busy. If any ports do not allow outcall — the total seconds all ports that do allow outcall were busy.

NUMBER OF PORTS SIMULTANEOUSLY BUSY The number of ports that are busy at the same time and the total number of seconds during the reporting period for which that number of ports were busy.

☞ To retain accuracy of the Port Statistics report, it is recommended the report be listed and cleared before changing a port's COS in the UPDATE program, or changing the number of ports in System Parameter 4 — PORTS USED. The System Performance and Port Statistics reports are listed together in the CLEAR REPORT command. Therefore, also list and clear the System Performance report when listing and clearing the Port Statistics report.

5.9

MAILBOX USAGE

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
- ▶ 7. MAILBOX USAGE.
8. USER STATUS DETAIL.

The Mailbox Usage report contains information detailing individual mailbox usage. The report shows the amount of time a port was used for each mailbox in the USER Table. The extension associated with each mailbox is also listed. The usage time for each mailbox is measured in two ways: Logon Time and Access Time.

Logon Time Logon time is the amount of time a person is logged onto their mailbox. The accumulated time is added to that mailbox's logon time when the person exits their mailbox (by entering or hanging up).

Access Time Access time is the amount of time a caller listens to a greeting and/or leaves a message. The accumulated time is added to that mailbox's access time after the greeting plays or a message is left.

This is an example of a Mailbox Usage report:

* MAILBOX USAGE SUMMARY *
MM/DD HH:MM P.M. YYYY

MAILBOX	EXTENSION	LOGON TIME (MIN)	ACCESS TIME (MIN)
468	468	22	2
469	469	24	6
470	470	4	0
471	471	14	12
472	472	11	9
473		0	0
474	474	10	2
475	475	6	3

In some applications, it may be necessary to only collect timing information for certain ports. For example — the amount of time a person is logged onto a mailbox over a WATS line should be charged for, but the time logged on locally should not.

To provide this capability, COS Attribute 55 — DO NOT COLLECT MAILBOX TIMING INFORMATION FOR THIS PORT, can be assigned to specific ports. Timing information is not collected for calls made to ports with this attribute in their COS. (Attribute 55 has no effect if assigned to a mailbox.)

5.10 USER STATUS DETAIL

1. SYSTEM PERFORMANCE.
2. NETWORK TRAFFIC.
3. USER MESSAGE STATISTICS.
4. USER CALLING STATISTICS.
5. DISK USAGE.
6. PORT STATISTICS.
7. MAILBOX USAGE.
- ▶ 8. USER STATUS DETAIL.

This report provides current status information on mailbox access and the time durations associated with individual mailbox usage.

The following information is provided for each mailbox.

- Mailbox Number.
- Name Recorded (Y/N).
- Greeting ON (Y/N).
- Greeting Length (mmm:ss).
- Last Logon (mm/dd/yy).
- Oldest Message (mm/dd hh:mm).
- Newest Message (mm/dd hh:mm).
- Total Current Messages (up to 32).
- Total Message Duration (mmm:ss).

An example of the User Status Detail report follows.

USER STATUS DETAIL REPORT

MM/DD HH:MM P.M. YYYY								Page 1
MAILBOX	NAME	<GREETING>	LAST	<-----MESSAGES----->				DUR.
	REC?	ON? LENGTH	LOG-ON	OLDEST	NEWEST	TOTAL		
549	N	N 0:07	6/26 10:03	6/04 11:18	6/26 10:03	8		1:23
550	N	Y 1:02	6/03 13:11	5/26 13:56	6/13 12:08	3		3:05
551	N	N 0:13	6/16 19:19	6/22 16:39	6/26 16:39	1		0:23
552	Y	Y 0:18	6/12 10:59	6/12 9:19	6/18 10:49	3		5:23
599	Y	Y 0:13	6/06 9:03	—	—	0		0:00

The User Status Detail report uses the same tables as the User Message Statistics and User Calling Statistics reports. When one of these reports is cleared, the tables are cleared for all three reports.

MAINTENANCE

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INTRODUCTION

This chapter describes procedures for maintaining the VP 100. The VP 100's modular design and on-line computerized diagnostics simplify these procedures. The tools required to service a VP 100:

- An RS-232C compatible ASCII send/receive terminal capable of 300, 600, 1200, 2400, 4800, 9600, 19200 or 38400 baud. Toshiba recommends a PC compatible. Refer to the following two chapters in this manual: CONFIGURATION APPLICATIONS TERMINAL and INSTALLATION.
- Three standard touchtone telephones (2500-type).
- A No. 1 Phillips screwdriver.
- Telephone test set (Butt set).

Quick Reference Guide

Maintenance

Section	Subject	Command	Information
Call Processing Trace	List Trace	L T	Trace for specific activity, selecting from the menu shown.
Diagnostics	Reports	C R	Gives a menu for the type of report to clear.
	Hard Disk Drive	DEX x y	Reads all disk sectors. x = disk number; y = region number.
	List Features	L F	Lists the features the system is equipped with.
	Message Status	L HE x	Lists the status of a message. x = message header number.
	Mailbox Configuration	L M x	Lists the current configuration for a mailbox. x = mailbox number.
	Mailbox Configuration	L M x M	Lists information about messages for a specific mailbox. (Release 6.1 or later) x = mailbox number.
	Network Mailbox Status	L NET x	Displays message information for a network location. x = network location code.
	Personal Distribution List	L PDL	Lists the number of Personal Distribution List (PDL) sectors currently used.
	Port Configuration	L PO x	Displays current configuration for x = port number.
	Reports	L R	Gives a menu for the type of report to list.
Tone and DTMF	PRT x	Monitors and prints the tone and DTMF events received for the port specified. To exit the monitor mode, press Escape . x = port number.	

Quick Reference Guide

Maintenance

Section	Subject	Command	Information
Diagnostics (continued)	Port Status	PS	Displays current state of the ports.
	Alarm Test	TE A	Attempts to call number defined for alarm call.
	System Forwarding	TE C 1 x y	Forwards all ports specified. Uses string from System Parameter 45 — SYSTEM RELOAD FORWARD STRING. x = port number or first port in a range of ports (optional); y = port number of the last port in a range of ports (optional).
	Initialization	TE C 2 x y	Initializes and cancels forwarding for all ports specified. Sends initialization string from System Parameter 33 — PBX INITIALIZE CODE, then cancels forward string from System Parameter 46 — SYSTEM RELOAD CANCEL-FORWARD STRING. x = port number or first port in a range of ports (optional); y = port number of the last port in a range of ports (optional).
	LIC	TE L 1	Checks tone generation and detection circuitry.
	LIC	TE L 2	Ring-through test. Use only when no traffic on system.
	Network Routes	TE NET x y	Tests network routes to a network location. x = network location code (optional); y = non-zero show digits dialed.
	System Status	TE S	Checks voltages and temperatures.
Hardware Errors	List Hardware Error Table	L H	Lists the Hardware Error Table.
	Clear Hardware Error Table	C H	Clears the Hardware Error Table.

Quick Reference Guide

Maintenance

Section	Subject	Command	Information
Integration	Incoming Call Records	MON2	Used to monitor incoming call records over the RS-232C link (TERM 2). To exit the monitor mode, press Escape .
	Message Waiting Lamps	MWL RELITE	Send commands to relight each MWL that the VP 100 has marked as ON.
	Message Waiting Lamps	MWL RECALC	Examines each mailbox to determine whether its message waiting lamp should be ON or OFF.
	Message Waiting Lamps	MWOFF x	Turns OFF lamp message waiting. x is the mailbox number. For All, enter A . The maximum number of digits is eight. (Release 6.1 or later)
Traffic Pegs	Traffic Peg Count Table	LP	Lists the pegs.
		CP	Clears the pegs.
Message Purge	Automatic Purge	APURGE x y z	Starts the message purge function if Automatic Message Purge is not already in progress. Displays the thresholds specified and asks for confirmation before initiating the message purge function. x = save threshold, y = new threshold, z = Net Name. (Release 6.1 or later)
	Cancel Purge	CPURGE	Cancels message purge if it is in progress, regardless of whether it was initiated automatically or by the APURGE command. Asks for confirmation before cancelling message purge. (Release 6.1 or later)
	Baud Rate	BAUD	Displays the current baud rate setting. The available baud rates are 300, 600, 1200, 2400, 4800, 9600. and 19200.

Quick Reference Guide

Maintenance

Section	Subject	Command	Information
Message Purge (continued)	Allowable Commands	HELP	Displays the allowable commands for the password level of operation currently logged in to.
	System Configuration	IN	Command to enter the system configuration program INSTALL . This program consists of a series of questions that define the system database.
	Internal Modem	MOD DISABLE	Blocks access to the VP 100 via the internal modem.
MOD ENABLE		Restores access to the VP 100 via the internal modem.	
Miscellaneous	Password	PASS x y	Sets the password: x = password level; y = new password. There are three password levels. Each password may be a maximum of eight alphanumeric characters, 0-9 and A through Z. All alpha characters must be in capital letters.
		RESTA	Restarts the CPU. All active ports are dropped, and the modem is dropped.
	Time	TIME	Displays the current system date and time. Used only at the @ prompt.
	Update	UP	Command to enter the system configuration UPDATE program.

6.1 PREVENTIVE MAINTENANCE

Preventive maintenance consists of a periodic visual inspection of the connections, and of listing the System-Performance tables. The frequency of this maintenance depends on the operating environment provided for the VP 100. Based upon the environment, the local service company should determine the maintenance interval required.

Inspect all connections on the cabinet to make sure they are well seated and secure. Wires and cables should be slack so they do not pull free or break. Cable restraints should be placed where required.

► WARNING ◀

Use of a wrist grounding strap prevents damage to sensitive electronic components. Before handling any electronic equipment, including the power supply and cables, attach one end of the strap around your wrist and the other end to any unpainted surface of the VP 100 inner metal cabinet.

6.2 COMMAND SUMMARY

The overall command structure for VP 100 maintenance commands is different from the verb-noun protocol used in the UPDATE Program. The following tables illustrate the format for each command with **BOLD** letters indicating the minimum input. In some instances, a modifier and extension may be required to complete the command string.

The VP 100 indicates it is ready to receive information by displaying the @ prompt. All command strings must be followed by before the VP 100 executes the command.

■ Listing Tables

Tables are listed from the @ prompt by entering LIST followed by the table name. To abbreviate, enter:

L (table name)

For example, to list the Hardware Error Table, at the @ prompt enter L H. A space is always required between the L (for LIST) and the following letter.

Command	Basic Definition
L F	LIST FEATURES Prints the optional packages the VP 100 has installed. Gives the maximum number of ports, SCHEDULE Table entries, and mailboxes.
L H	LIST HARDWARE Lists the Hardware Error Table.
L M XXXX	LIST MAILBOX (XXXX=MAILBOX NUMBER) Lists the current configuration for the mailbox specified.
L M x M	LIST MAILBOX M (Release 6.1 and later) Lists the type, header number and creator of each message being stored in a mailbox. x = mailbox number
L INT x	LIST INTEGRATION STATUS (Release 6.1 and later) Lists the current state of the integration board, the diagnostic status, the status of the links and the pegs. x = slot number
L NET x	LIST NETWORK MAILBOX Lists messages in the network mailbox waiting to be sent to the specified network location. x = network location
L P	LIST PEG Lists the TRAFFIC PEG COUNT Table.

Command	Basic Definition
L PDL	LIST PERSONAL DISTRIBUTION LIST Lists the number of Personal Distribution List (PDL) sectors currently used throughout the system.
L PO x	LIST PORT Lists the current configuration status for the PORT number specified. x=port number
L R	LIST REPORT Prints a menu for types of report to select which contains the following entries. 1 = System Performance 2 = Network Traffic 3 = User Message Statistics 4 = User Calling Statistics 5 = Disk Usage 6 = Port Statistics 7 = Mailbox Usage 8 = User Status Detail
L T	LIST TRACE Prints a menu for types of trace to select which contains the following entries. 1 = All Activities 2 = Mailbox Activity 3 = Port Activity 4 = Location Activity 5 = Message Activity 6 = Integration Activity

■ Clearing Table Entries

Tables are cleared from the @ prompt by entering **CLEAR** followed by the table name. To abbreviate, enter:

C (table name)

For example, to clear the Hardware Error Table, at the @ prompt enter C H. A space is always required between the C (for CLEAR) and the following letter.

Command	Basic Definition
C H	CLEAR HARDWARE Clears Hardware Error Table. Also opens the alarm relay and turns OFF the alarm LED.
C P	CLEAR PEG Clears Traffic Peg Count Table and the System Performance report.

Command	Basic Definition
C R	<p>CLEAR REPORT Gives a menu for the type of report to clear.</p> <ol style="list-style-type: none"> 1. System Performance, Traffic Pegs, and Port Statistics. 2. Network Traffic. 3. User Message, User Calling, and Mailbox Usage. When cleared, the User Status Detail report is also cleared.

■ Tests

The following commands test the alarm callout, forwarding string, initializing string, hard disk, line card, network location, and system status. From the @ prompt, enter TEST followed by the name of the function to be tested. For example, to test the alarm, at the @ prompt enter:

TE A

A space is always required between the TE (for TEST) and the following letter.

Command	Basic Definition
TE A	<p>TEST ALARM Tests the alarm call out feature. Places a call to the number specified in the SYSTEM PARAMETER Table — System Parameter 31. Also closes the Alarm Relay and turns ON the Alarm LED.</p>
TE C 1 X [Y]	<p>TEST CHANNEL 1 (X = PORT NUMBER or FIRST PORT IN A RANGE OF PORTS. Y = LAST PORT IN A RANGE OF PORTS) If a port or range of ports is specified (X [Y]), the VP 100 forwards the port(s) specified. If no port is specified, the VP 100 tries to forward all ports. If a port successfully forwards, it is left in a FWD state. If a port fails to complete the forward string, it is left in the NDT state (no dial tone). The VP 100 continues to try to forward all ports specified until successful or Escape is pressed.</p>
TE C 2 X [Y]	<p>TEST CHANNEL 2 (X = PORT NUMBER or FIRST PORT IN A RANGE OF PORTS. Y = LAST PORT IN A RANGE OF PORTS) If a port or range of ports is specified (X [Y]), the VP 100 tries to initialize and cancels forwarding for the port(s) specified. If no port is specified, the VP 100 tries to initialize and cancels forwarding for all ports. If a port successfully initializes and cancels forwarding, it goes to the IDL state. If a port fails to complete either the initialization or cancel forward string, it is left in the NDT state.</p>
TE L 1	<p>TEST LINE 1 Tone reflection test. Ports that fail are left in a TEST state.</p>
TE L 2	<p>TEST LINE 2 Tests ring through capability of all the ports.</p>

Command	Basic Definition
TE NET (NET LOC)	TEST NETWORK (NETWORK LOCATION) Tests network routes to a network location. Tests all locations if no network location is specified.
TE S	TEST STATUS Tests the VP 100 temperatures and voltages. Displays the temperature range inside the cabinet since the last time the Hardware Error Table was cleared. Also displays the current temperature inside the cabinet.
DEX (REGION)	Disk EXerciser Tests all hard disk sectors for read errors.

■ Miscellaneous Commands

Command	Basic Definition
APURGE x y z	(Release 6.1 and later) Starts the message purge function if Automatic Message Purge is not already in progress. This command allows the specification of purge thresholds with the same restrictions enforced by UPDATE for the System and CSTAT parameters. Prior to initiating the message purge function, this command displays the thresholds specified and asks for confirmation. x = save threshold y = new threshold z = Net Name
BAUD	Displays the VP 100's current baud rate setting. To change the baud rate, enter BAUD at the @ prompt followed by the desired baud rate. Then change the terminal's baud rate and press <input type="text" value="Enter"/> when prompted by the VP 100. The available baud rates are: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400.
CPURGE	(Release 6.1 and later) Cancels message purge if it is in progress regardless of whether it was initiated automatically or by the APURGE command. Asks for confirmation before cancelling message purge.
HELP	Displays the allowable commands for the password level of operation currently logged in to.
IN	INSTALL At the @ (prompt), enter IN to access the System Configuration Installation program (INSTALL). This program consists of a series of questions that define the VP 100 database. Answers to questions may be derived from a list, a default value, or created by the installer.
MOD DISABLE	MODEM DISABLE Blocks access to the VP 100 via the internal modem. Once the modem is disabled, if logon is attempted by entering <input type="text" value="# # # 5"/> the caller receives the error message "That command is not allowed."

Command	Basic Definition								
MOD ENABLE	MODEM ENABLE Restores access to the VP 100 via the internal modem.								
MON2	MONITOR TERMINAL #2 Used in conjunction with Centrex SMDI Integration to display incoming call records over the RS-232C link. To EXIT the monitor mode, press <input type="button" value="Escape"/> .								
MWL RECALC	Used in certain integrations where the PBX lights lamps via a computer, when the computer has been out of service. Examines each mailbox to determine whether its message waiting lamp should be turned ON or OFF.								
MWL RELITE	Used in certain integrations when the PBX has been restarted. Turns ON all message waiting lamps that were ON before the PBX was restarted.								
MWOFF x	MESSAGE WAITING OFF (Release 6.1 and later) Turns OFF lamp message waiting. x = mailbox number (up to eight digits). For All, enter A.								
PASS (LEVEL) (NEW PASSWORD)	PASSWORD (LEVEL) (NEW PASSWORD) The VP 100 has three password levels. Passwords are not set by the manufacturer. Each password may be a maximum of eight alphanumeric characters, 0 – 9 and A through Z. All alpha characters must be in capital letters. To logon to a new system, press <input type="button" value="Enter"/> when asked for the password. Refer to the <i>Configuration manual — UNDERSTANDING CONFIGURATION</i> . The following is a list of the three password levels: MAINTENANCE Allows full access to system diagnostics, error information, and the INSTALL and UPDATE programs. ADMINISTRATIVE Allows entrance into the UPDATE program. Also allows the LIST and CLEAR commands to be used for the Hardware Error Table, Pegs, and all reports. REPORT Allows the LIST and CLEAR commands to be used for the Hardware Error Table, Pegs, and all reports. Passwords can be set for each level as follows:								
	<table border="1"> <thead> <tr> <th>Level</th> <th>Set or Change Password</th> </tr> </thead> <tbody> <tr> <td>Maintenance</td> <td>Maintenance, Administration, Report</td> </tr> <tr> <td>Administrative</td> <td>Administration, Report</td> </tr> <tr> <td>Report</td> <td>Report</td> </tr> </tbody> </table>	Level	Set or Change Password	Maintenance	Maintenance, Administration, Report	Administrative	Administration, Report	Report	Report
Level	Set or Change Password								
Maintenance	Maintenance, Administration, Report								
Administrative	Administration, Report								
Report	Report								

Command	Basic Definition
	<p>To set or change the password, at the @ (prompt) enter the following commands followed by the password.</p> <p>PASS A (for administrative)</p> <p>PASS M (for maintenance)</p> <p>PASS R (for report)</p>
PRT X	<p>PORT X</p> <p>Monitors and prints the tone and DTMF events received for the channel specified.</p> <p>☞ To Exit the monitor mode, press <code>[Escape]</code>.</p>
P S	<p>PORT STATUS</p> <p>Prints the status of all ports.</p>
RESTA	<p>RESTART</p> <p>Restarts the CPU. All active ports are dropped, and the modem is dropped.</p>
RESTO	<p>RESTORE</p> <p>Copies the features and system identity from the Option Control Chip (OCC) to the hard disk.</p>
TIME	<p>TIME</p> <p>Displays the current system date and time. Used only at the @ prompt.</p> <p>☞ To change the date and time by using the UPDATE program, at the . (dot) command, enter M DATE.</p>
UP	<p>UPDATE</p> <p>Command to enter the system configuration UPDATE program. The configuration database may be LISTED, MODIFIED, or otherwise changed to satisfy a specific requirement. A dot (.) is displayed indicating when the UPDATE program is ready for commands. Refer to the <i>Configuration</i> manual — UPDATE.</p>

6.3 DIAGNOSTICS

The VP 100 performs selftesting, diagnostic programs which run continuously and do not interfere with normal system operation. These tests are designed to locate faults in the system and reduce the need for additional test equipment, circuit descriptions, and schematic diagrams. When errors are detected, they are logged into the Hardware Error Table, by error code, describing the fault and its location.

In addition to the background diagnostics, several diagnostic or test programs can be run by command from a terminal. These programs are described in this section.

Poll the system on a regularly scheduled basis by using a 103A or 212A compatible modem, or poll directly with a terminal or teleprinter. Print the Hardware Error Table, Traffic Peg Count Table, System Performance report and User Statistics. Study the reports for any abnormal indications. This allows for scheduled maintenance or corrective action rather than reactive action. In addition, the following diagnostics are available.

■ Mailbox Configuration Status

The mailbox configuration command quickly displays information about a specific mailbox. At the @ prompt, enter the following:

```
LIST MAILBOX XXXX (or L M XXXX) 
```

where XXXX is the mailbox number. When listing a mailbox configured with multiple INFORMATION Tables, the status displays only information for the current time period.

The following example shows all items that can be displayed. This includes optional feature packages.

Prior to Release 6.1

```
@L M 350
CLASS OF SERVICE: 1 WITH ATTRIBUTES: 8 10 13 24
CURRENTLY USING INFORMATION TABLE: 25
EXTENSION NUMBER: 350
MESSAGE WAITING IS/TURNED ON (OFFSITE)/TURNED OFF/SUSPENDED
or MESSAGE WAITING IS OFF IN THE INFORMATION TABLE
or MESSAGE WAITING IS NOT WITHIN THE USER SPECIFIED TIME PERIOD TO CALL
or A CALL REMINDER HAS BEEN LEFT ON THIS DISPLAY PHONE
OFFSITE OR PAGER# 99875432
GREETING IS/TURNED ON/TURNED OFF/ON BY AUTO ACTIVATION
THIS MAILBOX HAS A SECURITY CODE/NO SECURITY CODE ON THIS MAILBOX
THIS IS AN EXTENDED MAILBOX
THE ALTERNATE TRANSFER CODES WILL BE USED TO CALL THIS MAILBOX
MESSAGES WILL BE DIVERTED TO MAILBOX:123
AUTO COPY MAILBOX:
PERSONAL ASSISTANCE MAILBOX: 325 (ACTIVE/NOT ACTIVE)
or NO PERSONAL ASSISTANCE MAILBOX
INTERCEPT MAILBOX: 321 INTERCEPT EXTENSION: 321/WILL USE PORT INTERCEPT
or INTERCEPT MAILBOX: 654 IN ANOTHER CABINET
NUMBER OF MESSAGES: 9
```

Release 6.1 and later

```
@L M 350
INFORMATION TABLE NUMBER: 25 CLASS OF SERVICE: 1
WITH ATTRIBUTES 8 10 13 24
EXTENSION NUMBER: 350
MESSAGE WAITING IS/ON (OFFSITE)/OFF/SUSPENDED
or MESSAGE WAITING IS OFF IN THE INFORMATION TABLE
or MESSAGE WAITING IS NOT WITHIN THE USER SPECIFIED TIME PERIOD TO CALL
or A CALL REMINDER HAS BEEN LEFT ON THIS DISPLAY PHONE
OFFSITE OR PAGER# 99875432
GREETING IS/ON/OFF/ON BY AUTO ACTIVATION
THIS MAILBOX HAS A SECURITY CODE/NO SECURITY CODE, DEFINED USE SYSTEM DEFAULT
THIS IS AN EXTENDED MAILBOX
THE ALTERNATE TRANSFER CODES WILL BE USED TO CALL THIS MAILBOX
MESSAGES WILL BE DIVERTED TO MAILBOX:123
AUTO COPY MAILBOX:
PERSONAL ASSISTANCE MAILBOX: 325 (ACTIVE/NOT ACTIVE)
or PERSONAL ASSISTANCE MAILBOX: NONE
INTERCEPT MAILBOX: 321 INTERCEPT EXTENSION: 321/WILL USE PORT INTERCEPT
or INTERCEPT MAILBOX: 654 IN ANOTHER CABINET
NUMBER OF MESSAGES: 9 NUMBER OF FUTURE DELIVERY MESSAGES: 0
LOG-ON LANGUAGE: DEFAULT
MAX DIGITS: 0 PREFIX DIGITS:NONE
```

FLAGS:

The mailbox configuration command LIST MAILBOX also displays information about message for a specific mailbox (Release 6.1 or later). At the @ prompt, enter the following:

```
L M x M 
```

where x is the mailbox number, and M is a required extension (the letter M, not an argument) of the command.

The following is an example of this extended command:

(Release 6.1 or later)

```
@L M 350 M
STATUS MSG CRE STATUS MSG CRE STATUS MSG CRE STATUS MSG CRE
22 SAV 0003 0001 20 SAV 0004 0000 20 SAV 000A 0000 10 NEW 0024 0002
```

- | | |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STATUS | The STATUS field indicates whether the message is in the Saved Queue*(SAV) or New Queue (NEW). |
| MSG | The MSG field is the message header number. |
| CRE | The CRE field shows the system user number of the mailbox who created the message.

The user number is in the hexadecimal format. To convert the user number to the mailbox number, at the @ prompt, enter L M xxxx and press <input type="text" value="Enter"/> .

xxxx = the user number in hexadecimal format. This number must be four digits, including leading 0.

FFFF in the CRE field indicates that the message was received from the network.

0000 in the CRE field indicates that the message was created by Quick Message, broadcast message, or the creator is unknown. |

 Distribution lists are not mailboxes and cannot be listed with this command.

■ Message Status

The list header command displays information about a message. Enter the command

LIST HEADER XXXX (or L HE XXXX)

where XXXX is the message number.

The following example shows all items that can be displayed.

```
@L HE 3
CREATOR MAILBOX NUMBER: NONE
EXTENSION MESSAGE NUMBER: 0000
TIME 08/03/89 10:11
USE COUNT: 00002
ORIGINAL MESSAGE TYPE: 9
DEPTH OF FORWARDING: 0
FIRST EXTENSION BLOCK: 0004
NUMBER OF FULL EXTENSION BLOCKS: 0
NUMBER OF DATA BLOCKS IN PARTIALLY FULL EXTENSION BLOCK: 13
FLAGS:
ADDRESSES:
3000
```

The following lists the descriptions of the possible Original Message Types:

Number	Description
1	Made by message command
2	Forwarded message
3	Reply message
4	Greeting message
5	Name message
6	Broadcast message
7	Message left after call to busy extension
8	Message after no answer/vacant/Centrex
9	Quick Message
10	Message left after greeting played or no extension defined
11	Message came from network
12	This is a Return Receipt message
13	The message has been forwarded on the network
14	The mailbox is full
15	The mailbox does not exist
16	The disk was full
17	Routes failed too many times
18	The message was undeliverable
19	Too many addresses for this location
20	Generic mailbox failure (VP networking)
21	Not used
22	Auto-forward of a broadcast message
23	Personal Distribution List name message
24	Send failure due to mailbox being full

■ Network Mailbox Status

The LIST NETWORK MAILBOX command displays information contained in the network mailbox about a specific location, including the message numbers of all the messages in the network mailbox waiting to be sent to that location. It also shows the current delay (in minutes), the error retry count, and the retry limit.

LIST NETMAILBOX XXXX (or L NET XXXX)

where XXXX is the location of the system to which the messages will be sent.

The following example shows the information displayed.

```
@L NET 640
LOCATION FRAME NUMBER: 0005
DELAY: 00000 MIN.
ERRORS: 00000
LIMIT: 00010
MESSAGE #
000E
0010
0012
```

■ Port Configuration Status

The current configuration status for a port can be listed at the @ prompt by entering the command:

```
LIST PORT X (L PO X) 
```

where X represents the port number. When a port is configured to use different INFORMATION Tables, only current information is displayed.

The following example shows all items that can be displayed. This includes optional feature packages.

```
@L PO 1
CLASS OF SERVICE: 63 WITH ATTRIBUTES:
USE FOR OUTCALL: YES/NO ANSWERING MODE: AX/CX/MX
PORT TYPE: 5000 TEST PORT: YES/NO
CURRENTLY USING INFORMATION TABLE: 64 ERROR NO INFORMATION TABLE
INTERCEPT MAILBOX: 300 INTERCEPT EXTENSION: 300 / ERROR NO INTERCEPT
PORT EXTENSION: 500 COMPANY GREETING MAILBOX: 405
or NO PORT EXTENSION or NO COMPANY GREETING MAILBOX
```

■ Hard Disk (HD) Drive Diagnostics DEX (DISK#) (REGION)

The purpose of the DEX command is to “exercise” the disks; hence its name **Disk EXerciser**. Since a small percentage of disk sectors are accessed in the course of normal system operation, and since disk error handling cannot be performed for any sectors that are never accessed, DEX provides an orderly and efficient means to read all disk sectors.

Each disk is divided into five regions, as follows:

Region 1	Critical sectors
Region 2	File system
Region 4	Prompts
Region 8	Message headers
Region 10	Voice data

DEX tests each of the specified regions separately, starting with the lowest-numbered region through the highest-numbered region. When DEX finishes testing a region, it displays a status line:

```
REGION WW COMPLETE DISK #1: XXXXX DISK #2: YYYYY MISMATCHES:ZZZZZ
```

WW = Region that has just completed testing
 XXXXX = Number of sectors on the disk had read error
 YYYYY = Does not apply to VP 100
 ZZZZZ = Does not apply to VP 100

The form of the command is as follows:

DEX (DISK#) (REGION)

(DISK#) 1 = Test disk
 0 = Abort background DEX

(REGION) The second argument specifies which regions to test. It is not applicable if DISK# is 0.

 1 = Critical sectors
 2 = File system
 4 = Prompts
 8 = Message headers
 10 = Voice data
 = All regions

The following example shows how DEX is invoked to test all regions the disk.

```
@DEX 1
REGION 01 COMPLETE DISK#1:00000 DISK#2:00000 MISMATCHES:00000
REGION 02 COMPLETE DISK#1:00000 DISK#2:00000 MISMATCHES:00000
REGION 04 COMPLETE DISK#1:00003 DISK#2:00002 MISMATCHES:00000
REGION 08 COMPLETE DISK#1:00000 DISK#2:00000 MISMATCHES:00000
REGION 10 COMPLETE DISK#1:00012 DISK#2:00007 MISMATCHES:00000
DISK EXERCISE COMPLETE
```

If any errors are reported, refer to the Hardware Errors section in this chapter.

■ Line Interface Card (LIC) Diagnostics

Two on-line diagnostic tests may be used to test the LICs. The first test described is performed periodically during normal system operation. It is used to check the analog (voice) path of the LIC. The second test is performed only when there are no calls in the system. It is used for the ring-through test.

■ Tone/DTMF/Beep Test

To run the test, turn on the terminal or teleprinter. At the @ prompt enter:

TEST LINE 1 (or TE L 1)

This test runs in sequence on each of the installed ports. It uses the hybrid transformer on the LIC to check tone generation and detection circuitry.

A tone is applied to the hybrid transformer and, as it is being reflected, the tone detector is turned on. A comparison is made to see if the tones match the tones detected. The test sequence continues through all assigned ports. If a test tone sent is not received correctly, an error is entered in the Hardware Error Table.

Some PBXs have the capability of running diagnostics on their ports. The diagnostics may cause the VP 100's selftest to fail and place the VP 100 port in TST mode, taking the port out of service. The port remains in TST mode until selftest runs again and is able to put the port in service, or until the VP 100 is restarted. In cases of conflict with PBX diagnostics, selftest can be disabled in the PORTS Table.

■ Ring - Through Test

A ring-through test can also be used. This test runs only on demand and should only be used when the VP 100 is initially installed or when it is known that no calls are being processed.

The ring-through test performs as follows:

- Seizes a port.
- Waits for dial tone from the PBX.
- Dials a port using the extension number entered in the PORTS Table.
- Waits for the port to answer, and sends a test pattern.

For example, a 4-port system makes 12 test calls, each test call takes 20 to 30 seconds to complete. If the port called is busy or does not answer, an error is logged in the Hardware Error Table. To initiate this test, at the @ prompt, enter:

TEST LINE 2 (or TE L 2)

■ Port Status

To display the current state of the installed ports, at the @ prompt, type:

PS [1]

Use [1] to get a continuous update status of the ports. Press to exit Port Status.

The VP 100 responds with the current state for each port installed, in addition to displaying system features and disk drive status.

```
CH 1 CH 2 CH 3 CH 4 CH 5 CH 6 CH 7 CH 8
IDL MSW TST AIC IDL MOD GRT IDL
```

The LED lights indicate port usage and can be seen through the plastic window on the front of the cabinet.

Port states are represented under CH 1, CH 2, etc., and can be in any of the states listed in the following table.

Table 6-1 Abbreviations for Channel/Port State

Port State	Description
ADR	COLLECT ADDRESS FOR A MESSAGE
AFC	AUTO COPY CONFIGURATION
AFZ	PLAY ALL PHRASES
AIC	(ASSISTED INWARD CALLING) CALLING A USER OR PLAYING A GREETING
ALM	ALARM-CALL-OUT
APR	PLAY ALL PROMPTS
CHK	CHECK FEATURE
CON	CONFIGURATION, MSG WAITING PARAMETERS OR SECURITY
DRP	DROPPING CALL
EXT	EXIT
FUT	FUTURE DELIVERY LISTEN
FWD	FORWARDED TO DIGITS IN SYSTEM PARAMETER TABLE
GRT	GREETING
HLP	ASKING FOR HELP
ID2	BUSY OUT PORT AFTER RING IN
IDL	IDLE
LSN	LISTENING TO A MESSAGE
MSW	MESSAGE WAITING
MOD	THIS PORT IS CONNECTED TO THE MODEM
NAM	NAME SETUP
NDT	NO DIAL TONE WHEN ATTEMPTING TO FORWARD OR INITIALIZE PORTS
NET	NETWORKING
NEW	CREATE NEW, FORWARD, REPLY OR GREETING MESSAGE
NDM	NAMES DIRECTORY STATE
NMR	NET MESSAGE RECEIVE – PROTOCOL 1
NMS	NET MESSAGE SEND – PROTOCOL 1
NTS	NET TEST STATE
OMC	OFFSITE MESSAGE WAITING CONFIGURATION
QAD	COLLECTING AN ADDRESS FOR A QUICK MESSAGE
QCK	RECORDING A QUICK MESSAGE OR MESSAGE AFTER CALL
PAC	PERSONAL ASSISTANCE CONFIGURATION
PDL	PERSONAL DISTRIBUTION LISTS
RDY	WAITING FOR COMMAND AT READY
SCR	SCRIPTED GREETING
STR	START OF INITIAL LOGON BEFORE READY
TST	SLFTEST IN PROGRESS OR PORT HAS FAILED SELFTEST
VMR	VMX NET MESSAGE RECEIVED – PROTOCOL 2 (Not used)
VMS	VMX NET MESSAGE SEND – PROTOCOL 2 (Not used)
WFA	WAITING FOR MAILBOX ADDRESS AFTER RECEIVING #
WFD	WAITING FOR FIRST DIGIT AFTER ANSWERING CALL
DIG	IN-BAND DTMF INTEGRATION

■ Alarm Test

To test the alarm call-out feature, at the @ prompt, enter:

TEST ALARM (or TE A)

The test attempts to call the string entered during INSTALL. If successful, the person answering the alarm call hears the following:

"Beep-Beep-Beep-Beep. This is an alarm call from voice system number 123. Error type X has occurred. Press star to acknowledge alarm notification or press pound to connect to the modem."

If not acknowledged, the call disconnects after 1 minute and retries every 10 minutes until acknowledged (press

To logon, proceed as follows:

- Press Beeps for up to three minutes allowing time to connect the modem and terminal.
 - Press
- ☞ If a second

List the Hardware Error Table after testing the alarm or enabling remote access. At the @ prompt, enter:

L H

The VP 100 prompts ***** ALARM HAS BEEN GIVEN ***** to indicate an alarm test was performed. To clear this error, at the @ prompt, type:

C H

You must clear the Hardware Error Table to reset the VP 100 call-out feature or the system will not attempt to call the alarm number when a true alarm occurs. If the Hardware Error Table shows other errors, refer to the Hardware Errors section in this chapter.

- ☞ TE A also closes the alarm relay and turns ON the alarm LED.
C H reopens the alarm relay and turns OFF the alarm LED.

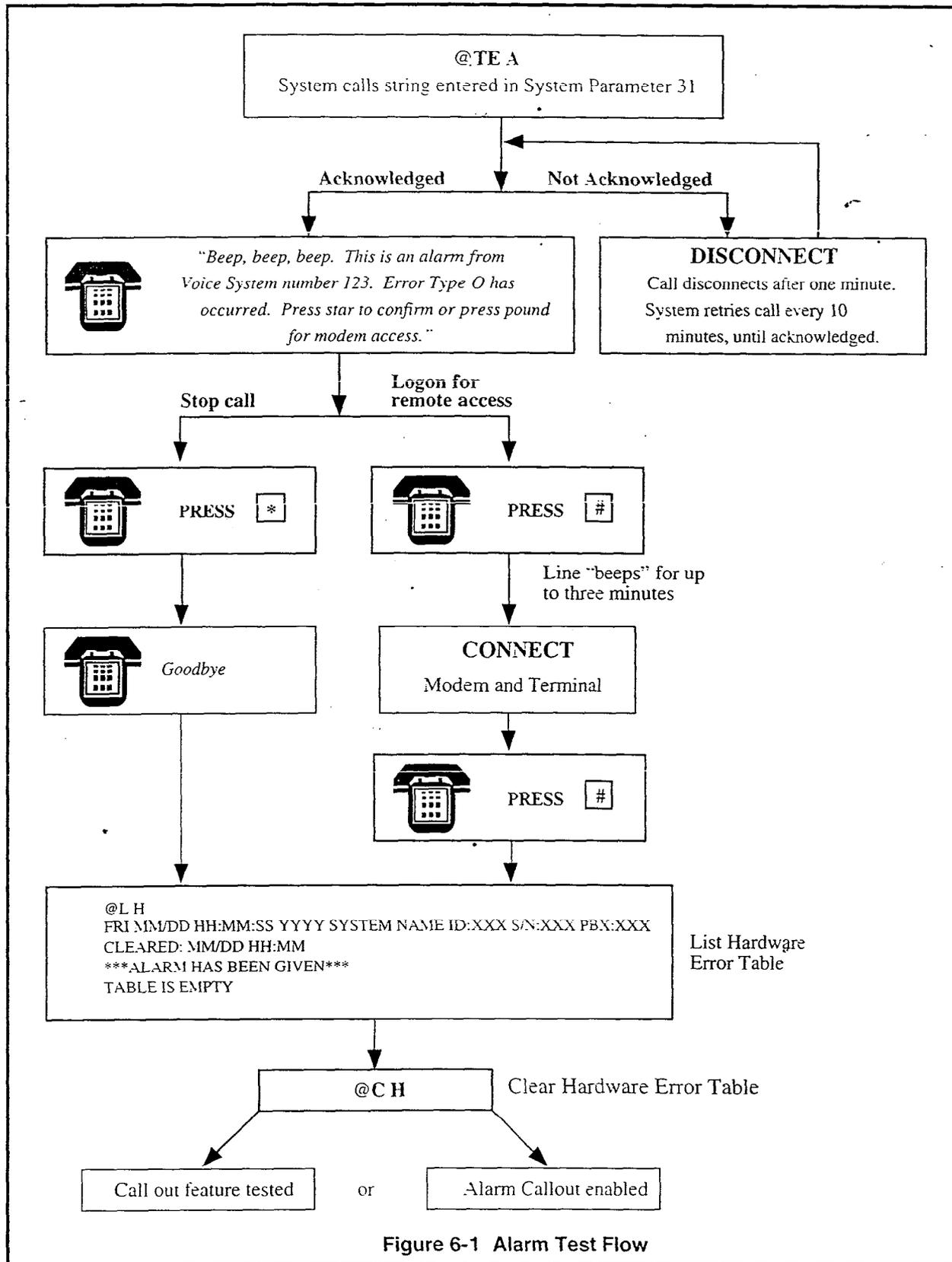


Figure 6-1 Alarm Test Flow

■ System Forwarding

The forwarding string entered in System Parameter 45 — SYSTEM-RELOAD FORWARD STRING, is automatically dialed if the VP 100 reloads for any reason. During this time, calls are not accepted for several minutes while an automatic check is performed on the database. If forwarding strings are not set up, incoming calls receive a ring-no-answer condition until the VP 100 is ready. When forwarding strings are set up correctly, the PBX forwards all incoming calls to an operator or attendant for handling until the VP 100 is ready to receive calls. The following describes the procedure for testing this feature.

To test the forward feature, at the @ prompt, enter:

TEST C 1 (or TE C 1)

This causes each port to attempt the forward string. When successful, a message is displayed. To forward a specific port or range of ports, at the @ prompt, enter:

TE C 1 X [Y]

where X is the port number or the first port in a range of ports to forward, and Y is the last port in a range of ports. If only one port is specified, the VP 100 attempts to forward only that port. If a range is specified, the VP 100 attempts to forward all ports in the range. If no port is specified, the VP 100 tries to forward all ports. If a port is successfully forwarded, it is left in the forward state. If a port fails to complete the forward string, it is left in the NDT state. The VP 100 continues to try to forward all ports specified until successful or is pressed. To review the port status, use the PS command. To cancel forwarding, run the system initialization test.

■ System Initialization

When the VP 100 has reloaded and is ready to handle calls, an initialization sequence automatically takes place. First, the PBX initialization string is attempted (System Parameter 33 — PBX INITIALIZE CODE), then the cancel forward string is attempted (System Parameter 46 — SYSTEM-RELOAD CANCEL FORWARD-STRING) for each port in turn. When a port fails to complete the initialization string or the cancel forward string, the port is left in the NDT state. The VP 100 attempts every 10 seconds to initialize a port.

To test this feature, at the @ prompt enter:

TEST C 2 (or TE C 2)

This causes the initialization string and cancel forward string to be attempted for each port in turn. To test a specific port or range of ports, at the @ prompt, enter:

TE C 2 X [Y]

where X is the port number or the first port in a range of ports initialized, and Y is the last port in a range of ports. If only one port is specified, the VP 100 tries to initialize and cancel forwarding for only the port specified. If a range is specified, the VP 100 tries to initialize and cancels forwarding for all ports in the range. If no port is specified, the VP 100 tries to initialize and cancel forwarding for all ports. If a port successfully initializes and cancels forwarding, it goes to the IDL state. If a port fails to complete either the initialization string or the cancel forwarding string, the status remains NDT.

■ System Status

Check the VP 100 status for DC voltages and temperature. At the @ prompt, enter:

TEST STATUS (or TE S)

The temperature range inside the cabinet since the last time the Hardware Error Table was cleared is displayed as follows:

```
TEMPERATURE-RANGE INSIDE CABINET SINCE MM/DD HH:MM
MINIMUM TEMPERATURE: 27 DEGREES C.   80 DEGREES F.
CURRENT TEMPERATURE: 33 DEGREES C.   91 DEGREES F.
MAXIMUM TEMPERATURE: 35 DEGREES C.   95 DEGREES F
```

If DC voltages and temperature are within acceptable ranges, the VP 100 responds with:

```
SYSTEM STATUS TESTED OK.
```

If DC voltages and temperature are out of range, the VP 100 responds with:

```
ERROR DETECTED. SEE HARDWARE ERROR TABLE.
```

■ List Features

This command displays various information about the VP 100 as shown below.

```
@L F
----- SYSTEM SOFTWARE RELEASE A.X.X.X (MM/DD/YY) -----
DAY MM/DD HH:MM:SS YYYY (SYSTEM NAME) ID:XXX S/N:123456 PBX:XX
MODEL NAME: VP 100
FEATURE PACKAGES:
  SW-20001 SW-20005
MAXIMUM NUMBER OF PORTS: 08
MAXIMUM NUMBER OF DRIVES: 01
MAXIMUM NUMBER OF SCHEDULE TABLE ENTRIES: 08
MAXIMUM NUMBER OF MAILBOXES: 00500
NUMBER OF PURCHASED MAILBOXES: 00500
```

■ Network Verification

Instructions for testing a network are found in the *Feature Description* manual — NETWORKING. Run the test for each location on the network.

6.4 CALL PROCESSING TRACE

The CPT (Call Processing Trace) logs call processing activities and events to a file on the hard disk drive. The CPT logs events for:

- Activity on a port.
- User activity while logged onto a mailbox.
- Message activity for a specific message.
- Activity for network locations.
- Integration activity.
- All system activities.

The CPT logs VP 100 activities. The CPT can be used to determine, for example, why a caller dialing 399 received the response "EXT 39 is invalid." The CPT can help determine which port was used for that call. However, the reason for the failure requires extensive testing to determine why the digit was not detected. Possible reasons may include the caller's instrument, transmission quality, or any other interruption in the transmission path during sending of the DTMF digits.

The CPT is a diagnostic aid, and should only be used as such. As a diagnostic aid, the CPT is designed to be used in conjunction with a detailed customer complaint. When properly used, the CPT helps to verify or explain complaints, such as late delivery or reappearing messages.

When the CPT function is used as part of the process to determine why something unexpected happened, several points should be considered:

- The PBX numbering plan.
- The VP 100 mailbox/extension numbering scheme.
- The extension numbers assigned to the VP 100 ports.
- PBX function and feature access codes.

■ Using the CPT

When the unexpected event is identified in the CPT, the first step is to backtrack and attempt to understand all activity reported prior to the event.

Examine the CPT to determine the DTMF digits entered just prior to the event. This usually explains why the VP 100 performed the way it did.

Storage The CPT stores several hours of activity for a high traffic, very active system, and up to several days of activities for a small, low traffic system.

Listing the CPT To list the trace, at the @ prompt, enter:
List Trace

A trace for specific activities can be selected from the menu as shown in the following example.

```
@L T
 1 ALL ACTIVITIES
 2 MAILBOX ACTIVITY
 3 PORT ACTIVITY
 4 LOCATION ACTIVITY
 5 MESSAGE ACTIVITY
 6 INTEGRATION ACTIVITY
```

SELECT TRACE TO BE LISTED (1 - 6, EMPTY LINE = EXIT).

```
:1
Enter start time: Month Day Hour Minute or C (continuous)
:3 13 15 27
TIME 03 13 15:27
PORT 2 DIG IN 3
PORT 2 DIG IN 4
PORT 2 logon MAILBOX 634
```

☞ Only part of the time needs to be entered, but it is necessary to add the year first. For example, 92 02 24 lists all information stored starting with the first event stored for February 24, 1992 and continuing to the current date and time. If the date and time entered precedes the date and time for the data stored, the system starts reporting events for the earliest date within the range specified. To select the complete history stored, press at the empty line. To display current events, enter C (for continuous) and press .

☞ A time stamp is recorded every minute. However, the only time stamps displayed are the minute just before an activity and then each minute until the activity ceases.

■ Trace Activity Examples

This section contains examples of trace activity. Examples are given for:

- All activities.
- Mailbox activity.
- Port activity.
- Location activity.
- Message activity.
- Integration Activity.

All Activities

When trace type 1 is selected, all mailbox, port, location, message, and integration activities are traced. The following example shows what the trace displays when a person calls into a port, logs on, plays two messages, saves the second one and exits.

```
SELECT TRACE TO BE LISTED
(1 - 6, EMPTY LINE = EXIT).
:1
PORT 01 OFF HOOK
TIME 02/21 10:31
PORT 01 DIG IN #
PORT 01 DIG IN 3
PORT 01 DIG IN 3
PORT 01 DIG IN 0 _____ Log on MBX 330
PORT 01 LOG ON 330
PORT 01 DIG IN 5 _____ Listen
PORT 01 PLAY MSG 8734(make) _____ Play message with "Make"
TIME 02/21 10:32
TIME 02/21 10:35 _____ No activity in last 3 minutes
PORT 01 MSG 8734 ENDED
PORT 01 DIG IN 5 _____ Listen
PORT 01 PLAY MSG 8944(fwd) _____ Play comments of forwarded message
PORT 01 MSG 8944 ENDED
PORT 01 DIG IN 7 _____ Message saved
PORT 01 DIG IN 9 _____ Exit
PORT 01 DIG IN 9 _____ Log off 330
PORT 01 LOG OFF 330
PORT 01 ON HOOK
REMOVE MSG 8734 FROM MBX 330
(listen to end)
MSG 8734 FREED
(use count zero)
```

Example: Quick message to a mailbox that is logged on to.

```
PORT 01 OFF HOOK
PORT 01 DIG IN *
PORT 01 DIG IN 3
PORT 01 DIG IN 0
PORT 01 DIG IN 0
PORT 01 START RECORD 765 (quick)_ Message recorded

MSG 0765 SENT (quick)
MSG 0765 DEFERRED FOR MBX 300 _____ Deferred message. 300 is logged on
PORT 01 DIG IN 9
PORT 01 DIG IN 9
PORT 01 LOG OFF 300 _____ Log off 300
PORT 01 ON HOOK
MSG 0765 PUT IN MBX 300 _____ Message put in mailbox 300
```

Mailbox Activity

When trace type 2 is selected, a specific mailbox can be entered or the line left empty to list activities for all mailboxes.

The following mailbox activities are traced:

- Logon to mailbox.

- Log off of mailbox (99 or 90).
- Hang up without logging off.
- Enter valid mailbox to call.
- Make message waiting call.
- Invalid security code entered.
- Number of messages in mailbox.

Example:

```
SELECT TRACE TO BE LISTED (1 - 6. EMPTY LINE = EXIT).
:2
Enter Mailbox (Empty line = ALL)
:1234
```

```
PORT 01 LOG ON 1234
PORT 01 LOG OFF 1234
PORT 01 NOT LOGOFF 1234
PORT 01 CALL FOR MBX 1234
PORT 01 MSG WAIT CALL FOR MBX 1234
PORT 01 INVALID SEC CODE FOR MBX 1234
PORT 01 THERE ARE 6 MSGS FOR MBX 1234
```

☞ When tracing activity for a mailbox, all activities on the port used by the mailbox are listed until the mailbox is logged off. For example:

```
PORT 02 LOG ON 402
PORT 02 THERE ARE 2 MSGS FOR MBX 402
PORT 02 DIG IN 6
PORT 02 START RECORD 0003 (make)
PORT 02 DIG IN *
PORT 02 DIG IN *
MSG 0003 FREED (hit **)
PORT 02 DIG IN 9
PORT 02 DIG IN 9
PORT 02 LOG OFF 402
```

Port Activity

When trace type 3 is selected, to list port activity, enter a specific port or press for all ports. The following port activities are listed:

- Off hook.
- Caller did nothing.
- Port hung up (line drop).
- DTMF digit in (digits dialed other than those for security code).
- DTMF out (digits dialed).
- Call status.
Answer (used for/by msg wait)

Busy
Fast busy
No answer
Unavailable

- Transfer Call:
 - Flash
 - Expect dial tone
 - Got dial tone
 - Delay
- Invalid security code.

Example:

SELECT TRACE TO BE LISTED (1 - 6, EMPTY LINE = EXIT).

```
:3
Enter Port (Empty line = ALL)
:1
```

```
PORT 01 OFF HOOK
PORT 01 ON HOOK
PORT 01 LINE DROP
PORT 01 DIG IN 8
PORT 01 DIG OUT 9
PORT 01 ANSWER
PORT 01 BUSY
PORT 01 FAST BUSY
PORT 01 NO ANSWER
PORT 01 UNAVAILABLE
PORT 01 FLASH
PORT 01 DELAY
PORT 01 EXPECT DIAL TONE
PORT 01 GOT DIAL TONE
PORT 01 NO DIAL TONE
PORT 01 INVALID SECURITY CODE
```

Location Activity

When trace type 4 is selected, enter a location number or leave blank for all locations. The following location activities are traced:

- Message for NET location (put message, remove message).
- NET message received (success/fail).
- NET message sent (success/fail).

Example:

SELECT TRACE TO BE LISTED (1 - 6, EMPTY LINE = EXIT).

```
:4
Enter Location (Empty line = ALL)
:640
```

```
MSG 1234 PUT IN LOC 640
MSG 1234 REM FROM LOC 640
MSG 0543 FROM LOC 640 RCVD
MSG 0543 FROM LOC 640 FAILED TO RCV
MSG 1234 FOR LOC 640 SENT
MSG 1234 FOR LOC 640 FAILED TO SEND
```

Message Activity

When trace type 5 is selected, a specific message number can be entered or the line left blank for all message activity to be listed. The following message activities are traced.

- Put message in mailbox (MSG type, name, greeting, etc.).
- Remove message from mailbox (entered $\boxed{3}$, listened till end).
- Message deferred log on.
- Play message (Msg Type — make, forward, record greeting, name, RNA message, broadcast message, Quick Message, after greeting, from net, net error return).
- Message played to end.
- Recording started.
- Message sent.
- Message freed.

Message	Explanation
Too Short	Message recorded was too short
No Talk	Nothing but silence recorded
Erase Request	Pressed $\boxed{3}$ while recording
Hit **	Pressed $\boxed{*}\boxed{*}$ while addressing
Old Greeting	Old greeting is replaced
Old Name	Old name is replaced
No Address Entered	Address for message was not entered
Use Count 0	Message not owned by any mailbox
Caller Hung Up	Abandoned
Bad Address	Address for message cannot be found
Recording Error	Disk error
Extension Header	Extension header of a delivered forwarded message

Example:

```

SELECT TRACE TO BE LISTED (1 - 6, EMPTY LINE = EXIT).
:5
Enter Message (Empty line = ALL)
:1234
MSG 1234 PUT IN MBX 3456
MSG 1234 REM FROM MBX 3574 (entered 3)
MSG 1234 DEFERRED FOR MBX 4567
PORT 01 PLAY MSG 1234 (forward)
PORT 01 MSG 1234 ENDED
PORT 01 START RECORD 1234 (quick)
PORT 01 MSG 1234 SENT
MSG 1234 FREED (use count 0)

```

Integration Activity The command to turn ON or OFF Message Waiting Notification has just occurred.

Example:

```
SELECT TRACE TO BE LISTED (1 - 6. EMPTY LINE = EXIT).  
:6  
Enter start time: Year Month Day Hour Minute or C (continuous)  
:C  
TIME MM/DD/YY HH:MM  
MSG WAITING SET FOR 202  
MSG WAITING SET FOR 214  
MSG WAITING CLEARED FOR 216  
MSG WAITING SET FOR 217
```

6.5 TRAFFIC PEG COUNT TABLE

The Traffic Peg Count Table is used to record events monitored by the VP 100. Proper use of the table helps to understand how the various VP 100 features and functions are being used.

Pegs are arranged in a table 10 columns wide. The pegs are numbered from the top left corner across the first row: 0, 1, 2... The second row begins with 10, 11, 12...

 Some pegs are no longer used. Unused pegs do not appear in the peg description below.

The header displayed when the table is listed contains the current date, time, system name, system ID number, system serial number, and PBX type. Under the header is the date and time the Peg table was last cleared. The numbers displayed in the Peg table are for the time period beginning from when the Peg Table was last cleared.

A listing of the pegs must be obtained on a regular basis to gather useful data. If the pegs are allowed to accumulate for a long period of time, they will not be incremented beyond a maximum value of 65535 (for Release 6.1 and later) or 32767 (prior to Release 6.1). (The System Performance report can print numbers up to 65535.) Since some values are the sum of several pegs, it is possible to overflow. If an overflow occurs during the printing of a field, the field is replaced with *** (stars).

- To display pegs on a terminal, at the @ prompt, enter: L P (for List Pegs).
- To set pegs to zero, at the @ prompt, enter: C P (for Clear Pegs).

► WARNING ◀

Many of the traffic pegs are used in the System Performance report. When the Traffic Peg Count Table is cleared, the System Performance report is also cleared. Likewise, if the System Performance report is cleared, the Traffic Peg Count Table is cleared.

■ Traffic Pegs

#	Name	Description
01	NUM CALLS:	INCOMING calls Total number of INCOMING CALLS answered by the VP 100. Includes calls, logons, hangups, etc.
02	QUICK MSG:	QUICK messages Number of QUICK messages left (IntraMessaging feature, key ).
03	MSG CREATE:	Messages CREATED Total number of MESSAGES CREATED. Includes messages left after extension busy/no answer, NEW messages, REPLY messages, QUICK messages, etc.(NEW, REPLY, QUICK).
04	LISTEN:	Times LISTEN was used Number of times LISTEN was used (key  .

#	Name	Description
05	LAST:	Times LAST was used Number of times LAST was used (keys [5]).
06	DIST MSG:	Messages SENT to Distribution List Number of times messages were SENT to Distribution Lists.
07	SAVE:	Times SAVE was used Number of times SAVE was used (key [2]).
08	ERASE:	Times ERASE was used Number of times ERASE was used (key [3]).
09	LOGON:	Times user LOGGED ON Number of times callers successfully pressed [#] followed by mailbox number and security code.
10	EXIT:	Times EXIT was used Number of times [7] was used to EXIT from mailbox.
11	ALLRDY LOGON:	Mailbox IN USE when user attempted to logon Number of times the mailbox was already IN USE when LOGON was attempted.
12	ERROR DROP:	User was DROPPED because of TOO MANY ERRORS Number of times a person was DISCONNECTED because too many errors had been made.
13	NO DIAL:	No DIAL TONE from PBX when trying to make a call Number of times the VP 100 attempted to call out and DID NOT RECEIVE dial tone from the PBX (when connecting a call).
14	MSG AFT CALL:	Left message AFTER CALLING an extension Number of MESSAGES LEFT AFTER CALLING an extension which was busy or did not answer.
15	VPERR:	Number of VOICE PROCESSING ERRORS Number of software errors.
16	NEW:	Times NEW was used to create a message Number of times NEW was used to create a message (key [1]).
17	FORWD:	Number of FORWARDED messages Number of times FORWARD was used (keys [1] [3]).
18	REPLY:	Number of REPLY messages Number of times REPLY was used (keys [1] [7]).
19	VOLUME:	Times VOLUME was used Number of times VOLUME was used (keys [1] [8]).
20	RETURN ATO ATN:	Returned to AUTO ATTENDANT from logon Number of times [5] [0] was used from mailbox to RETURN to AUTOMATED ATTENDANT level.
21	TIME:	Times TIME STAMP was used Number of times TIME was used (key [8]).

#	Name	Description
22	MULT ADDR:	Messages sent with MORE THAN ONE ADDRESS Number of messages that were directed to MORE THAN ONE address.
23	MSG DELETE:	Messages DELETED Number of messages DELETED — heard to conclusion and EXITED with [9], DELETED because too short, or ERASED. If a message has been sent to more than one address, the message is not deleted (and count accumulated) until all addresses have erased the message.
24	SEC ALL BSY:	Amount of seconds ALL PORTS BUSY Total number of seconds calls were BLOCKED because all VP 100 ports were busy.
25	MSG WT COLLID:	Message Waiting COLLIDED with an incoming call Number of times Message Waiting call COLLIDED with incoming call or did not receive dial tone from PBX.
26	MSG WT CALL:	CALLS MADE by Message Waiting Number of Message Waiting CALLS MADE.
27	TOO SHORT:	Message deleted – TOO SHORT Number of messages DELETED because they were less than 4 seconds in duration.
29	IMMED CALL:	IMMEDIATE CALL used Number of times IMMEDIATE CALL was used (keys [1] [4]).
30	BACKUP LISTEN:	BACKUP while LISTENING to a message Number of times BACKUP was used while listening to a message (key [2]).
31	BACKUP RECORD:	BACKUP while RECORDING a message Number of times BACKUP was used while recording a message (key [2]).
32	RELOAD COUNT:	Times system has RELOADED Number of times the system has RELOADED.
33	RESTART COUNT:	Times system has RESTARTED Number of times the system has RESTARTED.
34	BUSY CALLS:	Auto Attendant calls to BUSY extension Number of calls made to BUSY extensions.
35	NO ANS CALLS:	Auto Attendant calls to extension that DID NOT ANSWER Number of calls made to extensions that DID NOT ANSWER.
36	GREET PLAY:	Greetings PLAYED Number of times GREETINGS were played.
37	GREET RECORD:	Greetings RECORDED Number of GREETINGS recorded.

#	Name	Description
38	VACANT CALLS:	Calls to VACANT extension Number of calls made to extensions that DO NOT EXIST (does not count message waiting calls).
39	UNAVAIL CALLS:	Calls to UNAVAILABLE extension Number of calls made to UNAVAILABLE extensions.
40	ALARM CONFRM:	Alarm calls CONFIRMED Number of Alarm Calls CONFIRMED by pressing the <input type="checkbox"/> upon receipt of Alarm Call.
41	ALARM ATTMPT:	Alarm calls ATTEMPTED Number of calls made ATTEMPTING TO DELIVER Alarm Calls.
42	ALARM NO PORT:	NO PORT AVAILABLE when alarm call was attempted Number of times an Alarm Call could not be made because a Port was NOT AVAILABLE.
43	MSG WT NO PORT:	Message Waiting encountered 3/4 of the PORTS BUSY Number of seconds Message Waiting could not call, and/or could not deliver a Network message because 3/4 or more of all PORTS WERE BUSY (when all ports are configured for Outcall).
44	MSG WT VACANT:	Message Waiting called VACANT extension Number of times Message Waiting called an extension that DID NOT EXIST.
45	CALLS PLACED:	Auto Attendant calls PLACED Number of times the system DIALED an extension number; counts all extensions called.
46	CALLS ANSWRD:	Auto Attendant calls ANSWERED by called party Number of CALLS PLACED that were answered.
47	ATN XFR DIAL 0:	Number of times TRANSFER to intercept by dialing 0 Number of times TRANSFER to intercept because zero was dialed.
48	ATN XFR BY TMO:	Number of times TRANSFER to intercept by time out (no digits dialed) Number of times actually TRANSFERRED to intercept when caller defaulted because no digits were entered. (The difference between peg 48 and peg 138 equals the number of times the Attendant/ Intercept Greeting played.)
49	ALT NO DIAL:	No dial tone on ALTERNATE TRANSFER CODE Number of times NO DIAL TONE was received when attempting the ALTERNATE transfer string.
50	BROADCAST:	Number of BROADCAST messages sent Number of BROADCAST messages sent.
51-58	PORT # CALLS:	Number of CALLS IN – broken down by ports Number of CALLS RECEIVED by PORT, peg 51 = Port 1, peg 52 = Port 2, etc.

#	Name	Description
67	MSG SND FAILED:	Message Send Failed Number of times message failed to be delivered because mailbox full or set not to accept messages.
70	SUBSEQ CALLS:	Number of SUBSEQUENT CALLS Number of mailboxes dialed AFTER PLACING INITIAL CALL.
71	MSG WT BUSY:	Message Waiting calls to BUSY extensions Number of calls Message Waiting placed to BUSY extensions.
72	MSG WT NO ANS:	Message Waiting calls to RING-NO-ANSWER extensions Number of calls Message Waiting placed to RING-NO-ANSWER extensions.
73	MSG WT ANSWER:	Message Waiting calls ANSWERED Number of calls Message Waiting placed that were ANSWERED.
74	NAME RECORD:	NAME messages recorded Number of NAME messages recorded.
75	EXTND FAILED:	SEND failed to EXTENDED MBOX - mailbox full/set to not accept message Number of times a message WAS NOT SENT to an Extended Mailbox because the mailbox was full or set not to accept messages.
76	OFFSITE SETUP:	SET UP Offsite Message Waiting Number of times Offsite Message Waiting digit string was SET UP.
77	MW GOT CX PORT:	Message Waiting called CX/MX port Number of times an extension was called and answered by a VP 100 CX/MX PORT.
78	NET SND ATTMPT:	NETWORK message send ATTEMPT Number of network messages sent ATTEMPTS.
79	NET SND SUCCESS:	NETWORK message send SUCCESS Number of network messages sent successfully.
80	NET SND COLLID:	NETWORK send COLLISION Number of network messages sent ATTEMPTS that COLLIDED with an incoming call.
81-88	# PORT BUSY:	Each peg represents that number of ports found BUSY (in sec) Each peg represents the AMOUNT OF SECONDS that number of ports were busy. (i.e. if peg 82 = 99, 2 ports were busy for 99 seconds.)
97	NET DIG LOST:	DIGIT LOST during NETWORK communication Number of times a DIGIT was LOST OR GARBLED during network communication. (Bad checksum — value of numbers did not add up correctly.)

#	Name	Description
98	AIC GOT CX PORT:	AIC called a CX/MX port (AIC = Assisted Inward Calling) Number of times a CX/MX port answered when the VP 100 was extending a call.
99	POWER FAILED:	POWER FAILED Number of times the VP 100 detected a POWER FAILURE.
100	NET SND BSY:	NET message send – other system BUSY Network message not sent — other system was BUSY (greater than 3/4 of the ports were busy).
113	NET RCV DSK FUL:	NETWORK message receive DISK FULL Number of times received DISK FULL when receiving a network message.
114	NET RCV LONG:	NETWORK message receive HIT BLOCK LIMIT Message being received is LONGER than expected. (i.e. line dropped — end of message not detected.)
115	NET RCV SIL LIM:	NETWORK message received HIT SILENCE LIMIT Network message receive ABORTED due to silence limit being exceeded.
116	NET RCV BUSY:	NETWORK message receive PORTS BUSY Network message attempt received system BUSY (greater than 3/4 ports busy).
117	OFF MW CALLS:	OFFSITE Message Waiting calls PLACED Number of Offsite Message Waiting calls ATTEMPTED.
118	OFF MW ANSWER:	OFFSITE Message Waiting times ANSWERED Number of Offsite Message Waiting Calls calls ANSWERED.
119	OFF MW SPK LIM:	OFFSITE Message Waiting Answered but NO RESPONSE Number of times Offsite Message Waiting calls were answered but the system detected no response after speaking the prompt the maximum number of times.
120	OFF MW PRE FAIL:	OFFSITE Message Waiting pre-digit FAILED Number of times the PRE DIGIT string failed.
121	NET QUA ATTEMPT:	NETWORK Line Quality Test ATTEMPT Network line quality ATTEMPTS.
122	NET QUA FAIL:	NETWORK Line Quality Test FAILED Network line quality FAILURES.
123	NET QUA LOW SIG:	NETWORK Line Quality Signal TOO LOW Network line quality signal too LOW.
124	NET QUA LOW S/N:	NETWORK Line Quality Signal/Noise ratio TOO LOW Network line quality signal/noise ratio too LOW.
125	MSG WT LAMP:	LAMP Message Waiting calls made Number of times a message waiting lamp digit string was ATTEMPTED.

#	Name	Description
126	LIN DRP EVENTS:	LINE DROP events Number of LOOP CURRENT INTERRUPTION (momentary disconnect).
127	INIT DIAL 0:	INITIAL dialed 0 for assistance Number of times a caller dialed 0 IMMEDIATELY after answer.
128	SUBSEQ DIAL 0:	SUBSEQUENT Dialed 0 for assistance Number of times callers dialed 0 AFTER DIALING a mailbox.
129	INIT DIG DIAL:	INITIAL dialed extension or digit Number of times a caller INITIALLY dialed the FIRST DIGIT (1-8) for a defined mailbox or extension in the USER Table.
130	SUBSQ DIG DIAL:	SUBSEQUENT dialed extension or digit Number of times a caller SUBSEQUENTLY dialed a FIRST DIGIT (1-8) mailbox or extension defined in the USER Table.
131	INIT DIAL #:	INITIAL PRESSED # to logon Number of times caller INITIALLY dialed # as a first digit, indicating a request to logon to a mailbox.
132	SUBSQ DIAL #:	SUBSEQUENT PRESSED # to logon Number of times a caller SUBSEQUENTLY dialed # after attempting to call another mailbox.
133	INIT DIAL *:	INITIAL PRESSED * for Quick Message Number of times * was dialed IMMEDIATELY after the system answered.
134	SUBSQ DIAL *:	SUBSEQUENT PRESSED * for Quick Message Number of times * was SUBSEQUENTLY dialed after other digits were dialed.
135	CALLER WAS NET:	Caller was NETWORK Number of times the caller was from another network system.
137	CALL XFR TO NET:	Caller was TRANSFERRED OUT to Network Number of calls TRANSFERRED out to the network.
138	INL DFLT INTCP:	INITIAL DEFAULT to Intercept The number of times a caller listened to the Company Greeting, did nothing and DEFAULTED to the INTERCEPT extension. The call may not actually be transferred to the intercept extension. For example, the greeting may have played or the caller may have abandoned. (The difference between peg 48 and peg 138 equals the number of times the Attendant/Intercept Greeting played.)
139	SUB DEF INTCP:	SUBSEQUENT DEFAULT TO Intercept – caller made too many errors Number of times callers were TRANSFERRED to the INTERCEPT extension after dialing too many non-existent extensions.

#	Name	Description
140	INL LFT MSG:	INITIAL left message at tone Number of callers that left a MESSAGE at the tone.
141	SUBSQ LEFT MSG:	SUBSEQUENT left message at tone Number of times a message was left AFTER CALLING a different Mailbox.
142	MSG AFT GRT:	Message received after GREETING Number of messages left AFTER GREETING played.
143	MSG RCV FRM NET:	Message received from NETWORK Number of messages RECEIVED from the NETWORK.
144	NORMAL GRT PLA:	Normal GREETING PLAYED, no call placed Number of times a GREETING PLAYED and no additional digits were dialed.
145	MSG CRE NOT SNT:	Message CREATED BUT NOT SENT, (error - no address, etc.) Number of messages NOT SENT because there was absolute silence, no address was entered, or the message was deleted before sent. A message is defined as any message, greeting, or name.
146	PARTL EXTENS:	INCOMPLETE extension number dialed Number of times caller FAILED TO FINISH DIALING an extension number.
152	RS-232C MW ON:	Command sent over RS-232C to PBX to TURN ON Message Waiting Number of times a command was sent over RS-232C to PBX to TURN ON Message Waiting light (PBX Integration only).
153	RS-232C MW OFF:	Command sent over RS-232C to PBX to TURN OFF Message Waiting Number of times a command was sent over RS-232C to PBX to TURN OFF Message Waiting light (PBX Integration only).
154	RS-232C IN:	INFORMATION sent from PBX over RS-232C Received information from PBX over RS-232C (PBX Integration only).
155	RS-232C UNKNWN:	Received INVALID/UNEXPECTED response from PBX over RS-232C Received invalid or unexpected response from PBX over RS-232C (PBX Integration only).
156	INTG BUSY FWD:	INTEGRATION — BUSY forward PBX forwarded call when BUSY was encountered.
157	INTG RNA FWD:	INTEGRATION — RING-NO-ANSWER forward PBX forwarded call when RING-NO-ANSWER was encountered.

#	Name	Description
158	INTG ALL FWD:	INTEGRATION – ALL forward Integration — PBX immediately forwarded all calls. or forwarding status unknown.
159	INTG DIRECT:	INTEGRATION – DIRECT call Integration — Direct station call to LOGON.
160	INTG NO CALL REC:	INTEGRATION – NO CALL RECORD Integration — Number of times received a call on an integrated system but received no call record or it was late.
161	XFR PA:	TRANSFER TO PERSONAL ASSISTANT Number of times caller dialed ☐ or was automatically transferred to a Personal Assistance position.
162	PA UNAVAIL:	PERSONAL ASSISTANT Unavailable Number of times a Personal Assistant did not answer due to Busy, Ring-No-Answer, or telephone forwarded back to the VP 100.
167	PDL BAD ADDR:	Number of times a message was sent to a Personal Distribution List that contained an invalid mailbox as one of its members.
170	REPLY ADDR:	Number of times reply to additional addresses was used.
171	MSG PRIV:	Number of times mark a message PRIVATE was used.
172	FUTURE DELIV:	Number of times FUTURE DELIVERY message was used.
173	NAME DIR USED:	Number of times the NAMES DIRECTORY mailbox was accessed.
174	PDL USED:	Number of times a PERSONAL DISTRIBUTION LIST was used.
175	NET P2 ATTEMPT:	PROTOCOL 2 message attempt Number of PROTOCOL 2 messages attempted.
176	NET P2 SUCCESS:	PROTOCOL 2 message sent Number of PROTOCOL 2 messages successfully sent.
190	INTG PBX RST:	INTEGRATION — PBX RESTART PBX notified the VP 100 of a restart. Message waiting lamps are relit.
191	INTG REC-CALL	INTEGRATION — RECORD CALL-IN-PROGRESS Record call-in-progress requested by user.
192	INTG FORCED FWD	INTEGRATION — FORCED FORWARD A call was forced to forward to the VP 100.
193	INTG UNK FMT	INTEGRATION — UNKNOWN FORMAT Unknown format for call record received.
194	INTG PREM END	INTEGRATION — PREMATURE END Premature end of call record.

#	Name	Description
195	INTG BAD FD	INTEGRATION — BAD FIRST DIGIT Bad first digit in VAR field.
196	INTG DIG NOM	INTEGRATION — DIGITS NOMATCH Digits do not match call format.
197	TO DO QUEUE	TODO QUEUE TOO FULL (Release 6.1 and later) Number of times TODO QUEUE too full (3/4) to take a message.

Figure 6-2 represents the Traffic Peg Count Table. In the representation, names are used. In the actual table, the number of occurrences appears. The pegs are arranged in a table 10 columns wide. The pegs are numbered from the top left corner across the first row: 0, 1, 2... The second row begins with 10, 11, 12...

	0	1	2	3	4	5	6	7	8	9
00	■	NUM CALLS	QUICK MSG	MSG CREATE	LISTEN	LAST	DIST MSG	SAVE	ERASE	LOGON
10	EXIT	ALRDY LOGON	ERROR DROP	NO DIAL	MSG AFT CALL	VPERR	NEW	FOWRD	REPLY	VOLUME
20	RETURN ATO ATN	TIME	MULTI ADDR	MISC DELETE	SEC ALL BSY	MSG WT COLID	MSG WT CALL	TOO SHORT	■	IMMED CALL
30	BACKUP LISTEN	BACKUP RECORD	RELOAD COUNT	RESTART COUNT	BUSY CALLS	NO ANS CALLS	GREET PLAY	GREET RECORD	VACANT CALLS	UNAVAIL CALLS
40	ALARM CONFRM	ALARM ATTMPT	ALARM NO PORT	MSG WT NO PORT	MSG WT VACANT	CALLS PLACED	CALLS ANSWRD	ATN XFR DIAL 0	ATN XFR BY TMO	ALT NO DIAL TN
50	BROAD CAST	PORT 1 CALLS	PORT 2 CALLS	PORT 3 CALLS	PORT 4 CALLS	PORT 5 CALLS	PORT 6 CALLS	PORT 7 CALLS	PORT 8 CALLS	■
60	■	■	■	■	■	■	■	MSGND FAILED	■	■
70	SUBSEQ CALLS	MSG WT BUSY	MSG WT NO ANS	MSG WT ANSWER	NAME RECORD	EXTND FAILED	OFFSITE SETUP	MW GOT CX PORT	NET SND ATTMPT	NET SND SUCCESS
80	NET SND COLLID	1 PORT BUSY	2 PORTS BUSY	3 PORTS BUSY	4 PORTS BUSY	5 PORTS BUSY	6 PORTS BUSY	7 PORTS BUSY	8 PORTS BUSY	■
90	■	■	■	■	■	■	■	NET DIG LOST	AIC GOT CX PORT	POWER FAILURE
100	NET SND BUSY	IMMED INTCP	RNA INTCP	BUSY INTCP	ERROR INTCP	INVALID BUS MSG	RQST CODE	RQST TABLES	RQST IMMED	DID/E&M ERROR
110	DUPLI FOUND	BUS IN MSGS	BUS OUT MSGS	NET RCV DSK FUL	NET REV LONG	NET RCV SIL LIM	NET REV BUSY	OFF MW CALLS	OFF MW ANSWER	OFF MW SPK LIM
120	OFF MW PRE FAIL	NET QUA ATTEMPT	NET QUA FAIL	NET QUA LOW SIG	NET QUA LOW S/N	MSG WT LAMP	LN DROP EVENT	INITIAL DIAL 0	SUBSEQ DIAL 0	INITIAL DIG DIAL
130	SUBSQ DIG DIAL	INITIAL DIAL =	SUBSEQ DIAL =	INITIAL DIAL *	SUBSEQ DIAL *	CALLER WAS NET	CALLER WAS DID/E&M	CALLER XFR TO NET	INL DFLT INTCP	SUB DEF INTCP
140	INL LFT MESSAGE	SUB LFT MESSAGE	MSG AFT GREETING	MSG RCV FRM NET	NORMAL GRT PLA	MSG CRE NOT SENT	PARTL EXTENS	■	■	■
150	■	■	RS232 MW ON	RS232 MW OFF	RS232 INFO	RS232 UNKNWN	INTG BUSY FWD	INTG RNA FWD	INTG ALL FWD	INTG DIRECT
160	INTG NO CALL REC	XFR PA	PA UNAVAIL	NO PRT AVAIL	PORT STATUS CONFLICT	RESET INTEGR	DOWNLD CODE	PDL BAD ADDR	MW ON	MW OFF
170	REPLY ADDR	MSG PRIV	FUTURE DELIV	NAME DIR USED	PDL USED	NET P2 ATTEMPT	NET P2 SUCCESS	■	■	■
180	■	■	■	■	■	■	■	■	■	■
190	INTG PBN RST	INTG REC-CALL	INTG FORCED FWD	INTG UNK FMT	INTG PREM END	INTG BAD FD	INTG DIG NOM	QUE 100 FULL	■	■

Figure 6-2 Traffic Peg Count Table

■ = Not Used

BOOT ROM DIAGNOSTICS

When the VP 100 reloads after input power is applied, the processor on the Main Board starts its bootup process. This process includes some diagnostic tests that verify that the hardware is working correctly.

The complete message shown below is printed, except when an error is detected by the boot ROM diagnostics. If errors are encountered, an error message is printed.

```
TESTING HARDWARE...
TEST COMPLETE
BOOTING FROM HARD DISK
```

```
----- SYSTEM SOFTWARE RELEASE AX.X.X (MM/DD/YY) -----
DAY MM/DD/ HH:MM:SS YYYY ID:000 S/N:000000 PBX:00
```

```
(MODEM ENABLED) LAST LOGIN: 00/00 00:00
@PREPARING DISK TO READ DATA
DISK READY
RUNNING DISK REBUILD... DONE
INITIALIZING PORTS...DONE
```

There are several possible error messages that can be encountered during the bootup process. The messages and the required actions are:

Message	Required Action
ERROR 1. PROBABLE CAUSE: MAIN BOARD	Replace the Main Board and metal case.
ERROR 2. PROBABLE CAUSE: HARD DISK	Replace the hard disk.
ERROR 3. PROBABLE CAUSE: DISK DATA	Restore system software or restart the procedure that was aborted.
*** POWER FAIL ***	Ignore if power was turned OFF. Otherwise, replace the power supply.

Refer to the VP 100 Installation section in the INSTALLATION chapter for details of how to connect a local terminal to observe the bootup process.

6.7 HARDWARE ERRORS

The VP 100 logs each hardware error, along with its date, time, and type, in the Hardware Error Table. This section explains how to read and interpret the information in the Hardware Error Table. It also suggests some probable causes and remedies.

- To LIST the Hardware Error Table, from the @ prompt, enter:

```
LIST HARDWARE or (L H) 
```

- To CLEAR the Hardware Error Table, from the @ prompt, enter:

```
CLEAR HARDWARE or (C H) 
```

Hardware Error Table Example:

```
TYPE SLOT CHNL PRIO DATE TIME #BAD DATA1 DATA2 DATA3 DATA4
## ## # # mm/dd hh:mm ## ## ## ## ##
```

The Hardware Error Table field descriptions are as follows.

TYPE	Range 1-nn. Indicates which hardware assembly detected an error or failed to perform a function.
SLOT	Where applicable, shows slot number in which PCA was installed when the error was reported.
CHNL	Indicates the number of the failed channel.
PRIO	Range 1-3, with 1 the lowest. Indicates the priority of the error. Always correct the higher priority errors first. Priority 3 errors attempt an alarm call immediately. Priority 2 attempts an alarm call after 25 failures of exactly the same type, (including data fields). Priority 1 attempts the alarm call after 50 failures of the same type.
DATE	Shows the month and date the error was first detected.
TIME	Shows the hour and minute the error was first detected, using a 24-hour clock.
#BAD	Indicates the number of times the error occurred (up to 99 times).
DATA1-DATA4	These fields contain information used by Toshiba when an assembly is returned for repair.

■ Hardware Error Types

The following table outlines the probable cause and suggested remedy for errors. Clear errors with the highest priority first. Priority 3 is the highest; 1 is the lowest.

Table 6-2 Hardware Error Types and Remedies

Error Type:Name	Source	Remedy	Priority
2: Tone Reflection	Selftest or TEST LINE 1.	Clear Hardware Error Table. Run TE L 1. If one channel fails, disconnect line cord and run TE L 1 again . If errors repeat, replace the LI. If all lines fail, check the configuration or MB as possible cause. If error repeats, replace MB and metal case.	2
3: Prompt	Selftest or TEST LINE 1.	Same as error 2.	2
4: DTMF Reflection	Selftest or TEST LINE 1.	Same as error 2.	2
5: Ring Through	TEST LINE 2.	Verify extension numbers in the PORT Table are correct. Could be a problem in PBX extensions or LIC.	2
9: Hard Disk	Error detected or reported by HD.	Replace HD. Re-boot the system if error repeats, replace MB and metal case.	3
10: Disk is Getting Full	Percentage of storage has reached threshold.	DATA1 = 01, alarm threshold has been reached. Increase alarm threshold or erase some messages.	3
11: Disk Initiaion Failure	Error detected while initializing the HD.	Replace the hard disk. If error repeats, replace MB and metal case.	3
12: CPU Parity	Parity error detected on the MB.	Replace power supply. If error repeats, replace MB and metal case.	3
15: System Status Error	<p>Temperature. If DATA1 = 1, the inner cabinet temperature has either risen above 113 F (+5 C) or has dropped below 41 F (5 C).</p> <p>LIC</p> <p>Voltage If DATA1 does not equal 1 or 10, then one of the system voltages is out of range.</p>	<p>Check that the room temperature is within the range of 65 F-80 F (18 C-27 C). Also check tha the fan is working properly. If error persists, replace MB and metal case.</p> <p>If DATA1 = 10 , the number of LICs does not correspond to the number of ports defined for System Parameter 4.</p> <p>Replace the power supply. If the error repeats, replace MB and metal case.</p>	3

Table 6-2 Hardware Error Types and Remedies (continued)

Error Type:Name	Source	Remedy	Priority
16: HD =1 PROMPTS	Defect in prompt area logged into Defect List.	Restore system prompts from the CAT to the HD. Refer to the PROCEDURES chapter. If errors repeat, replace the HD. If the error repeats, replace MB and metal case.	3
17: HD Defects DATA-1 = ERROR CODES DATA-2 = DISK # DATA-3 = NOT USED DATA-4 = NOT USED	Too many defects, or defects in a critical area.	Replace the hard disk with a spare provided by Toshiba. Possible cause: HD, VCU. Replace one at a time. If error repeats, contact Toshiba technical support.	3
18: HD Relocate Error	Failed attempt to relocate a bad sector.	Replace HD. If the error repeats, replace MB and metal case.	3
23: PBX Integration	Problem with the RS-232C link with the PBX.	Check the RS-232C connections. If error repeats, check the PBX configuration.	3
24: PBX Integration DATA-1 09 GOT CALL, BUT NO CALL RECORD (OR CALL RECORD WAS TOO LATE) DATA-2 = PORT # CALL CAME IN ON DATA-3 = NOT USED DATA-4 = NOT USED The call rang in on the Port, but the call record was not received on the RS-232C link. Therefore, the VP 100 port answered the call after 5 rings and played the generic company greeting. REMEDY: Check the RS-232C connection to the PBX. If the cabling is correct and the problem persists, call Toshiba technical support	Problem with the RS-232C link with the PBX.	This error pertains only to RS-232C integrated systems. The following outlines the probable cause and suggested remedy for that error.	2
26: Hard Disk Error	HD was unable to handle a disk error properly.	Replace the HD. If the error repeats, replace MB and the metal case.	3

Table 6-2 Hardware Error Types and Remedies (continued)

Error Type:Name	Source	Remedy	Priority
27: Option Control Chip Error	Problem with the Option Control Chip.	Contact Toshiba technical support.	3
<p>DATA-1 = ERROR CODE: 01 = OCC READ ERROR (OCC CHIP PROBABLY BAD OR MISSING) 02 = OCC CHECKSUM ERROR 03 = SERIAL NUMBERS ON THE OCC AND SECTOR 3 ARE DIFFERENT 04 = CONTENTS OF THE OCC AND SECTOR 3 ARE DIFFERENT 05 = OCC SERIAL NUMBER IS ALL ZEROES 06 = SECTOR 3 READ ERROR 07 = SECTOR 3 CHECKSUM ERROR</p> <p>DATA-2 UNUSED DATA-3 UNUSED DATA-4 UNUSED</p>			
29: DMA Timeout	Non-maskable interrupt.	Contact Toshiba technical support.	3
30: Arbitration Timeout	Non-maskable interrupt.	Contact Toshiba technical support.	3
37: Ring Detection Failure	TEST Line 4	Ensure that the PBX is properly connected to the LIC, and verify that the PBX type provides sufficient loop current for the test. If the test still fails, replace the LIC.	2
<p>DATA-1 = UNEXPECTED EVENT TYPE DATA-2 = NOT UNUSED DATA-3 = NOT UNUSED DATA-4 = NOT UNUSED</p>			

6.8 VP 100 SYSTEM DIAGRAMS

Figure 6-3 through Figure 6-5 illustrate various views of the VP 100 cabinet.

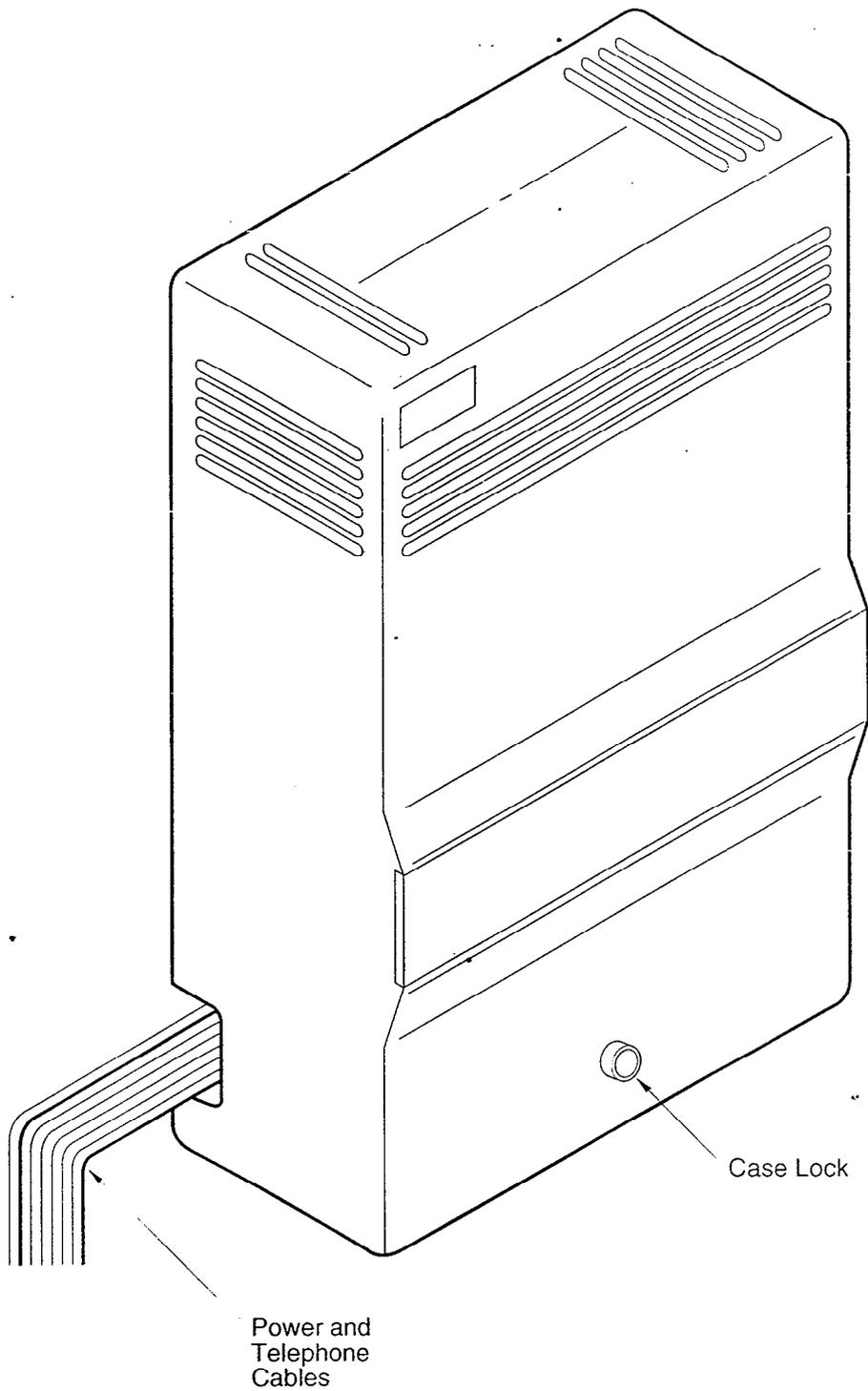


Figure 6-3 The VP 100 Cabinet Front View

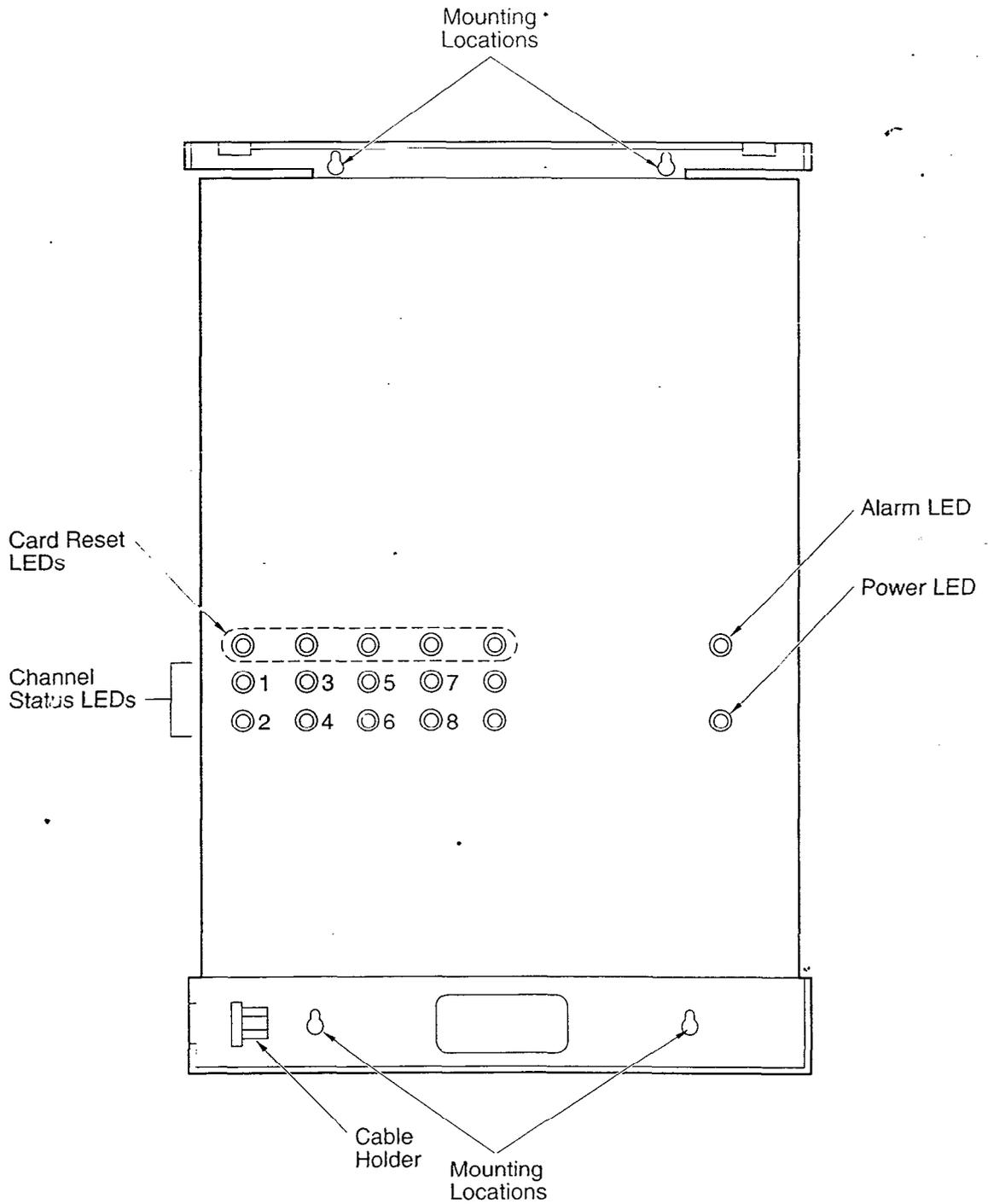


Figure 6-4 The VP 100 Front View of Metal Enclosure

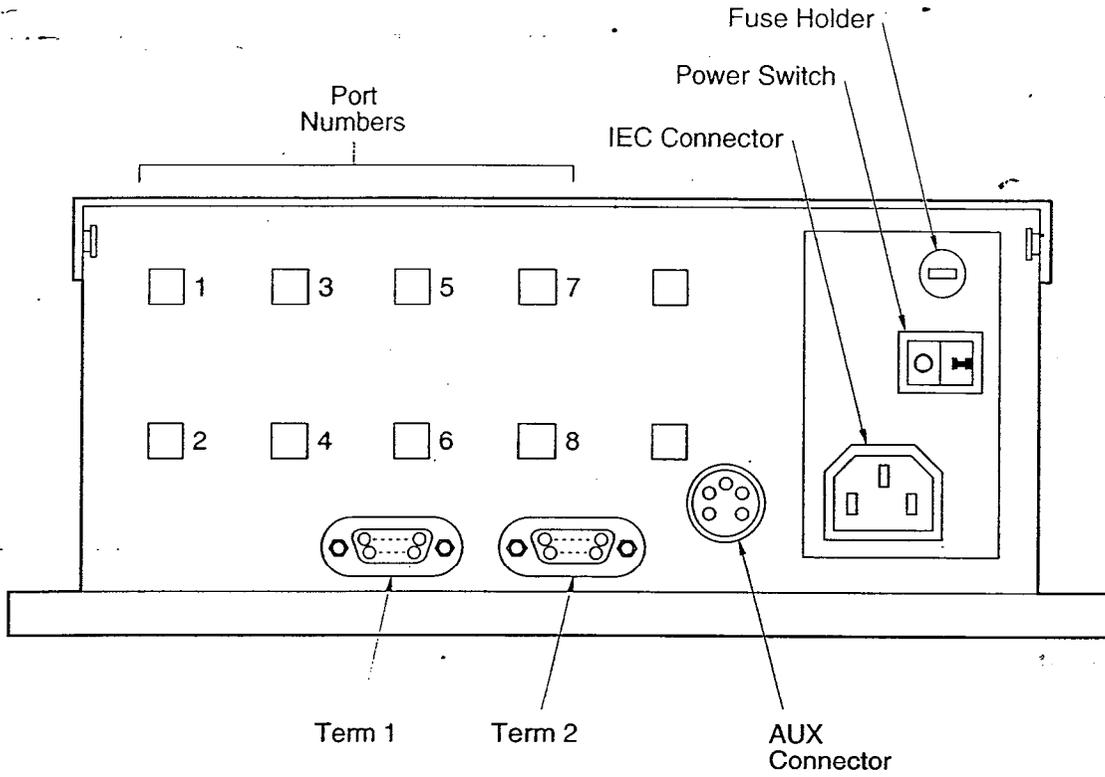


Figure 6-5 VP 100 Bottom View of Metal Enclosure

6.9 HARDWARE REPLACEMENT

The following sections explain how to safely replace sub-assemblies in the VP 100 cabinet. The sub-assemblies do not contain any replaceable components. Replacing, attempting to replace, or modifying any of the sub-assemblies voids all warranties. An assembly may be replaced by the manufacturer with an equivalent assembly.

► WARNING ◀

Use of a wrist grounding strap prevents damage to sensitive electronic components. Before handling any electronic equipment, including the power supply and cables, attach one end of the strap around your wrist and the other end to any unpainted surface of the VP 100 cabinet.

■ Access to the VP 100 Inner Components

The following are the instructions for removing the outer plastic cover and the inner metal case. Specific instructions for replacing hardware components are in this chapter.

5. Unlock and remove the plastic cover. The plastic cover swings up and is removed at the hinges.
6. Turn OFF the input power switch located at the right side on the bottom of the VP 100 cabinet.
7. Loosen the four screws at the sides of the VP 100 metal case and swing the metal cover down.

■ Closing the VP 100 Metal and Plastic Cases

To close the case after replacing hardware components:

1. Close the metal case and tighten the four retaining screws.
2. Connect the input line cord.
3. Turn ON the input power.
4. Observe system startup messages on a terminal.
5. Rotate the plastic case down over the metal cover and lock it in place.

■ Component Locations

The following diagrams illustrate the components and their mounting locations, and the components with their connectors. Refer to these drawings when reading the replacement instructions in the following sections.

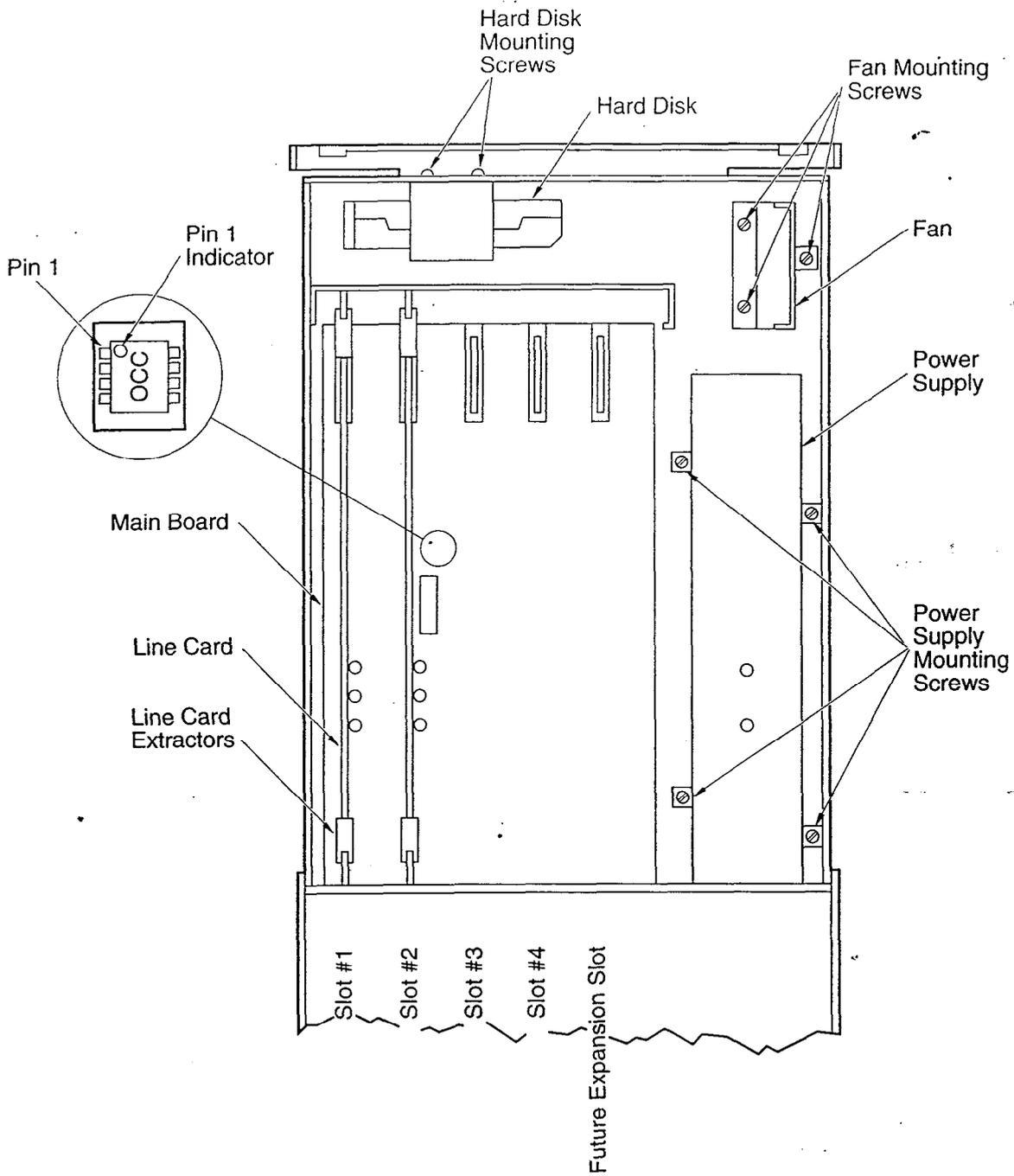


Figure 6-6 The VP 100 Components and Their Mounting Locations

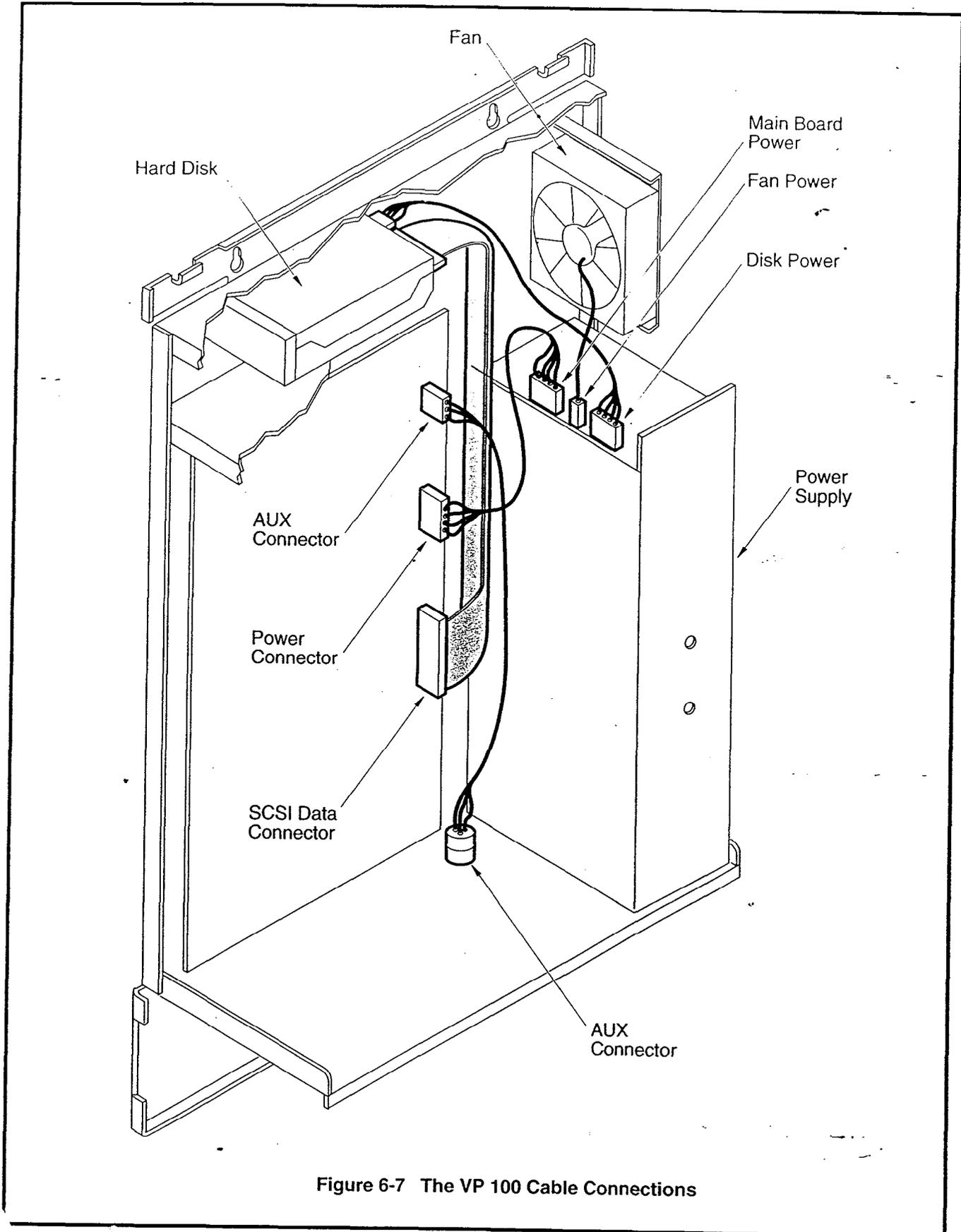


Figure 6-7 The VP 100 Cable Connections

■ Line Interface Card (LIC) Replacement

If a LIC problem occurs, the card must be returned to Toshiba for replacement. Components on the LIC are not replaceable.

► WARNING ◀

The VP 100 **must** be turned OFF before inserting or removing a LIC.

The procedures to remove and add a LIC are below. Be careful not to touch the components on the LIC. Handle the card carefully, touching it only on the sides and using the extractors. Use a wrist grounding strap to prevent damage to sensitive electronic components.

Removing LIC

The procedure to replace a Line Integration Card is as follows:

1. Forward all ports by entering, at the @ prompt: TE C 1.
2. Remove the outer covers to gain access to the inner components. Be sure to turn OFF the input power before opening the metal case.
3. Remove the modular line cords.
4. Use the two white extractors on the LIC to lift the board out of the card cage. Between the ports on the LIC is a piece of grounding metal. When removing a LIC, be careful not to snag or bend it.

Installing LIC

1. Position the LIC in the the guides mounted on the card cage. Use the two white extractors on the LIC to push the board into the card cage. If the LIC does not easily snap into the connector, rather than applying unnecessary force, try to realign the LIC in the guides.
2. Insert the modular line cords from the PBX.
3. Close the metal and plastic cases.
4. Test to be sure the VP 100 and the new LIC are operating correctly.

If Adding Ports:

1. Enter the UPDATE program.
2. Modify System Parameter 4 to reflect the number of ports.
3. Modify the PORT Table — add required information for new ports.
4. Exit UPDATE and perform the Configuration Backup procedure.
5. At the @ prompt, type: RESTA .

6. When the VP 100 comes up, logon by entering the password.
7. Verify that the additional ports exist. At the @ prompt, enter: PS.
8. Test the new LIC. At the @ prompt, enter: TE L 1.
9. Test the new ports for call processing and message taking capabilities.
10. Add the new extensions to the existing PBX hunt group.

■ Hard Disk Drive (HD) Replacement

Hard disk drives are initially shipped installed in the cabinet. When a replacement is required, certain procedures must be followed to restore a system to normal operation. The following describes the physical aspects of disk drive, voice storage capacities, and replacement procedures. Refer to PROCEDURES, Hard Disk Drive Replacement Procedures in this manual for detailed instructions when restoring the system to normal operation after replacing a hard disk drive.

All hard disk drives are shipped installed in their mounting bracket (see Figure 6-6).

☞ When removing or shipping the disk drive for any reason, always remove the complete assembly. Altering or tampering with the disk drive voids all warranties.

Table 6-3 Disk Drive Assembly Numbers		
VP 100 Storage (hours)	Maximum Ports	Disk Drive Part No.
2.5	8	100HD-2.5
6.0	8	100HD-6
11.0	8	100HD-11

Removing Hard Disk Drive

To remove the hard disk drive, follow the procedures described below.

- ☞ Only hard disk drives supplied by **Toshiba** can be used to replace or to upgrade a system.
1. Remove the outer cover to gain access to the inner components. Be sure to turn OFF the input power before opening the metal case.
 2. Loosen the four 8-32 Phillips head screws securing the disk drive at the top exterior of the VP 100 cabinet.
 3. Remove the hard disk drive from the VP 100 cabinet. This allows easy access to the cables.

4. Remove the disk drive SCSI data cable.
5. Remove the disk power supply cable.

Installing Hard Disk Drive

To replace the hard disk drive follow the procedures described below.

1. Connect the disk power supply cable.
2. Connect the disk drive SCSI data cable. The cable is keyed to only mount in one direction; you cannot connect it incorrectly.
3. Install the hard disk drive in the upper position by positioning the drive with cable connectors facing to the right.
4. Raise the drive until the four holes in the shock mount align with the holes in the cabinet top wall.
5. Tighten the four 8-32 x 3/8 screws.
6. Close the metal and plastic cases.
7. Refer to PROCEDURES for the correct Hard Disk Drive procedure to follow.

■ **Power Supply (PS) Replacement**

There are no adjustments on the power supply. There is a replaceable fuse located on the bottom of the cabinet near the power switch (refer to Figure 6-5). If the Boot ROM diagnostics report that the power supply is bad or if the VP 100 does not power on, check the fuse. If the fuse is OK, replace the power supply.

However, whenever the input power switch is turned OFF, the following message appears:

```
*** POWER FAIL ***
```

In this case, the error message should be ignored.

Removing Power Supply

In the event of damage or malfunction, the PS may require replacement. The following describes how to remove the PS safely.

1. Remove the outer cover to gain access to the inner components. Be sure to turn OFF the input power before opening the metal case.
2. Remove the input power cord.
3. Loosen the PS retaining screws and remove the power supply. This allows easy access to the DC power cables.
4. Disconnect the disk power cables at the power supply. There are three power cables that go to the MB, the HD, and the fan.

Installing Power Supply

To install the PS safely, perform the steps in the following order.

1. Make sure the input power switch on the PS is turned OFF.
2. Place the PS into the VP 100 cabinet.
3. Reconnect the three DC power cables to the MB, the HD, and the fan.
4. Tighten the four PS retaining screws.
5. Connect the input power cord.
6. Close the metal and plastic cases.

When the system is up, check for proper operation. Clear the Hardware Error Table before starting the checkout. List the Hardware Error Table when the checkout is completed. Verify that no errors were reported by the system diagnostics.

■ Fan Replacement

Removing Fan

1. Remove the outer cover to gain access to the inner components. Be sure to turn OFF the input power before opening the metal case.
2. Remove the input power cord from the PS.
3. Disconnect the fan DC power cable at the power supply.
4. Loosen the three fan retaining screws and remove the fan.

Installing Fan

1. Verify that the input power switch on the PS is turned OFF.
2. Connect the thin connector to the PS.
3. Place the fan into the VP 100 cabinet.
4. Tighten the three fan retaining screws.
5. Close the metal and plastic cases.

■ Main Board (MB) Replacement

If a bad Main Board is suspected, the metal case including the MB must be replaced. Remove the hard disk, OCC, power supply, fan, and all line cards from the metal cabinet. Place them in a protected environment (electrostatic bag) until the replacement metal case arrives.

► WARNING ◀

The Main Board is not to be removed from the metal case. Doing so can cause damage to the Main Board or to the connectors.

■ Option Control Chip (OCC) Replacement

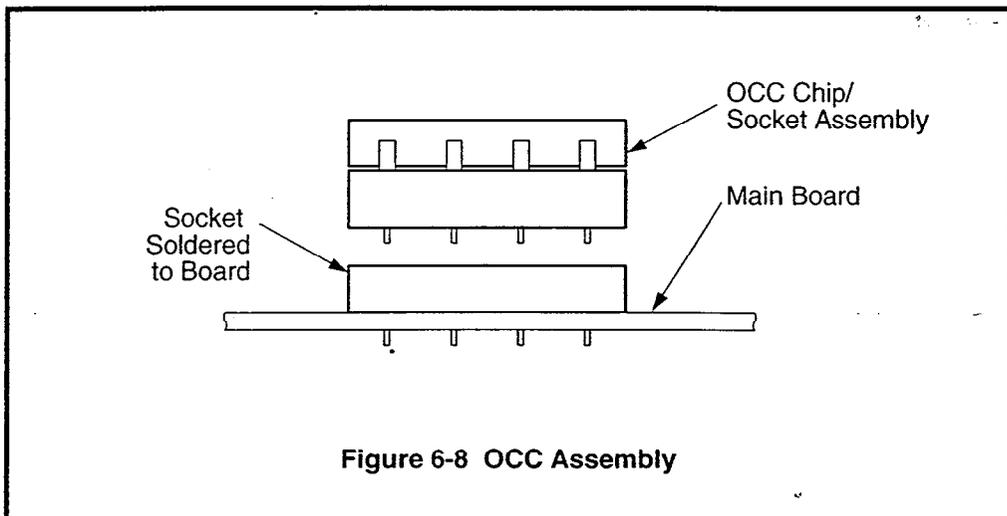
The OCC is the component that contains the features that each VP 100 is equipped with. The OCC assembly is an 8-pin integrated circuit that is inserted into a socket soldered onto the Main Board.

The OCC must always remain with the system it was purchased for. If a Main Board is being replaced, the OCC must be removed from its socket and placed into the socket on the Main Board of the replacement cabinet. It is recommended that you use an IC puller or a small screwdriver to **carefully** pry the OCC from the Main Board. If a pin is broken or bent during removal, a new OCC must be ordered.

If the OCC goes bad, the system still operates since the features are also stored on disk. However, you can not get into the UPDATE program; a new OCC must be ordered. OCC failure or malfunction is reported in the Hardware Error Table.

The OCC must be properly placed on the board; it is not keyed. Refer to Figure 6-6 for proper alignment.

Figure 6-8 shows the OCC assembly. When removing the OCC from the Main Board, do not take it out of the socket assembly.



6.10 VP 100 COMPONENT DESCRIPTIONS AND PART NUMBERS

Component	Part Number
Metal case with Main Board and cable	200-0147-001
Cable — CAT Interface	510-0326-001
Cable — Terminal Interface	510-0327-001
Fan	200-0156-001
Hard Disk — 2.5 hour	100HD-2.5
Hard Disk — 6.0 hour	100HD-6
Hard Disk — 11.0 hour	100HD-11
Line Card	VP-2P
Option Control Chip	152-0709-001
Power Supply	200-0144-011

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INTRODUCTION

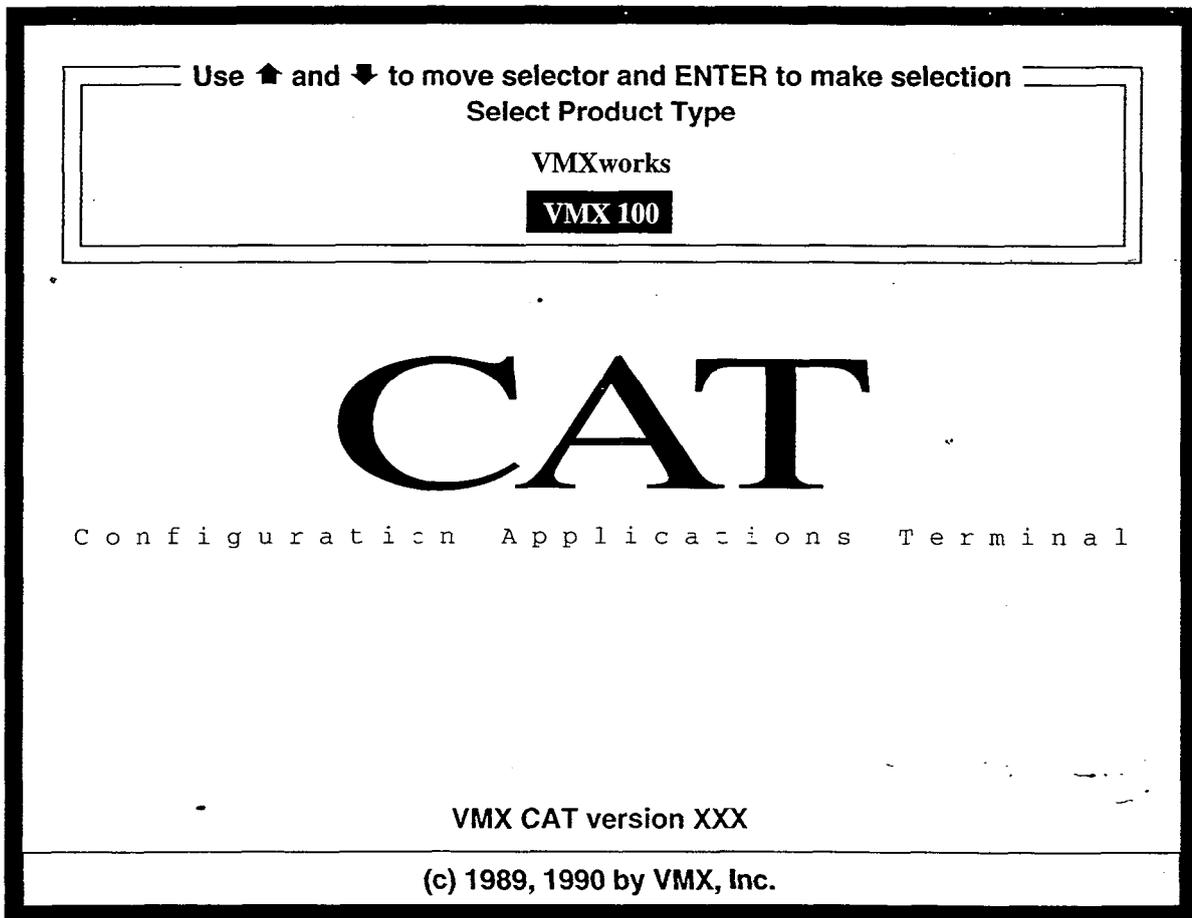
This chapter explains the VP 100 procedures available through use of the Configuration Applications Terminal, referred to as the CAT. The VP CAT menu option screens and the VP 100 procedures are described. CAT hard disk drive procedures are also described.

The CAT is used to initiate the procedures described in this chapter. The CAT is an IBM compatible PC with a floppy drive and an internal hard disk drive.

- The CAT floppy drive is used to transfer programs and files to and from the CAT hard disk drive.
- The CAT hard disk drive is used to store the CAT program, VP 100 system software, prompts, and backed up system configurations. It is also used when transferring programs and files to and from the VP 100.

Most standard ASCII data terminals that meet EIA RS-232C specifications can be used to communicate with the VP 100. These ASCII terminals can be used to access all configuration, reporting, and diagnostic programs on the VP 100.

The CAT is used with multiple Toshiba products. If the CAT hard disk drive contains information for more than one product type, the following screen appears when the CAT is first turned ON. It does not appear if only one product type is installed. This screen allows you to select the Toshiba product being used.



This chapter contains the following information.

CAT Menus	This section explains the Select System screen options and the Help, Exit, and Terminal menus of the CAT program.
Backup Procedures	This section explains how to backup a VP 100 System Configuration and Greetings, Names, Scripted, and Sequential Messages (GNSSM). It also explains how to archive a VP 100 system to floppy diskette.
Restore Procedures	This section explains how to recover a backed up VP 100 system from floppy diskette. It also explains the following procedures: <ul style="list-style-type: none">• Restore System Configuration.• Restore GNSSM.• Restore System Software.• Restore System Prompts.• Add a second language (Release 6.1 or later).
VP 100 Hard Disk Replacement	This section explains how to replace a hard disk drive in a VP 100. The drive may need to be replaced when specific Boot ROM or hardware errors occur.
VP 100 Hard Disk Upgrade	This section explains how to upgrade a VP 100 disk drive to a drive with increased capacity, which will provide additional hours of voice message storage.
VP 100 System Software Update	This section explains how to update a VP 100 system to a new release of system software.
Session Review	This section provides information about session logs captured during communications with a VP 100. Also described are procedures for saving, deleting, viewing, and printing the files containing a record of session activity.
CAT Hard Disk Drive Operations	This section explains the procedures to remove a VP 100 system from the CAT hard disk drive, and provides guidelines for CAT hard disk drive maintenance.
Appendix A	A sample listing of System Serial number subdirectories.
Appendix B	The Data Transfer Messages are listed.

CONVENTIONS:

To indicate the difference between the text in this chapter, the following conventions are followed.

Text This is normal text in this chapter.

VP 100 and DOS system prompts

The VP 100 system and DOS prompts are represented in this type:

```
C:\VMXCAT>
```

VP 100 screen sample

The VP 100 screens are represented in the following type face and are surrounded by gray shading:

```
-----SYSTEM SOFTWARE  RELEASE A.X.X.X. (MM/DD/YY)-----  
DAY MM/DD HH:MM:SS YYYY NAME ID:XXXXXX S/N:XXXXXX PBX:XX
```

User entries within VP 100 screens

The VP 100 system and DOS commands that you type are represented in this type:

```
.M USER
```

```
.M USER
```

Enter current MAILBOX number.

```
:500
```

Enter each user's MAILBOX and COS. Enter as:

Mailbox,COS (Mailbox=1-8 digits, COS=0-127)

User's EXTENSION will be set to match MAILBOX.

```
MOD:500,0
```

CAT Menus

The names of CAT Menus are represented in this type:

Terminal Menu

 The various screens described in this chapter appear ONLY when using the CAT.

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Commonly Used DOS Prompts

DOS provides a prompt to indicate when it is ready to receive and process commands. The following are examples of DOS prompt information:

<u>Prompt</u>	<u>Description</u>
C:>	DOS prompt, not indicating which directory is selected. This prompt will most likely appear if the VP CAT software has not been installed or if the PC was not rebooted after VP CAT software was installed.
C:\>	DOS prompt with the root directory selected.
C:\VMXCAT>	DOS prompt with the VP CAT directory selected.

Moving from the Select System screen to the CAT menus

- With the **Select System** screen displayed on the CAT press **Escape** .
 - Hold down the **Alt** key and press **H**. The CAT menu appears with the Help option selected.
 - Use the left and right arrow cursor control keys to select the desired menu option.
-

Moving from the VP 100 screen to the CAT menus.

Hold down the **Alt** key and press the first letter of the VP CAT menu item you wish to select. The menu bar appears at the top of the screen with the selected menu item highlighted in reverse video:

Alt H	Help .
Alt E or Alt X	Exit the CAT program and return to the DOS prompt.
Alt T	Terminal (VP CAT activities).
Alt B	Backup information from the VP 100.
Alt R	Restore information to the VP 100.
Alt U	Update the VP 100 system software.

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The following is a brief description of the VP CAT batch file commands. In the DOS command column, XXXXXX represents the system serial number, and YY represents the Log file number. All commands are typed into the DOS command processor when the following DOS prompt is displayed: C:\VMXCAT>

Desired Action	DOS Command	Description
Archive to floppy	SYS_BACK XXXXXX <input type="text" value="Enter"/>	Command used to archive (backup) a VP 100 system to floppy diskette.
Delete a system	SYS_DEL XXXXXX <input type="text" value="Enter"/>	Command used to delete (remove) a VP 100 system from the hard disk of the PC. Should be used only after archiving to a floppy diskette.
Recover from floppy	SYS_REST XXXXXX <input type="text" value="Enter"/>	Command used to recover (restore) a VP 100 system from a floppy diskette, or beginning with Release 6.1, add a second language.
Save a log file	LOG_SAVE XXXXXX <input type="text" value="Enter"/>	Command used to save a CAT.LOG file as CAT.LYY (where YY is the next sequentially available log file number).
Log file directory	LOG_DIR XXXXXX <input type="text" value="Enter"/>	Command used to display the names of all stored log files for this particular system serial number.
Display Log file	LOG_SHOW XXXXXX YY <input type="text" value="Enter"/>	Command used to display the CAT.LOG file. If log number YY is included, displays that log file. Enter <input type="text" value="Control S"/> and <input type="text" value="Control Q"/> to start and stop file display.
Print Log file	LOG_PRNT XXXXXX YY <input type="text" value="Enter"/>	Command used to print the CAT.LOG file. If log number YY is included, prints that log file. Enter <input type="text" value="Shift"/> <input type="text" value="PrtSc"/> to print a snapshot of the current screen while in the CAT program.

Refer to the following sections of this chapter for details about these commands:

- Backup Procedures
 - Restore Procedures
- Session Review and File Maintenance
CAT hard disk Drive Operations

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This table shows VP CAT vs RS-232C terminal operation capability with the various VP 100 programs and procedures. The procedures that can be accessed from a remote location using the internal modem of the VP 100 are indicated. All programs and procedures listed can be performed onsite.

Terminal vs VP CAT Operations Guideline

Program/Procedure	VP CAT	RS-232C Terminal	Remote ¹ Procedure	Onsite Baud Rate
Install Program	Y	Y	N	19200
Backup System Configuration	Y	N	Y	19200
Backup Names/Greetings (GNSSM)	Y	N	Y ²	19200
Configuration Changes ³	Y	Y	Y	19200
Restore System Configuration	Y	N	N	19200
Restore Names/Greetings (GNSSM)	Y	N	N	19200
Restore System Software ⁴	Y	N	N	38400
Restore Systems Prompts ⁴	Y	N	N	38400
Restore System Disk ⁴	Y	N	N	38400
Add a Second Language	Y	N	N	38400
Update System Software ⁴	Y	N	N	38400
Save Log Sessions	Y	N	Y	ALL

1 Remote (modem) operations can be performed at 1200 or 300 baud only.

2 Not recommended.

3 Configuration changes saved only to VP 100 hard disk drive.

4 These operations require the VP 100 to be out of service to perform the procedure. All ports must be forwarded.

7.1 CAT MENU OPTIONS

This section explains each CAT menu option and gives a sample of each screen. The selected menu option appears highlighted at the top of the screen. Once in the menu screen, use the left and right arrow keys to move between the choices at the top of the screen. The active menu choice is always highlighted at the top of the screen with a description of it at the bottom.

To access the various menus while in the terminal emulation mode, (which causes the PC to act like a terminal for communicating with the VP 100); hold down **Alt** then press the first letter of the menu option desired.

The following is a list of the CAT menu options and the command to obtain each.

- **Help** **Alt** H
- **Exit** **Alt** E or **Alt** X
- **Terminal** **Alt** T (includes **Select System** screen)
- **Backup** **Alt** B
- **Restore** **Alt** R
- **Update** **Alt** U

This section explains the **Select System**, **Help**, **Exit**, and **Terminal** options. The **Backup**, **Restore**, and **Update** options are described in following sections of this chapter.

■ Select System Screen

The **Select System** screen appears when the CAT program is first started. This screen can also be accessed from the **Terminal** menu after the program has been started, by choosing **Select System** from the menu choices.

The **Select System** screen enables you to work with previously stored systems on the CAT hard disk. You can work without selecting a system, select an existing VP 100 to modify, or add a new system. The following is an example of the **Select System** screen followed by an explanation of each selection.

Use **↑** and **↓** to move selector and **ENTER** to make selection

Select this line to add another system
Select this line for no system

System Name	System ID	System S/N	Release #	Prompt Set(s)
System 1	123123	123123	A.04.03.08	000
System 2	456456	456456	A.05.02.02	A50
System 3	657657	657657	A.06.01.00	ENG6H M51

Baud:19200	VMX CAT version xxx	SysS/N<none>	LogFile:Closed
------------	---------------------	--------------	----------------

■ Select No System

When the **Select System** screen first appears, the cursor is positioned on the **Select this line for no system** field. Choose this field when using the CAT for terminal emulation purposes only. Terminal emulation begins as soon as you press . When **No System** is selected, the Backup, Restore and Update procedures described in this chapter are not available. Session log information is still captured and stored in the CAT.LOG file in the C:\VMXCAT subdirectory.

The following explains how to use the CAT for terminal emulation.

Action	CAT/VP 100 Description and Response
1. <input type="text" value="←"/> and <input type="text" value="→"/>	Move to Select this line for no system . Selection is highlighted.
2. <input type="text" value="Enter"/>	Terminal emulation begins. SysS/N<none> appears in the status line at the bottom of the screen.

■ Select an Existing System

The **Select System** screen displays all systems currently stored on the CAT hard disk drive. Each VP 100 is identified by its unique serial number on the CAT hard disk drive. Refer to the CAT chapter, Software Description. The following explains how to access an existing system.

Action	CAT/VP 100 Description and Response
1. <input type="text" value="←"/> and <input type="text" value="→"/>	Move to desired system. Selection is highlighted.
2. <input type="text" value="Enter"/>	Terminal emulation begins. The selected system's serial number appears in the status line at the bottom of the screen. Terminal emulation mode allows the CAT to act as a terminal device for communicating with a VP 100. When a system is selected in this manner, all system backup and session log information is stored within that system's subdirectory. In addition, any system restore procedure transfers information files from the selected system's subdirectory to the VP 100. If the selected system was previously backed up and is backed up again, the old information is lost and is replaced with the new information.

■ Modify an Existing System

The following explains how to modify an existing system.

Action	CAT/VP 100 Description and Response
1.  and 	Move to desired system. Selection is highlighted.
2. 	System information screen appears.
3. Modify system information	Refer to fields as shown in the diagram in the previous section, Add a New System. The changes are saved when information in the last field has been entered.
4. 	Terminal emulation begins. The selected system's serial number appears in the status line at the bottom of the screen.

 To abort the modify operation, press  and changes are not saved.

■ Add a New System

The following explains how to add a new VP 100 system to the CAT.

Action	CAT/VP 100 Description and Response
1.  and 	Selection is highlighted. Move to Select this line to add another system
2. 	System information screen appears, as displayed below.

Use Enter to move between fields

System Name:
 System ID:
 System S/N:
 SW Release: ...
 Prompt Sets:

3. Enter system information

Enter information into the fields by using the following guidelines and conventions. Press the  key to move between fields.

SysName: 1 to 8 alpha-numeric characters and spaces
 Use this field to enter the system name. Generally, this name is the same as displayed on the VP 100 system header, System Parameter 1.

SysID: 1 to 6 digits

The system identification can be any string of numbers used to identify the particular VP 100. Generally the system ID is the same as the system serial number.

SysS/N: 6 digits only

All VP 100 system serial numbers are six digits long. The serial number is assigned by the manufacturer and is hardware resident, stored in the Option Control Chip (OCC). The entry in this field **must be the same** as the serial number assigned to the VP 100 that appears in the system header.

NO SPACES ARE ALLOWED when entering this number.

Release #:

When the cursor enters this field, a release number of VP 100 system software installed on the CAT hard disk is automatically inserted. To accept this entry press or use the **▲** and **▼** keys to move among the choices. **Only select the software release that matches the release currently installed on the VP 100 being added.**

Prompt Sets:

The Prompt Set field is blank, but a window appears displaying the languages installed on the CAT hard disk. An example of this window is below. A valid language prompt set must be selected. Use the **▲** and **▼** keys to select a language choice. Press .

Use Enter to move between fields

System Name: System ID: System S/N: SW Release: . . . Prompt Sets:	none ENG6H ENG60 A50 F50 M51 Z50 000 BR549
--------------------------------------------------------------------------------	--------------------------------------------------------------------

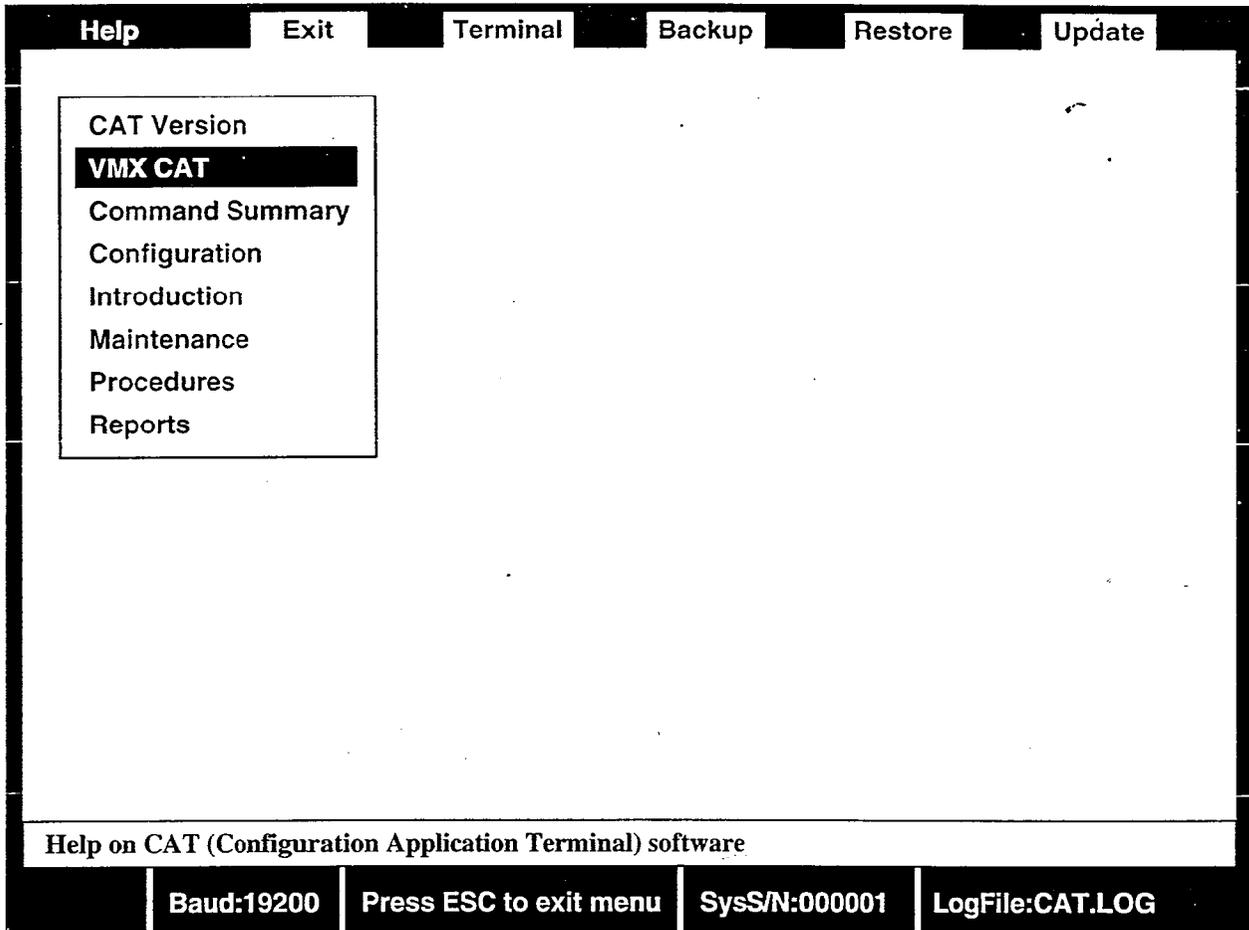
Beginning with Release 6.1, two language prompt sets can be installed. After the first prompt set is selected, the window displays the languages again. Select another language to install or select **none** to install Prompt Set 1.

After the prompt selection(s) has been made press , the CAT goes into the terminal emulation mode and the new system serial number appears in the program status line.

- ✎ VP 100 system software and prompts must be installed on the VP CAT to be able to add a system using the **Select System** screen.

■ Help Menu

The **Help** menu offers online help for CAT program operation, procedures, and for VP 100 programming and system commands. The following is an example of the **Help** screen. The list that is displayed in the **Help** screen varies according to the software release of the VP System selected.



The following explains how to access the **Help** menu while in terminal emulation.

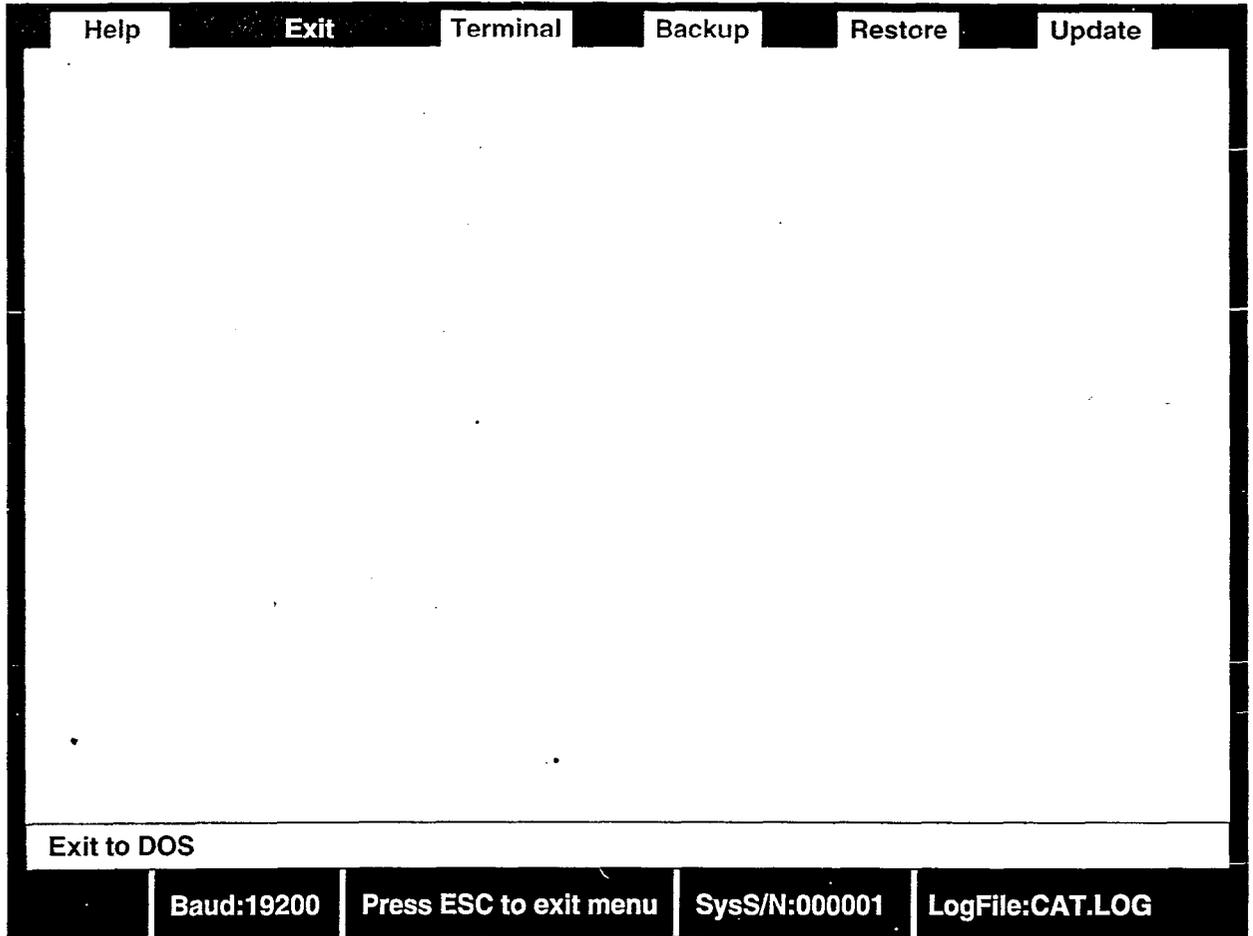
Action	CAT/VP 100 Description and Response
1. Alt H	The Help menu appears.
2. ▲ and ▼	To highlight the desired topic. Selection is highlighted.
3. Enter	Help window appears.
4. PgUp and PgDn	Use the arrow and page keys to scroll through the text. Information in Help window scrolls.
5. Escape	To return to terminal emulation, when finished. Returns to terminal emulation.

☞ Pressing **Alt** followed by any letter that is not a valid (first letter) menu choice automatically highlights the pop-up **Help** menu.

■ EXIT

The **Exit** menu is used to terminate the CAT program and return the PC to the DOS prompt in the C:\VMXCAT subdirectory. Prior to exiting the CAT program, make sure your communication session with the selected system is complete and that the @ prompt is displayed from the VP 100. When you exit the CAT program, any open CAT.LOG file is closed and saved.

The following is an example of the **Exit** screen.

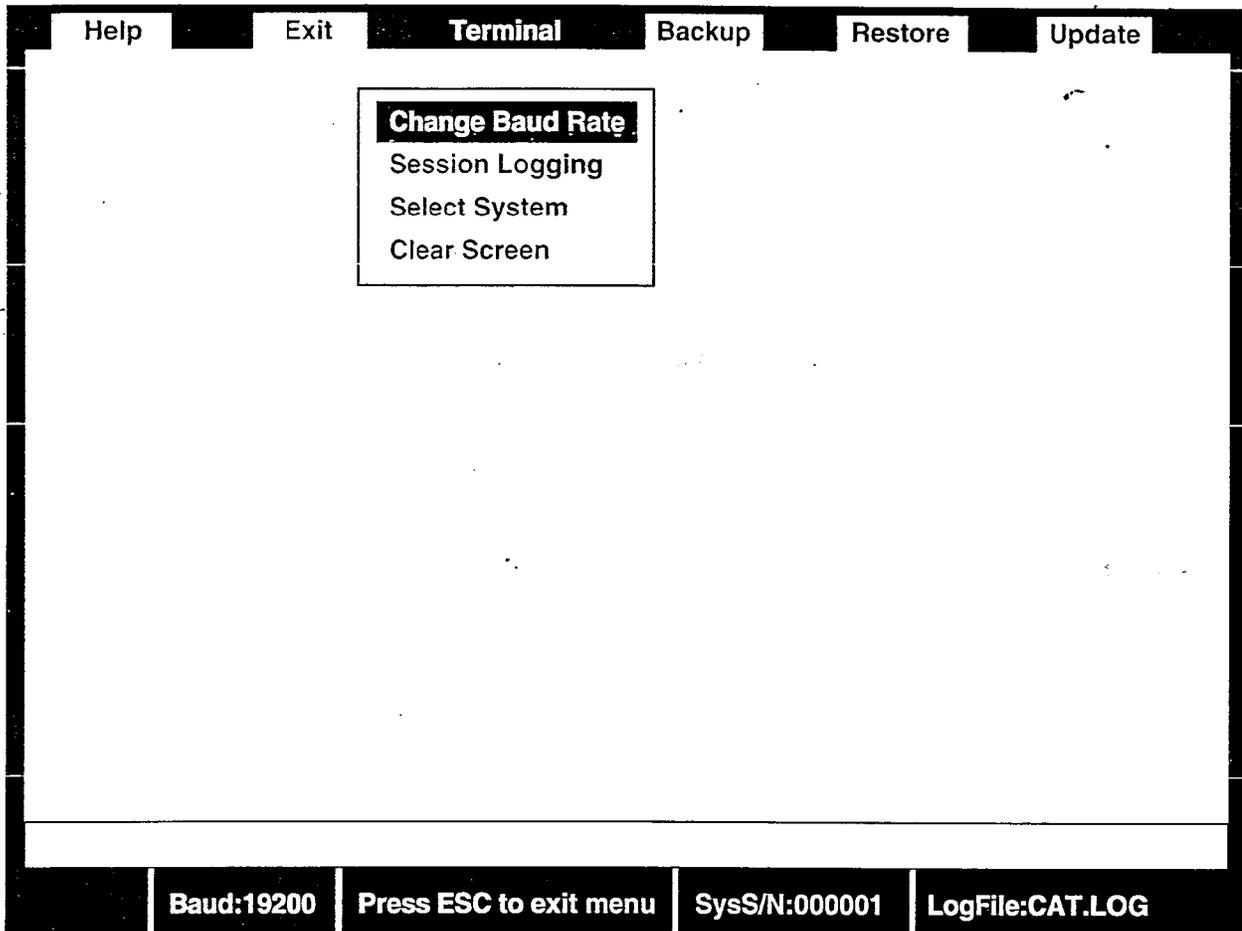


The following explains how to use the **EXIT** menu.

Action	CAT/VP 100 Description and Response
1. <input type="button" value="Alt"/> E or <input type="button" value="Alt"/> X	To exit the CAT program while in terminal emulation. Menus appear with Exit option selected.
2. <input type="button" value="Enter"/>	Return the PC to the DOS prompt. DOS prompt is displayed.

■ TERMINAL

The **Terminal** menu options provide control of terminal emulation activities. The menu selections are used to select the baud rate, select a system, start and stop session logging, and to clear the CAT terminal screen (without affecting the VP 100). The following is an example of the **Terminal** screen.



The following explains how to access the **Terminal** menu while in terminal emulation.

Action	CAT/VP 100 Description and Response
1. Alt T	To activate Terminal menu option. Menus appear with Terminal option selected.
2. ▲ and ▼	Highlight the desired choice. Selection is highlighted.
3. Enter	Menu appears for selected choice. Selected action begins.
In the CONFIGURATION APPLICATIONS TERMINAL (CAT) chapter in this manual, Terminal menu options are discussed in the VP CAT Overview — Clear Screen section, and Communication with the VP 100 — Changing the Baud Rate section.	
In the PROCEDURES chapter, Terminal menu options are discussed in the CAT Menu Options — Select System Screen section, and the Session Review and File Maintenance section.	

7.2 BACKUP PROCEDURES

This section describes how to backup the VP 100 configuration and select combinations of Greetings, Names, Scripted, and Sequential Messages (GNSSM). The VP 100 should be backed up using this procedure, then archived to a floppy diskette after the initial installation and whenever major changes are made to the VP 100. The backed up information is required to restore a system in the event of a hard disk drive failure.

Information in this section describes the following.

- Prepare for a backup.
- Backup information from a VP 100.
- Archive a VP 100 to a floppy diskette.

The **Backup** menu option is only available when a system is selected. All backup data is stored within the selected system's subdirectory. Refer to the CAT chapter, Software Description.

The Backup procedure is a two-step process:

13. The CAT program is used to backup data from the VP 100 to the CAT hard disk.
14. The backed up data on the CAT hard disk is archived to floppy diskette.

▶ **WARNING** ◀

The Backup procedures should be performed at 19200 baud or less. Backups should **not** be performed at 38400 baud.

The following is an example of the **Backup** screen.

Help	Exit	Terminal	Backup	Restore	Update
------	------	----------	---------------	---------	--------

System Configuration
Greetings/Names/Script & Seq Msgs

Backup System Configuration files from VP 100 to the PC

Baud:19200	Press ESC to exit menu	SysS/N:000001	LogFile:CAT.LOG
------------	------------------------	---------------	-----------------

■ Backup Preparation

The following explains how to prepare for the VP 100 Backup procedure.

Action	CAT/VP 100 Description and Response
1. Start the CAT program	Select System screen appears. Refer to the CAT chapter.
2. Select/add system to backup	Terminal emulation begins. Refer to the Select System Screen section in this chapter.
3. Set baud rate	Baud rate is displayed on the status line. Refer to the CAT Chapter and Quick Reference Guide. Choose 19200 baud for onsite backup, and 1200 (300) for remote backup.
4. Establish connection	VP 100 password prompt appears. Connection can be onsite (cabled) or remote (modem) with the VP 100 to be backed up. Refer to the INSTALLATION chapter.
5. Log on	VP 100 @ prompt appears. Enter the maintenance or administrative level password.
☞	Refer to the specific procedure in this chapter for detailed instructions on performing the procedure.

■ Backup – System Configuration

This procedure backs up the system configuration database from the VP 100 to the CAT hard disk. The length of time this procedure takes to complete varies depending on the baud rate selected (on site or remote connection), and the configuration to be backed up.

Prepare for a backup as described earlier in the Backup Preparation section, then follow the steps below.

Action	CAT/VP 100 Description and Response
1. Alt B	With the @ prompt displayed, obtain the Backup menu and move the cursor to highlight the desired backup option. Backup menu appears.
2. ▲ and ▼	Move to System Configuration . Selection is highlighted.
3. Enter	Data transfer begins.
4. Wait for completion	As each step begins and ends, the screen is updated. At completion, the Data Transfer Complete screen appears.
5. Enter	Returns to terminal emulation (VP 100 @ prompt).
6. Archive to floppy diskette	See Archive VP 100 System to Floppy Diskette section in this chapter.
☞ If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.	
☞ To abort this procedure, press Escape at any time.	

■ Backup – Greetings, Names, Scripted, & Sequential Messages (GNSSM)

This procedure backs up recorded voice information from the VP 100 to the CAT hard disk drive. Recordings that can be backed up are Greetings, Names, Scripted, and Sequential Messages (GNSSM). Messages stored in a mailbox cannot be backed up.

Recorded voice requires a lot of space on the disk, therefore, a large amount of PC disk storage space may be required. As a guideline, approximately 177K bytes of disk space is required to backup each minute of recorded voice.

The time this procedure takes to complete varies depending on the number of GNSSM to be backed up, and the length of the recordings. This operation should be performed onsite with a cabled connection at 19200 baud.

- ☞ Due to the length of time required to backup recorded voice, it is recommended that this operation be performed locally, **not** remotely.

The following is an example of the **Backup GNSSM** screen. An explanation of the fields follows.

Help	Exit	Terminal	Backup	Restore	Update
<p>Begin Procedure Greetings/Names/Script & Seq Msgs Getting User Input . . .</p> <div style="border: 1px solid black; padding: 10px; margin: 20px auto; width: 60%;"> <p style="text-align: center;">Greetings: Y Names: Y Script & Seq Msgs: Y</p> <p style="text-align: center;">Mailbox: All COS:</p> </div>					
Baud:19200		Press ESC to exit menu		SysS/N:000001 LogFile:CAT.LOG	

■ Entering Information

The default value of each option is NO. To move the cursor within the menu, press or use the **▲** or **▼** keys. The fields are described below.

Greetings, Names, Script & Sequential Enter **Y** in the field of the option you wish to backup. After entering **Y**, you are automatically advanced to the next option. Only **Y** and **N** are valid characters in the option fields.

Mailbox Enter the number of the mailbox to backup. You may also enter **ALL** to backup all mailboxes in the USER Table. The CAT checks the VP 100 database for valid entries. If an invalid mailbox number is entered, the VP 100 sends the following error message:

Mailbox does not exist.

COS To backup all mailboxes for a specific COS, enter the COS number for backup.

☞ Either a mailbox number or a COS is entered, not both.

Prepare for a backup as described earlier in the Backup Preparation section, then follow the steps below.

Action	CAT/VP 100 Description and Response
1. <input type="text" value="Alt"/> B	With the @ prompt displayed, obtain the Backup menu and move the cursor to highlight the desired backup option. Backup menu appears.
2. ▲ and ▼	Move to Greetings/Names/Script & Seq Msgs. Selection is highlighted.
3. <input type="text" value="Enter"/>	The GNSSM Backup menu appears.
4. Enter information for GNSSM Backup menu	Refer above to the description of each field.
5. <input type="text" value="Enter"/>	Once the COS is entered, the procedure begins immediately. The GNSSM Backup menu disappears and data transfer begins.
6. Wait for completion	As each step begins and ends, the screen is updated. The length of this procedure is determined by the amount of voice data being backed up. At completion, the Data Transfer Complete screen appears.
7. <input type="text" value="Enter"/>	Returns to terminal emulation (VP 100 @ prompt).

☞ If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.

☞ To abort this procedure, press at any time.

■ Archive VP 100 System to Floppy Diskette

All information backed up for each VP 100 stored on the CAT hard disk can be archived to floppy diskette by using the procedure shown below. Systems must be backed up to the CAT hard disk then archived to floppy diskette to produce a copy of critical system information. Systems should be archived to floppy diskette before deleting a system from the CAT hard disk drive. Refer to the CAT Hard Disk Drive Operations section in this chapter.

☞ Two sets of archive diskettes are recommended for each system.

Information archived for each system includes the backed-up system configuration, backed up GNSSM, and all session log files.

Multiple floppy diskettes may be required to complete this operation. Each diskette should be labeled with the following information:

- VP 100 serial number.
- Customer/company name.
- Date of backup.
- Type of PC used for backup.
- Backup diskette number.
- DOS version installed on PC.
- Maintenance level password at time of backup.

► WARNING ◀

This procedure uses the DOS backup utility stored in the C:\DOS subdirectory, and is unique for each PC. Backups made on one PC type may not be able to be restored to a different type of PC. Always identify the type of PC used for the backup.

To archive a VP 100 from the CAT hard disk to floppy, follow the procedure below.

1. Be sure that the VP 100 resident on the CAT hard disk is the latest copy of that system's configuration. Complete any activity with the VP 100 and exit from the CAT program (**Alt** E).
2. Format enough floppy diskettes required for the archive. Refer to the CONFIGURATION APPLICATIONS CHAPTER, Appendix A — DOS Commands, or to your PC Owner's Manual, for formatting instructions.
3. With the DOS prompt C:\VMXCAT> displayed, type the following command, where XXXXXX is the system serial number:

```
SYS_BACK XXXXXX 
```

Follow the instructions displayed on the screen. The first example screen is from a Zenith laptop. The second example screen is from a Toshiba T1600 laptop.

```
C:\VMXCAT> SYS_BACK 000002
```

The command is used to backup a CAT system to floppy diskette(s)

```
BACKUP version 3.30.06  
Copyright (C) 1988 Zenith Data Systems Corporation
```

Insert first backup disk in drive A:

```
Format backup disk (Y/N) ? Y  
Format low or high density (L/H) ? H
```

```
FORMAT version 3.30.05  
Copyright (C) 1988, Zenith Data Systems Corporation
```

Head: X Cylinder: XX

```
C:\VMXCAT\SN000002.100\SYSINFO.VMX  
C:\VMXCAT\SN000002.100\ADELYT.IM  
C:\VMXCAT\SN000002.100\SYPSP.IM  
.  
.  
.
```

```
C:\VMXCAT> SYS_BACK 000002
```

The command is used to backup a system to floppy diskette(s)

Insert backup disk 01 in drive A:

```
WARNING! Files in the target drive  
A:\ root directory will be erased  
Press any key to continue . .
```

7.3 RESTORE PROCEDURES

This section describes how to restore information to a VP 100. The Restore procedure transfers information from the CAT hard disk drive to the VP 100. To restore system configuration and GNSSM information to the VP 100, it must have been previously backed up to the CAT hard disk (by using the Backup procedures) and archived to floppy diskette.

Information in this section describes the following:

- Recover VP 100 from floppy diskette.
- Restore preparation.
- Restore System Configuration.
- Restore Greetings, Names, Scripted & Sequential Messages (GNSSM).
- Restore System Software.
- Restore System Prompts.
- Adding a Second Language Prompt Set (Release 6.1 or later).

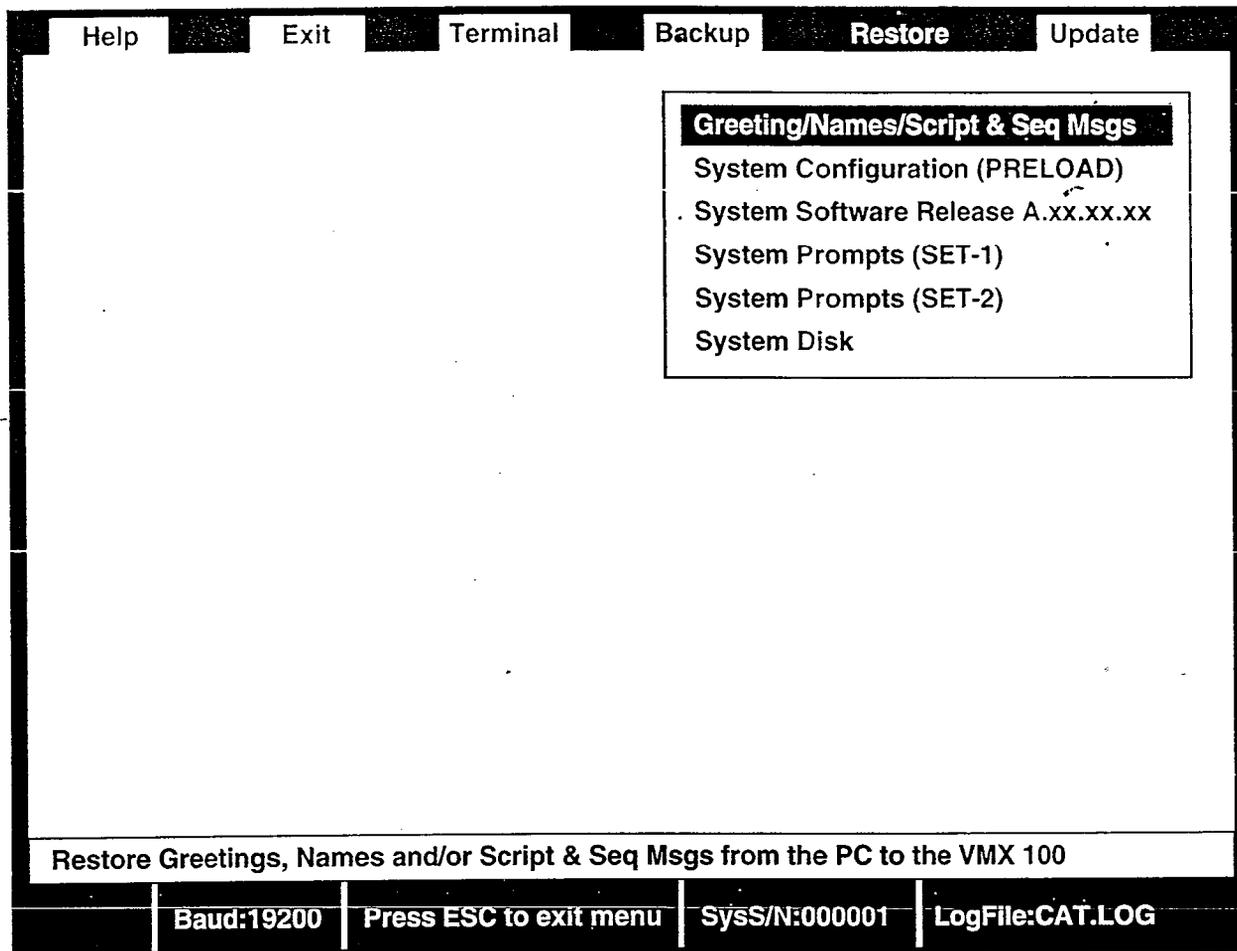
The Restore System Disk procedure is used when replacing or upgrading a hard disk drive, and beginning with Release 6.1, this procedure is used when adding a second language if the optional Multilingual Prompt feature is installed. These procedures are described in this chapter.

 The **Restore** menu option is only available when a system is selected. All data to be restored is copied from subdirectories on the CAT hard disk drive to the VP 100. The actual subdirectories used during a Restore procedure are determined by the selected system's serial number, release of system software, and release of prompts. Refer to the CONFIGURATION APPLICATIONS TERMINAL chapter, Software Description section.

The following are guidelines on how to perform the Restore procedures.

System Configuration and GNSSM	<p>These procedures must be done on site at 19200 baud by using a cabled connection to the VP 100.</p> <p> VP 100 system configurations and/or GNSSM must have been previously backed up before they can be restored.</p>
System Software System Prompts System Disk	<p>These procedures must be done on site at 38400 baud by using a cabled connection to the VP 100. These procedures require that the VP 100 be taken out-of-service for the duration of the procedure.</p>
System Disk Procedure	<p>The Restore System Disk procedure is used when replacing or upgrading a VP 100 hard disk drive. Refer to the appropriate procedure in this chapter for detailed instructions.</p>

The following is an example of the **Restore** menu. Beginning with Release 6.1, the window lists System Prompts (Set-1) and System Prompts (Set-2) as shown. The screen may display different wording if the Toshiba VP System software is at another release.



■ Recover VP 100 System from Floppy Diskette

All information for each VP 100 system previously archived to floppy diskette can be recovered or copied back to the CAT hard disk by using the procedure described below. Systems should be recovered prior to a Restore procedure, usually prior to replacing a failed VP 100 hard disk drive.

Information recovered for each system is exactly what had been previously archived, including the system configuration, GNSSM, all previous session log files, and maintenance level and mailbox passwords. All diskettes used to complete an archive operation are required to recover a system from floppy diskette.

► WARNING ◀

This procedure uses the DOS Restore utility stored in the C:\DOS subdirectory, and is unique for each PC. Archives made on one PC type may not be able to be recovered on another PC type. Always identify the PC type used for the archive.

To perform a VP 100 System Recover from floppy diskette to CAT hard disk, follow the procedure below.

☞ Be sure that the VP 100 system on the floppy diskette being recovered was archived by the same type of PC you are currently using.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt E**).
2. With the DOS prompt C:\VMXCAT> displayed, type the following command, where XXXXXX is the system serial number to be restored:

```
SYS_REST XXXXXX
```

If this system serial number already exists on the CAT hard disk, all existing information for this system is deleted and replaced by the system being restored. The Recover program prompts you to insert the first backup floppy diskette into the drive. Follow the on-line instructions to complete the recover operation.

The following is a sample Recover, on a Zenith Laptop.

```
C:\VMXCAT> SYS_REST 000002
```

This command is to restore a CAT system from floppy diskette(s)

RESTORE version 3.30.06

Copyright (C) 1988 Zenith Data System Corporation

Insert volume 1 in drive A and
press RETURN when ready.

```
Files were backed up on Month Day, Year
C:\VMXCAT\SN000002.100\SYSTEM.VMX
C:\VMXCAT\SN000002.100\ADELYT.IM
C:\VMXCAT\SN000002.100\SYSP.IM
```

```
.
.
.
```

■ Restore Preparation

The following explains how to prepare for the VP 100 Restore procedure.

Action	CAT/VP 100 Description and Response
1. Start the CAT program	Select System screen is displayed. Refer to the CAT chapter.
2. Select system to restore	Terminal emulation begins. Refer to the Select System Screen section in this chapter. Check the status line of the CAT screen and verify that the proper system serial number has been selected. If the system to be restored is not displayed in the Select System screen, recover the system from floppy diskette. Refer to the Recover VP 100 System from Floppy Diskette section of this chapter.
3. Set baud rate	Baud rate is displayed on the CAT status line. Refer to the Quick Reference Guide at the beginning of this chapter. Set baud rate for the desired Restore procedure.
4. Establish connection	VP 100 password prompt appears. Establish a local (cabled) connection to the VP 100 being restored. Refer to the INSTALLATION chapter.
5. Log on	VP 100 @ prompt is displayed. Enter the maintenance level password.
6. TE C 1 <input type="text" value="Enter"/>	Forward all ports by using this command. The following is a sample screen. If a PBX forwarding string is not defined in System Parameter 45, the ports are still placed in the FWD state but may not have actually been forwarded on the PBX. @TE C 1 PORT # 1 FORWARDED PORT # 2 FORWARDED PORT # 3 FORWARDED PORT # 4 FORWARDED ALL PORTS FORWARDED
7. PS <input type="text" value="Enter"/>	Port status is displayed, VP 100 displays @ prompt. Verify that all ports are forwarded by using this command. The following is a sample screen. @PS CH 1 CH 2 CH 3 CH 4 CH 5 CH 6 CH 7 CH 8 FWD FWD FWD FWD FWD FWD FWD FWD

8. Verify forwarding

Place a test call to the VP 100 and verify the ports have been forwarded and that the call is answered by a live intercept.

Refer to the specific Restore procedure in this chapter for further instructions.

■ Restore System Configuration (Preload)

Once a system configuration database has been backed up from the VP 100 to the CAT hard disk, the database can then be restored (copied) from the CAT hard disk to any VP 100. This procedure can be used to restore an original configuration to a system. For example, on a system where numerous changes were made that are no longer desired or are incorrect.

The Restore System Configuration procedure can also be used to place a "template" configuration (preload) onto any VP 100. For example, this configuration could contain a basic COS, SCHEDULE Table and INFORMATION Table structure that could be used for many systems.

The Restore procedure starts by clearing any existing configuration on the VP 100, then copies the system configuration from the selected system's subdirectory on the CAT hard disk onto the VP 100 hard disk. This procedure takes about 10 minutes.

► WARNING ◀

This procedure results in the complete loss of **all** messages and GNSSM on the VP 100. After restoring a system configuration, you may use the Restore GNSSM procedure to restore previously backed up GNSSM to the VP 100.

- ☞ To restore the VP 100 data from floppy diskette to the CAT hard disk, use the procedure described in this section.

For an example of the **Restore System Configuration (Preload)** menu, refer to the beginning of this section.

Prepare for a restore as described earlier in this section, then follow the steps below.

- ☞ Verify the baud rate is 19200.

Action	CAT/VP 100 Description and Response
1. Alt R	With the @ prompt displayed, obtain the Restore menu.
2. ← and →	Move to System Configuration (Preload) . Selection is highlighted.
3. Enter	The Restore menu disappears and data transfer begins.
4. Wait for completion	At completion, the Data Transfer Complete screen appears. As each step begins and ends, the screen is updated. This procedure takes about 10 minutes.
5. Enter	Returns to terminal emulation (VP 100 @ prompt).

The new configuration is now in effect. The VP 100 is ready for another command, or you can press **Alt** R to return to the **Restore** menu screen to restore GNSSM.

- ☞ If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.
- ☞ To abort this procedure, press **Escape** at any time.

■ Restore – Greetings, Names, Scripted, & Sequential Messages (GNSSM)

This procedure is used to restore Greetings, Names, Scripted, and Sequential Messages (GNSSM) from the CAT hard disk to the VP 100. For example, to restore original GNSSM to a system that had a hard disk drive replaced or upgraded to a larger capacity drive.

☞ To restore information to the VP 100, it must have been previously backed up (saved) on the CAT hard disk by using the Backup procedures.

GNSSM can be restored (copied) to either the original mailbox from which it was backed up, or to a different mailbox, and to the same or to a different system. For example, the same company greeting may be restored to multiple VP 100 systems for consistency.

The Restore procedure replaces existing GNSSM with the original (restored) message. The voice information is stored in the selected system's subdirectory on the CAT hard disk.

☞ The time this procedure takes to complete varies depending upon the length of the recorded voice information.

The following is an example of the **RESTORE GNSSM** menu with the backed-up GNSSM displayed. An explanation follows.

Help	Exit	Terminal	Backup	Restore	Update
------	------	----------	--------	---------	--------

	<table style="width: 100%; border-collapse: collapse;"> <tr><td>ALL</td><td></td><td></td><td></td></tr> <tr><td>123</td><td></td><td>N</td><td></td></tr> <tr><td>125</td><td>G</td><td>N</td><td></td></tr> <tr><td>301</td><td>G</td><td></td><td></td></tr> <tr><td>303</td><td></td><td>M</td><td>4</td></tr> <tr><td>355</td><td>G</td><td>N</td><td>M 2</td></tr> </table>	ALL				123		N		125	G	N		301	G			303		M	4	355	G	N	M 2
ALL																									
123		N																							
125	G	N																							
301	G																								
303		M	4																						
355	G	N	M 2																						
Greetings:																									
Names:																									
Script & Seq Msgs:	Y																								
Original Mailbox:																									
Destination Mailbox:																									

Restore Greetings, Names and/or Script & Seq Msgs from the PC to the VP 100

Baud:19200	Press ESC to exit menu	SysS/N:000001	LogFile:CAT.LOG
------------	------------------------	---------------	-----------------

Prepare for a restore as described in the Restore Preparation section, then follow the steps below.

☞ Verify that the baud rate is 19200.

Action	CAT/VP 100 Description and Response
1. <input type="text" value="Alt"/> R	With the @ prompt displayed, obtain the Restore Menu .
2. <input type="text" value="↑"/> and <input type="text" value="↓"/>	Move to Greetings/Names/Script & Seq Msgs. Selection is highlighted.
3. <input type="text" value="Enter"/>	The GNSSM Restore menu appears.
4. Enter information into GNSSM Restore menu	Refer below to the description of each field.
5. <input type="text" value="Enter"/>	Once the destination mailbox is entered, the procedure begins immediately. The GNSSM Restore menu disappears and data transfer begins.
6. Wait for completion	As each step begins and ends, the screen is updated. The amount of time this procedure takes varies with the amount of voice being restored. At completion, the Data Transfer Complete screen appears.
7. <input type="text" value="Enter"/>	Returns to terminal emulation (VP 100 @ prompt).

☞ If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.

☞ To abort this procedure, press at any time.

The following is a description of each field.

Greetings, Names, Script & Sequential	Enter Y in the field of the option you wish to restore. After entering Y , the cursor is automatically advanced to the next option. Only Y and N are valid characters in the option fields. To restore all GNSSM that have been backed up, enter Y for all three fields.
Original Mailbox	Enter the mailbox number from which GNSSM was backed up. You may also enter ALL to restore all GNSSMs that were backed up.
Destination Mailbox	Number to which any of the GNSSM are to be restored if different from the Original Mailbox number. If the Destination Mailbox is the same as the Original Mailbox, this field may be left blank, or enter the same mailbox number. If ALL was entered as the Original Mailbox, this field must be left blank.

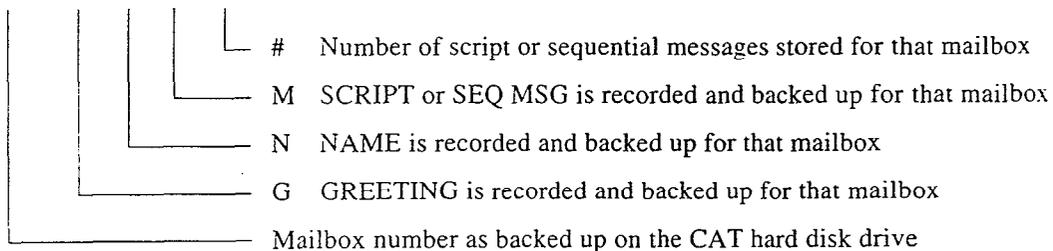
The following describes how to display and select backed-up GNSSMs.

Action	CAT/VP 100 Description and Response
1.  and 	Move to original mailbox field. Field entry is highlighted.
2. 	To display a list of all GNSSM backed up on the CAT hard disk for the selected system. List appears.
3. Scroll through list.	Use the arrow keys to select the desired mailbox (or ALL). Selected item is highlighted.
4. 	That mailbox number is placed in the Original Mailbox field, and the cursor advances to the Destination Mailbox field.

The following describes the backed-up GNSSM format.

ALL				
123		N		
125	G	N		
301	G			
303			M	4
305	G	N	M	2

Select ALL entries that match chosen field
 Select ALL entries that match chosen field
 Backed up Greeting and Name for mailbox 125
 Backed up Greeting for mailbox 301
 Four Scripted/Sequential Messages backed up for mailbox 303
 A Greeting, Name, and two S/S Messages backed up for mailbox 305



■ Restore System Software

The Restore System Software procedure is used to copy the original VP 100 system software from the CAT hard disk to the VP 100. This procedure should only be used when recommended by the manufacturer.

The selected system defines which release of System Software will be restored onto the VP 100 hard disk. All system software files on the VP 100 are replaced with the original (master) files stored in the selected release directory. Any patches that were installed in the system are removed.

 Be sure the correct release of software is defined for the selected system. Refer to the Select System Screen section of this chapter.

► WARNING ◀

This procedure takes approximately 15 minutes (at the recommended baud rate), during which time the VP 100 will be out of service.

Prepare for a restore as described earlier in this section, then follow the steps below.

Action	CAT/VP 100 Description and Response
1. Alt R	To display the Restore menus at the @ prompt. The Restore menu appears.
2.  and 	Move to System Software . Selection is highlighted.
3. Enter	The procedure begins by requesting the system to be powered OFF, and responds with: Please power OFF the system.
4. Power VP 100 OFF	This step is skipped if power is already OFF. Thank you. Please wait.
5. Wait 15 seconds	This delay is for the VP 100 hard disk drive to spin down. Please power ON the system.
6. Power VP 100 ON	Data transfer begins.
7. Wait for completion	As each step begins and ends, the screen is updated. This procedure takes about 45 minutes. At completion, the Data Transfer Complete screen appears.
8. Enter	System reboots.
9. Enter Enter ...	This begins auto baud detect. TESTING HARDWARE ...
10. Wait for VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS ...DONE
11. Logon	VP 100 @ prompt.

12. C H To clear the Hardware Error table. VP 100 @ prompt appears.
 13. Test Test for normal operation.
- ☞ If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.
 - ☞ To abort this procedure, press at any time. If aborted, this procedure **must** be restarted and run through to completion before the VP 100 returns to operation.

■ Restore System Prompts

The Restore System Prompts procedure is used to copy the original VP 100 system prompts from the CAT hard disk to the VP 100. This procedure should only be used when recommended by the manufacturer, or when a Type 16 Hardware Error is logged, as described below.

► WARNING ◀

Do not use this Restore System Prompts procedure to add a second set of language prompts. Use the Procedure for Adding a Second Language Prompt Set in this chapter.

The disk sector number is automatically added to the hard disk defect list when the VP 100 encounters a defective sector on the hard disk in the prompt region. Hardware error type 16 is logged in the Hardware Error Table, indicating that the prompts should be copied to the VP 100 by using this procedure.

The selected system defines which release of system prompts will be restored onto the VP 100 hard disk. All system prompts on the VP 100 are replaced with the original (master) prompts stored in the selected prompts directory.

- ☞ Be sure the correct release of prompts is defined for the selected system. Refer to the Select System Screen section of this chapter.

► WARNING ◀

This procedure takes approximately 45 minutes (at the recommended baud rate), during which time the VP 100 is out of service.

■ Restore System Prompts at Release 5.8

To restore system prompts for systems at Release 5.8, prepare for a restore as described earlier in this section, then follow the steps below.

To restore system software, prepare for a restore as described earlier in this section, then follow the steps below.

Action	CAT/VP 100 Description and Response
1. Alt R	To display the Restore menus at the @ prompt.
2. ▲ and ▼	Move to System Software . Selection is highlighted.
3. Enter	The procedure begins by requesting the system to be powered OFF, and responds with: Please power OFF the system.
4. Power VP 100 OFF.	This step is skipped if power is already OFF. Thank you. Please wait.
5. Wait 15 seconds	This delay is for the VP 100 hard disk drive to spin down. Please power ON the system.
6. Power VP 100 ON	Data transfer begins.
7. Wait for completion	As each step begins and ends, the screen is updated. This procedure takes about 45 minutes. At completion, the Data Transfer Complete screen appears.
8. Enter	System reboots.
9. Enter Enter ...	This begins auto baud detect. TESTING HARDWARE ...
10. Wait for VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS ...DONE
11. Logon	VP 100 @ prompt.
12. CH Enter	To clear the Hardware Error table. VP 100 prompt.
13. Test	Test for normal operation.
 If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.	

☞ To abort this procedure, press at any time.

▶ **WARNING** ◀

To abort this procedure, press at any time. If aborted, this procedure must be restarted and run through to completion before the VP 100 returns to operation.

■ Restore System Prompts Sets Beginning with Release 6.1

To restore system prompts for systems at Release 6.1 or later, prepare for a Restore as described earlier in this section, then follow the steps below.

Action	CAT/VP 100 Description and Response
1. Alt R	After the @ prompt, to display the Restore menus.
2. ← and →	Move to Prompt Set 1 or to Prompt Set 2 . Selection is highlighted. ☞ If you choose Prompt Set 2 and do not have two languages installed, an error message is displayed.
3. Enter	The procedure begins by requesting the system to be powered OFF, and responds with: Please power OFF the system.
4. Power VP 100 OFF	Thank you. Please wait. This step is skipped if power is already OFF.
5. Wait 15 seconds	This delay is for the VP 100 hard disk drive to spin down. Please power ON the system.
6. Power VP 100 ON	Data transfer begins.
7. Wait for completion	As each step begins and ends, the screen is updated. This procedure takes 45 or more minutes. At completion, the Data Transfer Complete screen appears.
8. Enter	System reboots.
9. Enter Enter ...	This begins auto baud detect. TESTING HARDWARE ...
10. Wait for VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS ...DONE
11. Logon	VP 100 @ prompt.
12. C H Enter	To clear the Hardware Error table. VP 100 prompt.
13. Test	Test for normal operation.
☞	If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.

☞ To abort this procedure, press Escape at any time.

▶ **WARNING** ◀

If aborted, this procedure **must** be restarted and run through to completion before the VP 100 returns to operation.

7.4 HARD DISK DRIVE REPLACEMENT PROCEDURE

This section describes the procedure to replace a VP 100 hard disk. Information is provided to prepare for a hard disk drive replacement and to replace the hard disk drive.

The circumstances under which the VP 100 hard disk must be replaced are:

- When a Type 2 Boot ROM diagnostic error occurs.
- When Hardware Error types 17 or 18 are logged.
- When Hardware Error type 16 continues to be logged after restoring system prompts.
- When the amount of available storage has decreased significantly. Refer to REPORTS, Disk Usage Report section, in this manual.

 Hardware error types 16, 17, and 18 indicate the disk drive has serious problems. If power to the VP 100 is lost, the system may not come back up. If you do not have a current backup of the system configuration and/or GNSSM, perform the necessary backup procedures as soon as possible.

► WARNING ◀

Replacing the VP 100 hard disk drive results in the loss of all stored messages in every mailbox. The system configuration and associated GNSSM that are restored to the replacement drive will reflect the configuration at the time the last backup was made.

You should be familiar with basic maintenance procedures and the UPDATE and INSTALL programs of the VP 100. Refer to the following chapters and sections in this manual for further information:

Chapter	Section
INSTALLATION	Testing the Installation and Telephone Changes
MAINTENANCE	Hard Disk Drive (HD) Replacement

Also refer to the *Configuration* manual — UPDATE and INSTALL chapters.

The Restore System Disk procedure is used when replacing a hard disk. The CAT **Restore** menu option transfers data from the CAT hard disk to the VP 100. The procedure transfers VP 100 System Software, then System Prompts, and then the System Configuration tables to the new hard disk.

 The Restore System Disk procedure must be done onsite with a cabled connection to the VP 100 at 38400 baud, and requires the VP 100 to be out of service for the duration of the procedure.

The **Restore System Disk** menu option is **only** available when a system is selected. All data to be restored is copied from subdirectories on the CAT hard disk to the VP 100. The subdirectories used during this restore procedure are determined by the selected system's serial number, release of system software, and by the release of prompts defined for the system. Refer to CONFIGURATION APPLICATIONS TERMINAL, Software Description in this manual.

Any GNSSM that had previously been saved (by using the Backup procedure) may be restored to the VP 100 after the Restore System Disk procedure has completed.

- ☞ If a type 3 Boot ROM diagnostic error occurs, perform the Restore System Disk procedure. If the error persists, replace the hard disk drive.

■ Replacement Procedure

The following equipment is needed for this procedure and should be assembled prior to starting:

- A replacement VP 100 hard disk drive.
 - ☞ **ONLY TOSHIBA SUPPLIED HARD DISK DRIVES CAN BE USED WITH THE VP 100.**
- A fully operational CAT with all VP 100 PC software installed (refer to the CAT chapter).
- A CAT interface cable.
- The configuration diskettes for the customer location (unless the backed up configuration and GNSSM are already present on the CAT hard disk drive).

To replace the VP 100 hard disk, perform the following steps.

Action	CAT/VP 100 Description and Response
1. Start the CAT program	Refer to the CAT chapter. Select System screen is displayed.
2. Select system to restore	Refer to the Select System Screen section of this chapter. If the system whose hard disk drive is being replaced is not displayed in the Select System screen, recover the system from floppy diskette following the Recover procedure described in this chapter. Terminal emulation begins.
3. Connect null modem cable to VP 100 TERM #1	If the VP 100 is not operational due to a defective hard disk, skip to step 11.
4. Establish connection at 19200 baud.	Establish a local (cabled) connection with the VP 100 that is being restored. Refer to the INSTALLATION chapter. Prompts for password.
5. Logon	Logon to Maintenance level at the VP 100 @ prompt.

Action	CAT/VP 100 Description and Response (continued)
6. TE C 1 <input type="text" value="Enter"/>	<p>Forward all ports by using this command. The following is a sample screen. When all ports are forwarded, VP 100 displays the @ prompt.</p> <pre> @TE C 1 PORT # 1 FORWARDED PORT # 2 FORWARDED PORT # 3 FORWARDED PORT # 4 FORWARDED PORT # 5 FORWARDED PORT # 6 FORWARDED PORT # 7 FORWARDED PORT # 8 FORWARDED ALL PORTS FORWARDED </pre> <p> If a PBX forwarding string is not defined in System Parameter 45, the ports are still placed in the FWD state but may not have actually been forwarded on the PBX.</p>
7. PS <input type="text" value="Enter"/>	<p>Verify that all ports are forwarded by using this command. The following is a sample screen. Port status is displayed. The VP 100 displays @ prompt.</p> <pre> @PS CH 1 CH 2 CH 3 CH 4 CH 5 CH 6 CH 7 CH 8 FWD FWD FWD FWD FWD FWD FWD FWD </pre> <p> If any ports were not forwarded, enter TE C 1 again. Repeat as necessary until all ports are forwarded.</p>
8. Verify forwarding	Place a test call to the VP 100 and verify the ports have been forwarded and that the call is answered by a live intercept.
9. Backup system configuration	See Backup - System Configuration section in this chapter.
10. Backup GNSSM	See Backup - GNSSM section in this chapter.
11. Power VP 100 OFF and replace the VP 100 hard disk drive	Follow the procedure to replace the hard disk drive. Refer to the MAINTENANCE chapter.
12. <input type="text" value="Alt"/> T	To display the Terminal menu . The Terminal menu appears.
13.  and 	Move to Change Baud Rate . Selection is highlighted.

Action	CAT/VP 100 Description and Response (continued)
14. <input type="button" value="Enter"/>	To change baud rate. The Baud Rates menu appears.
15.  and 	Move to 38400. Selection is highlighted.
16. <input type="button" value="Enter"/>	To accept new baud rate. Status line displays baud rate of 38400.
17. <input type="button" value="Alt"/> R	To display the Restore menu. The Restore menu appears.
18.  and 	Move to System Disk . Selection is highlighted.
19. <input type="button" value="Enter"/>	<p>The data transfer procedure begins immediately after the power is applied.</p> <p>For VP 100 systems at Release 5.x, go to step 30 and follow the steps from 30.</p> <p>For VP 100 systems at Release 6.1, continue with step 21.</p>
20. Power VP 100 ON	<p>A ***WARNING*** screen appears asking that Release 6 Prompt Set(s) be selected from the menus that follow.</p>
21. <input type="button" value="Enter"/>	<p>Choose new Prompt Set screen appears showing the first language as Prompt Set 1.</p>
22.  and 	<p>Move the the language prompt set number for the language being installed. This should be the same language as previously installed as Prompt Set 1.</p> <p>Selection is highlighted.</p>
23. <input type="button" value="Enter"/>	<p> The prompt sets must be installed in the same order as they were installed originally for the system configuration to be correct.</p> <p> If none is selected, the procedure will abort.</p> <p>If Prompt Set 1 is United States English, a ***WARNING*** screen appears stating that U.S. English is selected for Prompt Set 1. For all other languages installed, the screen states that U.S. English was not selected.</p>
24. <input type="button" value="Enter"/>	<p>Choose new Prompt Set screen appears showing Prompt Set 2 selections.</p>

Action	CAT/VP 100 Description and Response (continued)
25. <input type="button" value="left arrow"/> and <input type="button" value="right arrow"/>	Move to the language prompt set number for the language being installed. Select none if the VP. 100 does not have the Multilingual Prompts feature. Selection is highlighted.
26. <input type="button" value="Enter"/>	If none is selected, Prompt Set 1 is loaded onto the hard disk. Proceed to step 30. OR
27. <input type="button" value="Enter"/>	If a language is selected, a ***WARNING*** screen appears saying that a selection for Prompt Set 2 has been made and disk drive voice storage capacity will be reduced.
28. <input type="button" value="Enter"/>	Another ***WARNING*** screen appears saying that the Multilingual feature package must be installed to activate Prompt Set 2.
28. <input type="button" value="Enter"/>	If Prompt Set 2 is United States English, a ***WARNING*** screen appears stating that U.S. English has been selected for Prompt Set 2. For all other languages installed, the screen states that U.S. English was not selected.
29. <input type="button" value="Enter"/>	Both prompt sets are loaded onto the hard disk.
30. Wait for completion	This procedure takes about one hour to complete. At completion, the Data Transfer Complete screen appears.
31. <input type="button" value="Enter"/>	System reboots.
32. <input type="button" value="Enter"/> <input type="button" value="Enter"/>	This begins auto baud detect. TESTING HARDWARE
33. Wait for the VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS. . . DONE.
34. <input type="button" value="Enter"/>	VP 100 password prompt is displayed.
35. Logon	Enter the maintenance level password. VP 100 @ prompt is displayed.
36. Test	Test for normal operation.
 If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.	
 To abort this procedure, press <input type="button" value="Escape"/> at any time.	

▶ **WARNING** ◀

If aborted, this procedure **must** be restarted and run through to completion before the VP 100 will be back in service.

7.5 HARD DISK DRIVE UPGRADE PROCEDURE

This section describes the procedure to upgrade a VP 100 hard disk to a higher capacity hard disk drive. A hard disk drive upgrade provides additional hours of voice message storage. Information provided is preparation for hard disk drive replacement and hard disk drive replacement procedures.

Refer to the Disk Usage report to determine when to install a higher capacity drive. Refer to the REPORTS chapter in this manual.

► WARNING ◀

Replacing the VP 100 hard disk drive results in the loss of all stored messages in all mailboxes. The system configuration and associated GNSSM that are restored to the replacement drive will reflect the configuration at the time the last backup was made.

You should be familiar with basic maintenance procedures and the UPDATE and INSTALL programs of the VP 100. Refer to the following chapters and sections in this manual for further information:

Manual	Chapter	Section
<i>Installation and Maintenance</i>	INSTALLATION	Testing the Installation and Telephone Changes
<i>Installation and Maintenance</i>	MAINTENANCE	Hard Disk Drive (HD) Replacement
<i>Configuration</i>	CONFIGURATION	UPDATE and INSTALL

The Restore System Disk procedure is used when upgrading a hard disk. The CAT **Restore** menu option transfers data from the CAT hard disk to the VP 100. The procedure transfers VP 100 System Software, then System Prompts, and the System Configuration tables to the new hard disk.

 The Restore System Disk procedure **must** be done onsite with a cabled connection to the VP 100 at 38400 baud, and requires the VP 100 to be out of service for the duration of the procedure.

The **Restore System Disk** menu option is **only** available when a system is selected. All data to be restored is copied from subdirectories on the CAT hard disk to the VP 100. The subdirectories used during this Restore procedure are determined by the selected system's serial number, release of system software, and by the release of prompts defined for the system. Refer to the CAT chapter, Software Description section.

Any GNSSM that have previously been saved (by using the Backup procedure) may be restored to the VP 100 after the Restore System Disk procedure has completed.

■ Upgrade Procedure

The following equipment is needed for this procedure and should be assembled prior to starting:

- The new VP 100 hard disk drive.

☞ **ONLY TOSHIBA SUPPLIED HARD DISK DRIVES CAN BE USED WITH THE VP 100.**

- A fully operational CAT with all VP 100 PC software installed. Refer to the CAT chapter.
- A CAT interface cable.

To replace the VP 100 hard disk, perform the following steps.

Action	CAT/VP 100 Description and Response
1. Start the CAT program	Refer to the CAT chapter. Select System screen is displayed.
2. Select system to update	Refer to the Select System Screen section of this chapter. If the system whose hard disk drive is being replaced is not displayed in the Select System screen, recover the system from floppy diskette following the Recover procedure described in this chapter. Terminal emulation begins.
3. Connect null modem cable to VP 100 TERM #1	If the VP 100 is not operational due to a defective hard disk, skip to step 11.
4. Establish connection at 19200 baud.	Establish a local (cabled) connection with the VP 100 that is being restored. The screen prompts for the password. Refer to the INSTALLATION chapter.
5. Logon	Logon to Maintenance level at the VP 100 @ prompt.
6. TE C 1 <input type="text" value="Enter"/>	Forward all ports by using this command. The following is a sample screen. When all ports are forwarded, the VP 100 displays the @ prompt. <pre> @TE C 1 PORT # 1 FORWARDED PORT # 2 FORWARDED PORT # 3 FORWARDED PORT # 4 FORWARDED PORT # 5 FORWARDED PORT # 6 FORWARDED PORT # 7 FORWARDED PORT # 8 FORWARDED ALL PORTS FORWARDED </pre>

Action	CAT/VP 100 Description and Response (continued)
7. PS <input type="text" value="Enter"/>	<p> If a PBX forwarding string is not defined in System Parameter 45, the ports are still placed in the FWD state but may not have actually been forwarded on the PBX.</p> <p>Verify that all ports are forwarded by using this command. Port status is displayed. The VP 100 displays @ prompt. The following is a sample screen.</p> <pre> @PS CH 1 CH 2 CH 3 CH 4 CH 5 CH 6 CH 7 CH 8 FWD FWD FWD FWD FWD FWD FWD FWD </pre>
8. Verify forwarding	<p> If any ports were not forwarded, enter TE C 1 again. Repeat as necessary until all ports are forwarded.</p> <p>Place a test call to the VP 100 and verify the ports have been forwarded and that the call is answered by a live intercept.</p>
9. Backup system configuration	See Backup – System Configuration section in this chapter.
10. Backup GNSSM	See Backup – GNSSM section in this chapter.
11. Power VP 100 OFF and replace the VP 100 hard disk drive	Follow the procedure to replace the hard disk drive. Refer to the MAINTENANCE chapter.
12. <input type="text" value="Alt"/> T	To display the Terminal menu .
13.  and 	Move to Change Baud Rate . Selection is highlighted.
14. <input type="text" value="Enter"/>	To change baud rate. The Baud Rates menu appears.
15.  and 	Move to 38400. Selection is highlighted.
16. <input type="text" value="Enter"/>	To accept new baud rate. Status line displays baud rate of 38400.
17. <input type="text" value="Alt"/> R	To display the Restore menu .
18.  and 	Move to System Disk . Selection is highlighted.
19. <input type="text" value="Enter"/>	The data transfer procedure begins immediately after the power is applied. Data transfer begins.
20. Power VP 100 ON	

Action	CAT/VP 100 Description and Response (continued)
	<p>For VP 100 systems at Release 5.x, go to step 30 and follow the steps from 30.</p> <p>For VP 100 systems at Release 6.1, continue with step 21.</p> <p>A ***WARNING*** screen appears asking that Release 6 Prompt Set(s) be selected from the menus that follow.</p>
21. <input type="text" value="Enter"/>	<p>Choose new Prompt Set screen appears showing the first language as Prompt Set 1.</p>
22. <input type="text" value="←"/> and <input type="text" value="→"/>	<p>Move the the language prompt set number for the language being installed. Selection is highlighted.</p>
	<p> The prompt sets must be installed in the same order as they were installed originally for the system configuration to be correct.</p>
	<p> If none is selected, the procedure will abort.</p>
23. <input type="text" value="Enter"/>	<p>If Prompt Set 1 is United States English, a ***WARNING*** screen appears stating that U.S. English is selected for Prompt Set 1. For all other languages installed, the screen states that U.S. English was not selected.</p>
24. <input type="text" value="Enter"/>	<p>Choose new Prompt Set screen appears showing Prompt Set 2 selections.</p>
25. <input type="text" value="←"/> and <input type="text" value="→"/>	<p>Move to the language prompt set number for the language being installed. Select none if the VP 100 does not have the Multilingual Prompts feature.</p>
	<p>Selection is highlighted.</p>
26. <input type="text" value="Enter"/>	<p>If none is selected, Prompt Set 1 is loaded onto the hard disk. Proceed to step 30.</p>
	<p>OR</p>
	<p>If a language is selected, a ***WARNING*** screen appears saying that a selection for Prompt Set 2 has been made and disk drive voice storage capacity will be reduced.</p>
27. <input type="text" value="Enter"/>	<p>Another ***WARNING*** screen appears saying that the Multilingual feature package must be installed to activate Prompt Set 2.</p>

Action	CAT/VP 100 Description and Response (continued)
28. <input type="text" value="Enter"/>	If Prompt Set 2 is United States English, a ***WARNING*** screen appears stating that U.S. English has been selected for Prompt Set 2. For all other languages installed, the screen states that U.S. English was not selected.
29. <input type="text" value="Enter"/>	Both prompt sets are loaded onto the hard disk.
30. Wait for completion	This procedure takes about one hour to complete. At completion, the Data Transfer Complete screen appears.
31. <input type="text" value="Enter"/>	System reboots.
32. <input type="text" value="Enter"/> <input type="text" value="Enter"/>	This begins auto baud detect. TESTING HARDWARE
33. Wait for the VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS. . . DONE.
34. <input type="text" value="Enter"/>	VP 100 password prompt is displayed.
35. Logon	Enter the maintenance level password. VP 100 @ prompt is displayed.
36. Test	Test for normal operation.
☞ If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.	
☞ To abort this procedure, press <input type="text" value="Escape"/> at any time.	

▶ **WARNING** ◀

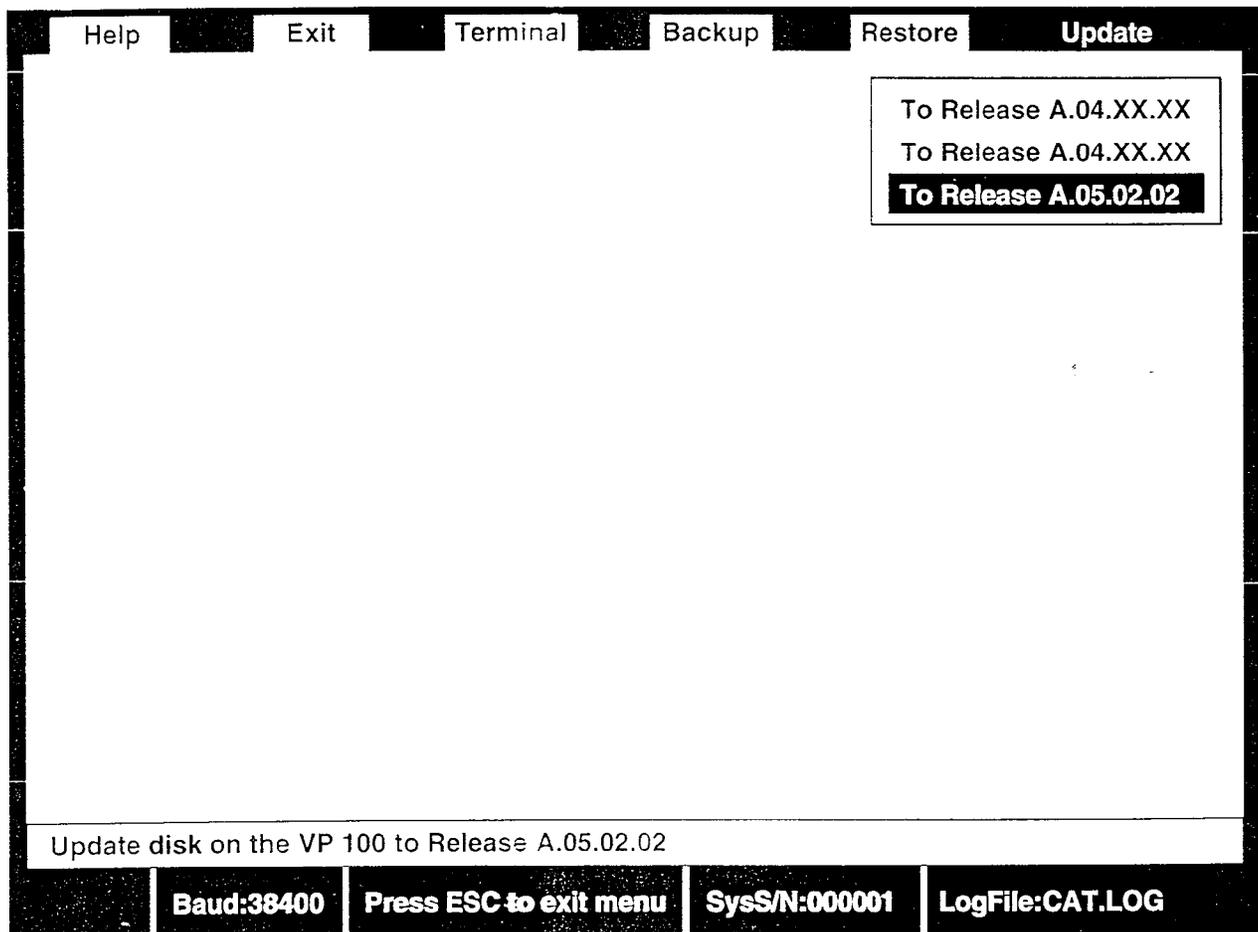
If aborted, this procedure **must** be restarted and run through to completion before the VP 100 is back in operation.

7.6 SYSTEM SOFTWARE UPDATE PROCEDURE

This section describes how to Update the VP system software. Information is included to prepare for system software Update and the system software Update procedure.

The **Update** menu option is used to install a new release of VP 100 system software onto the VP 100 hard disk. When multiple releases of VP 100 system software are installed on the CAT hard disk, the **Update** menu displays the different releases to which a system can be updated.

The following is an example of the **Update** menu.



The **Update** menu option is only available when the selected system is defined with an earlier release of system software (compared with the latest release installed on the CAT hard disk). After an Update procedure has completed, the CAT program automatically changes the release of software defined for the selected system to the updated release number.

The CAT **Update** menu option transfers data from a release directory on the CAT hard disk to the VP 100. The actual release directory used during the Update procedure is determined by the release selected from the **Update** menu.

- ☞ The Update procedure **must** be done onsite with a cabled connection to the VP 100 at 38400 baud, and requires the VP 100 to be out of service for the duration of the procedure.

New VP 100 software releases from the manufacturer are generally accompanied by a software release notice describing the changes, improvements, and modifications to the VP 100. The notice may also contain specific instructions for installing the new release on the CAT hard disk and on the VP 100. The instructions may supersede the general instructions that follow.

■ Update Procedure

To update the VP 100 software, perform the following steps.

Action	CAT/VP 100 Description and Response
1. Start the CAT program	Refer to the CAT chapter. Select System screen is displayed.
2. Select system to update	Refer to the Select System Screen section of this chapter. If the system whose software is being updated is not displayed in the Select System screen, recover the system from floppy diskette following the Recover procedure described in this chapter. Terminal emulation begins.
3. Establish connection at 38400 baud.	Establish a local (cabled) connection with the VP 100 that is being restored. Refer to the INSTALLATION chapter. Prompts for password.
4. Logon	Logon to Maintenance level. VP 100 @ prompt is displayed.
5. TE C 1 <input type="text" value="Enter"/>	Forward all ports by using this command. The following is a sample screen. <pre> @TE C 1 PORT # 1 FORWARDED PORT # 2 FORWARDED PORT # 3 FORWARDED PORT # 4 FORWARDED PORT # 5 FORWARDED PORT # 6 FORWARDED PORT # 7 FORWARDED PORT # 8 FORWARDED ALL PORTS FORWARDED </pre>
	When all ports are forwarded, the VP 100 displays the @ prompt.

Action	CAT/VP 100 Description and Response (continued)
6. PS <input type="text" value="Enter"/>	<p>☞ If a PBX forwarding string is not defined in System Parameter 45, the ports are still placed in the FWD state but may not have actually been forwarded on the PBX.</p> <p>Verify that all ports are forwarded by using this command. Port status is displayed. The VP 100 displays @ prompt. The following is a sample screen</p> <pre> @PS CH 1 CH 2 CH 3 CH 4 CH 5 CH 6 CH 7 CH 8 FWD FWD FWD FWD FWD FWD FWD FWD FWD </pre>
7. Verify forwarding	<p>☞ If any ports were not forwarded, enter TE C 1 again. Repeat as necessary until all ports are forwarded.</p> <p>Place a test call to the VP 100 and verify the ports have been forwarded and that the call is answered by a live intercept.</p>
8. <input type="text" value="Alt"/> U	To display the Update menu .
9. <input type="text" value="↵"/> and <input type="text" value="↵"/>	Move to desired release. Selection is highlighted.
10. <input type="text" value="Enter"/>	Procedure begins by requesting that the system be powered OFF. Please power OFF the system.
11. Power VP 100 OFF	This step is skipped if power is already OFF. Thank you. Please wait.
12. Wait 15 seconds.	This delay is for the VP 100 hard disk drive to spin down. Please power ON the system.
13. Power VP 100 ON	Data transfer begins.
14. Wait for completion	As each step begins and ends, the screen is updated. See release note for length of time this procedure takes to complete. At completion, the Data Transfer Complete screen appears.
15. <input type="text" value="Enter"/>	System reboots.
16. <input type="text" value="Enter"/> <input type="text" value="Enter"/>	This begins auto baud detect. TESTING HARDWARE

Action	CAT/VP 100 Description and Response (continued)
17. Wait for the VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS... DONE.
18. Test	Test for normal operation.
☞	If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.
☞	To abort this procedure, press Escape at any time. If aborted, this procedure must be restarted and run through to completion before the VP 100 is back in operation.

7.7

ELECTRONIC FEATURE DELIVERY/REMOVAL

The Option Control Chip (OCC) on the Main Board (MB) contains the features contained on the VP 100. The following optional features can be added or removed from VP 100 systems.

Software Option	Description
SW-20004	Networking
SW-20034	Network Names Confirmation
SW-20041	Multilingual Prompts
SW-20042	Centrex Integration Software

Contact the Toshiba Customer Service department to add or remove VP 100 optional software.

- ☞ The OCC must always remain with the system for which it was purchased. You cannot enter the UPDATE program if the original OCC is not installed on the MB. If the MB must be replaced, the OCC assembly must be removed from the original MB and installed on the replacement MB.

7.8 SESSION REVIEW AND FILE MAINTENANCE

This section provides information about logging sessions captured during communications with a VP 100. Also described are procedures for saving, deleting, viewing, and printing the files containing logging information.

Each time the CAT program is started and enters terminal emulation, a file named **CAT.LOG** captures all the information received from a VP 100. The **CAT.LOG** file is created by default when logging is enabled and stored in the selected system's subdirectory.

For example, the log file for system serial number 000512 would be stored on the CAT hard disk in subdirectory SN000512.100. The following is an example.

```
C:\VMXCAT\SN000512.100\CAT.LOG
```

If a **CAT.LOG** file exists from a previous session, it is reopened and the new session's information is added to the existing session information already in the file. The following is an example.

Original Information

```

-----CAT.LOG opened-----
-----SYSTEM SOFTWARE RELEASE A.4.3.8 (MM/DD/YY-----
DAY MM/DD HH:MM:SS YYYY 100 DEMO ID:123456 S/N:123456 PBX:10

(MODEM ENABLED) LAST LOGON: MM/DD HH:MM
@PASSWORD:
@U

```

```

-----SYSTEM CONFIGURATION UPDATE-----
DAY MM/DD HH:MM:SS YYYY 100 DEMO ID:123456 S/N:123456 PBX:10

```

At the dot (.), enter ? for HELP.

```

.A USER
ADD:710,N,13
ADD:
.E

```

EXITING UPDATE.

WAIT...DONE.

```

DAY MM/DD HH:MM:SS YYYY 100 DEMO ID:123456 S/N:123456 PBX:10

```

```

-----CONFIGURATION UPDATE COMPLETED-----
-----CAT.LOG opened-----
@U

```

New Information

```

-----SYSTEM CONFIGURATION UPDATE-----
DAY MM/DD HH:MM:SS YYYY 100 DEMO ID:123456 S/N:123456 PBX:10

```

At the dot (.), enter ? for HELP.

```

.D USER
DEL:710
DEL:
.E

```

EXITING UPDATE.

WAIT...DONE.

```

DAY MM/DD HH:MM:SS YYYY 100 DEMO ID:123456 S/N:123456 PBX:10

```

```

-----CONFIGURATION UPDATE COMPLETE-----
@

```

To save each session in separate files rather than adding to the end of a single cumulative CAT.LOG file, at the DOS prompt C:\VMXCAT>. enter: LOG_SAVE XXXXXX

(XXXXXX represents the serial number of the VP 100). The following is an example.

```
C:\VMXCAT>DIR SNXXXXXX.100\CAT.*
```

```
Volume in drive C is TEST STA B
Volume Serial Number is XXXXXX
Directory of C:\VMXCAT\SNXXXXXX.100
```

```
CAT L04    43 DD-MM-YY  HH:MMa
CAT L01    22037 DD-MM-YY  HH:MMp
CAT L02    16477 DD-MM-YY  HH:MMa
CAT L03    8552 DD-MM-YY  HH:MMa
CAT LOG    115 12-31-99  11:59p
5 File(s) 30742528 bytes free
```

} Previous sessions saved as individual files
 ↓ Current logged session

```
C:\VMXCAT>LOG_SAVE XXXXXX 
```

↓ Save the current session in an individual file

```
C:\VMXCAT>ECHO OFF
This command is used to save a CAT.LOG file session
Saved as LOG file 05
```

```
C:\VMXCAT>
C:\VMXCAT>DIR SNXXXXXX.100\CAT.*
```

```
Volume in drive C is TEST STA B
Volume Serial Number is 2D27-14EB
Directory of C:\VMXCAT\SN050102.100
```

```
CAT L04    43 DD-MM-YY  HH:MMa
CAT L01    22037 DD-MM-YY  HH:MMp
CAT L02    16477 DD-MM-YY  HH:MMa
CAT L03    8552 DD-MM-YY  HH:MMa
CAT L05    115 12-31-99  11:59p
5 File(s) 30742528 bytes free
```

From the size, date, & time, you can see this was the CAT.LOG file now renamed to CAT.L05

When the LOG_SAVE command is executed, the session is automatically renamed CAT.L01. The next time a session is saved, it is automatically named CAT.L02. All further sessions are automatically sequentially numbered.

For example, if the LOG_SAVE command were executed for system serial number 000512, the SN000512 directory would contain a file CAT.L01. The following shows how it appears.

```
C:\VMXCAT\SN000512.100\CAT.L01
```

If LOG_SAVE is executed when no system is selected, the CAT.LOG file is stored in the C:\VMXCAT directory.

■ To Stop Session Logging

The CAT program always starts with session logging turned ON. The following procedures explain how to turn session logging OFF.

Action	Description
Alt T	To enter Terminal menu .
Session Logging	Use the ▲ and ▼ keys to highlight.
Stop Logging Enter	Use the ▲ and ▼ keys to highlight.

■ To Start Session Logging

The following procedures explain how to turn session logging ON.

Action	Description
Alt T	To enter Terminal menu .
Session Logging	Use the ▲ and ▼ keys to highlight.
Start Logging to File CAT.LOG Enter	Use the ▲ and ▼ keys to highlight.

☞ If the CAT/LOGOFF command line option is used, the CAT program starts with the log file closed.

■ System Log Directory

If prior session logs have been saved, multiple log files may be stored within a system's subdirectory. Up to 100 session logs can be stored for each system: **CAT.LOG** and numbered logs from **CAT.L01** to **CAT.L99**. The procedure to display all logs stored for a given system follows:

1. Complete any active communication session with a VP 100 and Exit from the CAT program (**Alt E**).
2. To print the log directory, turn the printer ON and type **Control PrtSc** (print screen).
 Be sure to turn the printer OFF when finished by entering: **Control PrtSc**.
3. With the DOS prompt **C:\VMXCAT>** displayed, enter the following command, where **XXXXXX** is the system serial number:

```
LOG_DIR XXXXXX
```

The program displays the log file name, the file size (in bytes), and the date and time the file was created.

To stop scrolling the log directory display, type: **Control S**

To start scrolling the log directory display, type: **Control Q**

■ Saving a Session Log

The CAT program always uses the log file name **CAT.LOG** to store session information. This file must exist within a given systems subdirectory before it can be saved.

To save a session log follow the procedure below.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt E**).
2. With the DOS prompt **C:\VMXCAT>** displayed, enter the following command, where **XXXXXX** is the system serial number:

LOG_SAVE XXXXXX

This command saves the **CAT.LOG** file as **CAT.LXX**, where **XX** is the log file number, starting with 01. The time and date of the save is attached to the file. Each time this command is issued, the next available log number is assigned. Up to 99 log files can be saved in this manner.

■ Considerations

The **CAT.LOG** file is created by default when logging is enabled. If logging information is saved as individual files, the existing **CAT.LOG** is renamed to **CAT.LXX**. The following are considerations for managing session log files:

- To create a **CAT.LXX** file with a known start time or to create a log file containing only desired data, use the following procedure:

1. **LOG_SAVE** if the information from previous sessions is required.

or

LOG_DEL if information from previous sessions is not required.

2. Execute the commands in the VP 100 which you wish to save in the log file.
3. **LOG_SAVE** again.

The last log file will contain only the data you wish to keep.

- Since the entire **CAT.LOG** file is in effect moved to the **CAT.LXX** file, each execution of the **LOG_SAVE** command marks the start of a new file. After a **LOG_SAVE** command, a new **CAT.LOG** file is recreated as an empty file when logging is enabled; data will not overlap from one file to another and data from a deleted log file is not retrievable.

■ Deleting a Session Log

Any session log can be deleted from the CAT, when no longer needed or to increase storage capacity on the hard disk. To delete individual session logs from a given system's subdirectory, follow the procedure below.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt** E).
2. With the DOS prompt C:\VMXCAT> displayed, enter the following command, where **XXXXXX** is the system serial number and **YY** is the saved log number (01 to 99):

```
LOG_DEL XXXXXX YY
```

If the argument **YY** is omitted, the **CAT.LOG** file is deleted.

To delete the session log not specific to any system, follow the procedure below:

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt** E).
2. With the DOS prompt C:\VMXCAT> displayed, type the following command:

```
DEL CAT.LOG Enter
```

■ Viewing a Session Log

The contents of any log file stored on the CAT hard disk can be displayed. When viewing a session log, the display always starts from the top or beginning of the log file.

To view a session log for a given system, follow the procedure below.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt** E).
2. With the DOS prompt C:\VMXCAT> displayed, enter the following command, where XXXXXX is the system serial number and YY is the saved log number (01 to 99):

LOG_SHOW XXXXXX YY

If the argument YY is omitted, the **CAT.LOG** file is displayed.

To stop scrolling the log session display, type: **Control** S

To start scrolling the log session display, type: **Control** Q

 To print a screen of information while scrolling through a Log file, stop the display (**Control** S) then **Shift** **PrtSc**.

To view the session log for no system <NONE>, follow the procedure below.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt** E).
2. With the DOS prompt C:\VMXCAT> displayed, enter the following command:

TYPE CAT.LOG

To stop the log display, type: **Control** S

To start the log display, type: **Control** Q

■ Printing a Session Log

The contents of any log file stored on the CAT hard disk can be printed. When printing a session log, the entire file is printed.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt** **E**).
2. Turn the printer ON and attach the printer cable to the CAT.
3. With the DOS prompt **C:\VMXCAT>** displayed, enter the following command, where **XXXXXX** is the system serial number and **YY** is the saved log number (01 to 99):

LOG_PRNT XXXXXX YY

If the argument **YY** is omitted, the (default) **CAT.LOG** file is printed.

To print the session log for no system **<NONE>**, follow the procedure below.

1. Complete any active communication session with a VP 100 and exit from the CAT program (**Alt** **E**).
2. With the DOS prompt **C:\VMXCAT>** displayed, type the following command:

PRINT CAT.LOG

- ☞ To display all VP 100 systems stored on the CAT hard disk while in the DOS command processor, type the following command at the DOS prompt **C:\VMXCAT>**

DIR SN*

A listing of all system serial number subdirectories is displayed (see APPENDIX A at the end of this chapter). Note that the system name, ID, software and prompt level are **not** displayed. To view this information, you must use the CAT **Select System** menu.

- ☞ To display all DOS operations described in this chapter, type the following command at the DOS command processor with the DOS prompt **C:\VMXCAT>**

DIR *.BAT

A listing of all CAT DOS batch file commands is displayed in the Quick Reference Guide at the beginning of this chapter).

7.9 CAT HARD DISK DRIVE OPERATIONS

This section explains the procedures to delete a VP 100 from the CAT hard disk drive, and provides guidelines for CAT hard disk maintenance.

■ Delete System

When the CAT hard disk drive approaches maximum storage capacity, it is necessary to free space for new systems. Existing systems on the CAT should first be archived to floppy diskette. After archiving the data, delete the system from the CAT hard disk by following the procedure below.

Deleting a system removes all stored information for the selected VP 100 from the CAT hard disk, including backup configuration, GNSSM, and session log files.

► WARNING ◀

Follow the procedures to back up a system to floppy diskette before performing the following procedure.

To delete a VP 100 system directory from the CAT hard disk, follow the steps below.

1. Write down the six digit **serial number** of the system to be deleted.
2. Exit the CAT program by pressing **[Alt] E [Enter]**.
3. With the DOS prompt displayed (**C:\VMXCAT>**), where **XXXXXX** is the VP 100 system serial number, type:

```
SYS_DEL XXXXXX
```

The following text is displayed:

```
This command is used to erase a VP 100 system subdirectory. If you do NOT
wish to remove SYSTEM S/N XXXXXX press Ctrl-C NOW otherwise.
Press any key when ready . . .
```

4. Press any key when ready to remove the system directory.

If you get the following prompt, all possible options have not been backed-up for the system being deleted: **file not found.**

☞ To display all VP 100 systems stored on the CAT hard disk while in the DOS command processor and with the DOS prompt **C:\VMXCAT>** displayed, type the following command:

```
DIR SN* [Enter]
```

A listing of all system serial number subdirectories is displayed (see APPENDIX A in the back of this chapter for sample listing). Note that the system name, ID, software, and prompt level are **not** displayed. To view this information you must use the **CAT Select System** menu.

■ CAT Hard Disk Drive Maintenance

Most CAT hard disk drives have a 20-megabyte storage capacity. Although this appears to be a large size, it can quickly fill up when storing data representing digitized voice (Greetings, Names, Scripted and Sequential Messages).

Since one CAT may be used to support many VP 100, the hard disk drive on the CAT is generally used as a temporary storage area for VP 100 system configurations. After repeated write and delete operations have occurred on any disk drive, performance and speed can be reduced because files become fragmented. Old information must be deleted from the hard disk drive to accommodate new systems.

Toshiba recommends the periodic use of a program, such as *Norton Utilities Speed Disk*, to perform housekeeping chores on the hard disk drive. These utilities can scan and test all segments of a disk drive and correct most deficiencies in the system. In addition, data on the disk can be reorganized to allow more efficient data storage and retrieval.

7.10 ADDING A SECOND LANGUAGE (RELEASE 6.1 AND LATER)

This section describes the procedure to add a second language prompt set to the VP 100 hard disk.

- ☞ The Multilingual Prompts feature must be installed to activate the prompt set for the second language.

► WARNING ◀

Adding a second language prompt set will result in the loss of all stored messages, names and greetings and loss of voice storage capacity. The system configuration and associated GNSSM that are restored to the replacement drive will reflect the configuration at the time the last backup was made.

You should be familiar with basic maintenance procedures and the UPDATE and INSTALL programs of the VP 100. Refer to the following chapters and sections in this manual for further information:

Chapter	Section
INSTALLATION	Testing the Installation and Telephone Changes
CONFIGURATION	UPDATE and INSTALL

The procedure to add a second language includes transferring VP 100 System software, both language prompt sets, and the System Configuration tables to the hard disk. The Restore System Disk procedure is used to add the second language prompts. This **must** be done onsite with a cabled connection to the VP 100 at 38400 baud and requires the VP 100 to be out of service for the duration of the procedure.

The **Restore System Disk** menu option used to add the second language is only available when a system is selected. All data to be restored is copied from subdirectories on the CAT hard disk to the VP 100. The subdirectories used during this restore procedure are determined by the selected system's serial number, release of system software, and by the release of prompts defined for the system. Refer to CONFIGURATION APPLICATIONS TERMINAL, Software Description in this manual.

Any GNSSM that had previously been saved (by using the Backup procedure) may be restored to the VP 100 after the Restore System Disk procedure has completed.

■ Procedure for Adding a Second Language Prompt Set

The following equipment is needed for this procedure and should be assembled prior to starting:

- A fully operational CAT with all VP 100 PC software installed (refer to the CAT chapter).
- A CAT interface cable.
- The configuration diskettes for the customer location (unless the backed up configuration and GNSSM are already present on the CAT hard disk drive).

To add the prompt set for a second language to the VP 100 hard disk, perform the following steps. The prompt set already installed will be reinstalled first and the new language prompt set will be installed second.

Action	CAT/VP 100 Description and Response
1. Start the CAT program	Refer to the CAT chapter. Select System screen is displayed.
2. Select system to add the second set of language prompts to.	Refer to the Select System Screen section of this chapter. If the system that is being installed with a second language is not displayed in the Select System screen, add that system using the select system screen. Terminal emulation begins.
3. Connect null modem cable to VP 100 TERM #1	If the VP 100 is not operational due to a defective hard disk, skip to step 11.
4. Establish connection at 19200 baud.	Establish a local (cabled) connection with the VP 100 that is being restored. Refer to the INSTALLATION chapter. Prompts for password.
5. Logon	Logon to Maintenance level at the VP 100 @ prompt.
6. TE C 1 <input type="text" value="Enter"/>	Forward all ports by using this command. The following is a sample screen. When all ports are forwarded, the VP 100 displays the @ prompt.

```
@TE C 1
PORT # 1 FORWARDED
PORT # 2 FORWARDED
PORT # 3 FORWARDED
PORT # 4 FORWARDED
PORT # 5 FORWARDED
PORT # 6 FORWARDED
PORT # 7 FORWARDED
PORT # 8 FORWARDED
ALL PORTS FORWARDED
```

Action	CAT/VP 100 Description and Response (continued)
7. PS <input type="text" value="Enter"/>	<p>☞ If a PBX forwarding string is not defined in System Parameter 45, the ports are still placed in the FWD state but may not have actually been forwarded on the PBX.</p> <p>Verify that all ports are forwarded by using this command. The following is a sample screen. Port status is displayed. The VP 100 displays @ prompt.</p> <pre> @PS CH 1 CH 2 CH 3 CH 4 CH 5 CH 6 CH 7 CH 8 FWD FWD FWD FWD FWD FWD FWD FWD </pre>
8. Verify forwarding	<p>☞ If any ports were not forwarded, enter TE C 1 again. Repeat as necessary until all ports are forwarded.</p> <p>Place a test call to the VP 100 and verify the ports have been forwarded and that the call is answered by a live intercept.</p>
9. Backup system configuration	See Backup – System Configuration section in this chapter.
10. Backup GNSSM	See Backup – GNSSM section in this chapter.
11. Power VP 100 OFF	
12. <input type="text" value="Alt"/> T	To display the Terminal menu . The Terminal menu appears.
13. ▲ and ▼	Move to Change Baud Rate . Selection is highlighted.
14. <input type="text" value="Enter"/>	To change baud rate. The Baud Rates menu appears.
15. ▲ and ▼	Move to 38400. Selection is highlighted.
16. <input type="text" value="Enter"/>	To accept new baud rate. Status line displays baud rate of 38400.
17. <input type="text" value="Alt"/> R	To display the Restore menu . The Restore menu appears.
18. ▲ and ▼	Move to System Disk . Selection is highlighted.
19. <input type="text" value="Enter"/>	
20. Power VP 100 ON	The data transfer procedure begins immediately after the power is applied. A ***WARNING*** screen appears asking that Release 6 Prompt Set(s) be selected from the menus that follow.

Action	CAT/VP 100 Description and Response (continued)
21. <input type="button" value="Enter"/>	Choose new Prompt Set screen appears showing the first language as Prompt Set 1 .
22. <input type="button" value="▲"/> and <input type="button" value="▼"/>	Move to the language prompt set number for the language being restored. This should be the same language as previously installed as Prompt Set 1 . Selection is highlighted.
	<p><input type="checkbox"/> The language prompts originally installed as Prompt Set 1 must be reinstalled as Prompt Set 1 for the system configuration to be correct.</p> <p><input type="checkbox"/> If none is selected, the procedure will abort.</p>
23. <input type="button" value="Enter"/>	If Prompt Set 1 is United States English, a ***WARNING*** screen appears stating that U.S. English has been selected for Prompt Set 1. For all other languages installed, the screen states that U.S. English was not selected.
24. <input type="button" value="Enter"/>	Choose new Prompt Set screen appears showing Prompt Set 2 selections.
25. <input type="button" value="▲"/> and <input type="button" value="▼"/>	Move to the language prompt set number for the new language being installed. Selection is highlighted.
26. <input type="button" value="Enter"/>	A ***WARNING*** screen appears saying that a selection for Prompt Set 2 has been made and disk drive voice storage capacity will be reduced. Also, messages on the disk are lost.
27. <input type="button" value="Enter"/>	Another ***WARNING*** screen appears saying that the Multilingual Prompt feature package must be installed to activate Prompt Set 2.
28. <input type="button" value="Enter"/>	If Prompt Set 2 is United States English, a ***WARNING*** screen appears stating that U.S. English has been selected for Prompt Set 2. For all other languages installed, the screen states that U.S. English was not selected.
29. <input type="button" value="Enter"/>	Both prompt sets are loaded onto the hard disk.
30. Wait for completion	This procedure takes about one hour per prompt set to complete. At completion, the Data Transfer Complete screen appears.
31. <input type="button" value="Enter"/>	System reboots.
32. <input type="button" value="Enter"/> <input type="button" value="Enter"/>	This begins auto baud detect. TESTING HARDWARE

Action	CAT/VP 100 Description and Response (continued)
33. Wait for the VP 100 to boot	This step takes about three minutes. INITIALIZING PORTS... DONE.
34. <input type="text" value="Enter"/>	VP 100 password prompt is displayed.
35. Logon	Enter the maintenance level password. VP 100 @ prompt is displayed.
36. Test	Test for normal operation.

 If an error message appears during the procedure, refer to Appendix B — Data Transfer Messages.

 To abort this procedure, press at any time.

► WARNING ◀

If aborted, this procedure **must** be restarted and run through to completion before the VP 100 will be back in service.

APPENDIX A PROCEDURES

SYSTEM SERIAL NUMBER SUBDIRECTORIES

This is a sample listing of all system serial number subdirectories displayed when the following command is issued at the C:\VMXCAT> prompt:

```
dir sn* 
```

```
C:\VMXCAT>dir sn*
Volume in drive C has no label
Directory of C:\VMXCAT
SN000002  100 <DIR>  MM-DD-YY  HH:MMAa
SN000011  100 <DIR>  MM-DD-YY  HH:MMAa
SN000008  100 <DIR>  MM-DD-YY  HH:MMAa
SN000015  100 <DIR>  MM-DD-YY  HH:MMAa
SN000018  100 <DIR>  MM-DD-YY  HH:MMAa
SN000019  100 <DIR>  MM-DD-YY  HH:MMAa
SN000020  100 <DIR>  MM-DD-YY  HH:MMAa
SN000024  100 <DIR>  MM-DD-YY  HH:MMAa
SN000023  100 <DIR>  MM-DD-YY  HH:MMAa
SN000006  100 <DIR>  MM-DD-YY  HH:MMAa
10 file(s) 5324800 bytes free
```

Note that the system name, ID, software level, and prompt level are not displayed. To view that information, you must use the **CAT Select System** menu.

APPENDIX B PROCEDURES

DATA TRANSFER MESSAGES

The CAT displays one screen to indicate when data transfer is complete, and another screen to indicate that a data transfer error has occurred. The format of the information within each screen is always the same; the actual information reported varies.

In the following examples, the bold type indicates information that does not change. A list of the possible text entries that can appear within the parentheses is listed at the end of this section.

■ Data Transfer Complete

The following is the format in which the **Data Transfer Complete** screen appears.

```
(Procedure Name)  
Completed Successfully  
Press  to continue
```

■ Data Transfer Errors

The following is the format in which all errors appear.

```
(Procedure Name)  
Unable to complete  
(Step of procedure)  
because  
(actual error)  
Press  to abort or  to continue
```

■ Possible Screen Entries

The following are the entries which can be displayed on the screen.

Procedure Names:

Backup Greetings/Names/Script & Sequential Messages
Backup System Configuration
Restore Greetings/Names/Script & Sequential Messages
Restore System Configuration
Restore System Prompts
Restore System Software
Restore System Disk
Update

Step of Procedure:

Displays the actual step of the procedure being performed when the error occurred. If any error messages appear, write down the exact error and contact your technical support center.

Actual Errors:

Unable to get response
Unable to complete file I/O operation
Time Limit Reached
Unexpected Packet Type
User Requested Abort
Packet Out of Sequence
Data to restore cannot be found
File I/O Error
Mailbox does not exist

STANDARD DTMF INTEGRATION

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INTRODUCTION

This chapter contains information about standard phone system integration with the VP 100.

Topics discussed include:

- Standard DTMF Integration vs. Adaptive Integration.
- Standard DTMF Integration.
- Message Waiting Indication.
- Called Party Identification.
- VP 100/PBX Interaction.

8.1 STANDARD DTMF INTEGRATION VS. ADAPTIVE INTEGRATION

Standard DTMF Integration and Adaptive Integration (AI) depend on the capabilities of a PBX and standard or optional features of the VP 100.

Standard DTMF Integration and Adaptive Integration use VP 100 standard features. However, Adaptive Integration enhances the operation beyond standard DTMF integration, dependent upon PBX/CO capabilities and therefore may require additional hardware, consisting of modems or additional cabling.

■ Message Waiting Indication (MWI)

In a standard VP 100, when the first new message is left in a mailbox, ringing Message Waiting Notification (MWN) is provided. The VP 100 calls the extension of the mailbox with a new message and, if the call is answered, plays a prompt indicating that there are messages in the mailbox. Message Waiting Indication (MWI) is an alternate method of notification. Depending on PBX functionality, any of the following may occur:

- The telephone message lamp may be lit,
- Stutter dial tone may be provided when the telephone receiver is off-hook and a message is waiting, or
- With Adaptive Integration, a display phone may indicate that a message is waiting.

Only one method, either Message Waiting Notification or Message Waiting Indication, is used for a mailbox. Both methods may not be used at the same time for the same mailbox.

Normally, MWN and MWI are turned OFF when the mailbox is logged on to, whether messages are listened to or not.

MWI operation can be varied in the following ways:

- To activate the MWI for each new message (System Parameter 83 — LAMP MW: LIGHT LAMP FOR EACH NEW MESSAGE).
- To call the extension before activating MWI (System Parameter 84 — LAMP MW: CALL EXTENSION BEFORE LIGHTING LAMP).
- To turn OFF MWI only when a mailbox contains no messages (System Parameter 166 — LAMP MW: TURN OFF ONLY IF NO NEW MESSAGES).

These configurable settings apply to all mailbox holders system-wide and are generally selected for a better match with the PBX functions.

■ Called Party Identification (CPI)

A standard VP 100 normally supervises calls. After collecting digits and outpulsing them, the VP 100 monitors the line to detect ringing, answer, busy, or all calls forwarded. By staying on the line until the call is released, the VP 100 maintains knowledge of the number that was called and can direct messages correctly.

Some PBXs can forward information about a call to the VP 100. Depending on the method a particular PBX uses to send the information, Standard DTMF Integration or Adaptive Integration can process the information to tailor system operation to the type of call received.

8.2 STANDARD DTMF INTEGRATION

The standard connection between the VP 100 and PBX phone system is a 2500-type single line extension. VP 100 Line Interface Cards (LIC) accept a series of PBX single lines. By emulating the touchtone telephone sets the PBX is expecting, the VP 100 performs all the operations that are normally possible from a single-line phone — receiving calls, taking messages, transferring calls, and initiating PBX functions by dialing DTMF digits or codes.

Standard DTMF Integration depends on the PBX's capabilities and uses only standard Toshiba VP System features. Only PBX call record information delivered as DTMF signals can be processed by a system utilizing Standard DTMF Integration. After an incoming call has had the initial called party's ID processed, the VP 100 reverts to standard operation.

■ Message Waiting Indication (MWI)

A system using Standard DTMF Integration may use PBX message waiting indicators if a 2500-type extension can dial a code to perform the function. Typically, the message waiting indicator is a lamp on the telephone set or a distinctive stutter dial tone provided when the telephone receiver is off-hook. The following conditions apply to Toshiba telephone systems:

- Toshiba telephone systems provide MWI via a message waiting lamp on the Toshiba proprietary telephones. PERCEPTION telephone systems can also provide MWI via a 2500-type telephone set equipped with a message waiting lamp.
- MWI (lamp or stutter dial tone) is **not** available to 2500-type extension users on STRATA systems. Message waiting notification is accomplished by ringing the 2500-type extension user.
- Stutter dial tone is not available on Toshiba telephone systems.

The following system parameters allow the entry of DTMF digit codes to allow the VP 100 to turn MWI ON and OFF.

System 79 — LAMP MW: "ON" PRE-EXTENSION DIGITS
System 80 — LAMP MW: "ON" POST-EXTENSION DIGITS
System 81 — LAMP MW: "OFF" PRE-EXTENSION DIGITS
System 82 — LAMP MW: "OFF" POST-EXTENSION DIGITS

All possibilities for code digits to precede or follow the desired mailbox are allowed. Code entries that are not applicable may be left blank.

■ Called Party Identification (CPI)

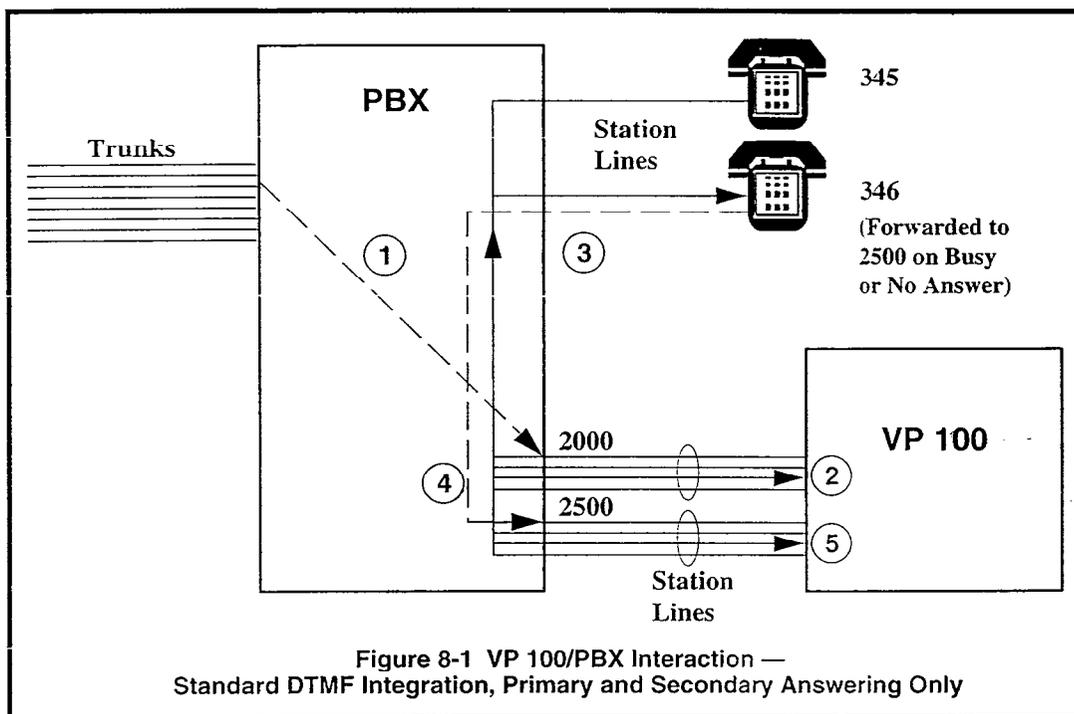
Certain phone systems provide the extension number of the called party when forwarding calls to the VP 100. When this information is provided in DTMF tones preceding the forwarded call, the VP 100 can process the call as if a caller had dialed the called extension. A standard integrated VP 100 can be configured to accept these forwarded calls in CX or MX mode. The call is extended to the called person's mailbox, and the caller hears the called person's greeting and may leave a private voice message. In this form of integration, the caller is not required to reenter the called person's extension as would normally be the case in CX or MX mode.

VP 100/PBX INTERACTION IN STANDARD DTMF INTEGRATION

This section explains how the phone system and the VP 100 interact when switching calls from the VP 100 port to a called station in standard DTMF integrated environments.

■ Primary and Secondary Answering

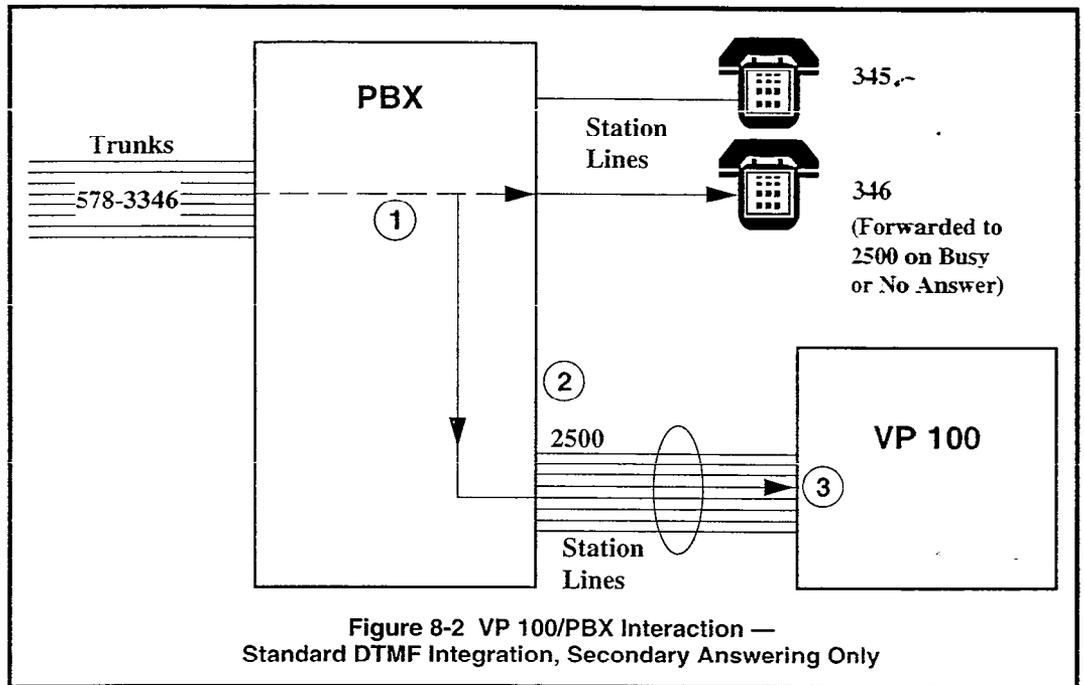
Figure 8-1 illustrates the interaction between the VP 100 and the PBX in a standard DTMF integration installation, where both Primary and Secondary Answering modes are used. An explanation of Figure 8-1 follows the diagram.



1. An incoming call is directed to the pilot number of the VP 100 hunt group for Primary Answering (e.g., 2000).
2. The VP 100 plays the port level Company Greeting and prompts the caller to dial an extension.
3. After the caller dials an extension (e.g., 346), the VP 100 transfers to a ringing extension and releases the port. If the greeting is ON, a transfer is not attempted, but instead the greeting is played and the caller is immediately prompted to leave a message, dial another extension, or dial zero.
4. On a no answer condition, the extension is programmed to automatically forward calls to a different group of ports (e.g., 2500) for Secondary Answering. When the call is forwarded, the PBX sends DTMF tones indicating the extension number that tells the VP 100 which extension the call was forwarded from.
On busy condition, the VP 100 reconnects to the caller and offers to take a message.
5. The caller is told that the person (or extension 346) "is unavailable" and is prompted to "leave a private message, dial another extension, or dial zero for assistance."

■ Secondary Answering Only

Figure 8-2 illustrates the interaction between the VP 100 and the PBX in a standard DTMF integration installation, where only Secondary Answering mode is used. An explanation of Figure 8-2 follows the diagram.



1. An incoming call is directed to an extension via a Direct Inward Dial (DID) telephone number (e.g., 578-3346) or station-to-station calling (e.g., 346).
2. On a busy or no answer, the extension is programmed to automatically forward calls to the VP 100 pilot number (e.g., 2500) for Secondary Answering. When the call is forwarded, the PBX tells the VP 100 which extension the call was forwarded from. There is no need for the caller to reenter the extension number.
3. The caller hears an announcement that the person (or extension 346) "is unavailable." or, if the person's greeting is ON, the greeting will play.

After the greeting or announcement plays, the caller is prompted to "leave a private message, dial another extension, or dial zero for assistance."

ADAPTIVE INTEGRATION

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INTRODUCTION

This chapter explains how Adaptive Integration enhances VP 100 operation by taking advantage of PBX/CO-provided call status and message indicator information.

Topics discussed include:

- How AI Enhances the VP 100.
- Different Types of Adaptive Integration.
- Called Party Status.
- Called Party Identification.
- Mailbox Features Available with Adaptive Integration.

ADAPTIVE INTEGRATION

Adaptive Integration (AI) enhances VP 100 operation beyond Standard DTMF Integration (see Standard DTMF Integration vs. Adaptive Integration in the previous chapter for a comparison). AI takes advantage of PBX/CO-provided call status and message waiting indication functions implemented by some means other than or in addition to DTMF mailbox digits prefixed to a call. Depending on the method a particular PBX uses to send call records and control indicators, the VP 100 may be equipped with proprietary integration cards or an RS-232C data link.

The Adaptive Integration feature enhances Message Waiting Indication (MWI) and Called Party Identification (CPI) significantly. AI enables the VP 100 to process MWI control signals from RS-232C or proprietary data links and expands CPI to a full data exchange capability where the PBX/CO and the VP 100 can pass calls and messages back and forth without the need to supervise call progress.

Message Waiting Indication (MWI)

In addition to lamp indicators and stutter dial tone, integrated VP 100 systems can send information via the data link that may allow the PBX/CO to display a message on a display phone. Some phone systems still use DTMF tones to activate MWI even if the identity of the called person is provided by the data link. The VP 100 can handle any combination of MWI and CPI methods because they are independent features.

Called Party Identification (CPI)

In an integrated VP 100, and depending on PBX/CO functions, CPI can expand well beyond the simple identification of the called party's extension and mailbox. Adaptive Integration relies on phone system station forwarding to deliver the call to the VP 100. If the PBX/CO is capable of sending a detailed call record to the VP 100, an integrated system collects the call record via DTMF tones or data link and associates the information with the port the call is received on. Then, using the information in the call record, the VP 100 responds with appropriate prompts and actions determined by the system configuration.

CPI Call Records

A call record format and its contents depend on the phone system manufacturer, model, and configuration. Call handling can be tailored according to the information provided by the call record. Following are the types of information a call record may contain:

- Called Party ID.
- Called Party Status (busy/no answer/all calls forwarded).
- Calling Party ID.
- External — Trunk ID.
- Internal — Extension/mailbox ID.
- Forwarded — Secondary Answering Call Coverage.
- Direct — Primary Answering.

The importance of the ability to process call records is that it directly affects the caller's experience. From the caller's point of view, all they have to do is call a number. If, for any reason, a call is unanswered and forwarded to the VP 100, subsequent system actions proceed based on the information in the call record, without repetitious input from the caller. This decreases misdirected calls and messages since the called number is only dialed once. The VP 100 moves toward seamlessly handling calls with fewer prompts.

Adaptive Integration (AI) introduces two additional features — Quick Logon and Quick Greeting Activation. These features offer shortcuts for high-use VP 100 functions.

Quick Logon

Allows a mailbox holder to enter to immediately log on to the mailbox identified by the calling extension number. After entering , the caller is prompted for their security code.

When calling from an extension other than their own, internal callers can log on to their own mailbox by using the standard logon (entering and their mailbox numbers).

Quick Greeting Activation

When configured for a mailbox, mailbox holders can turn their greeting ON without entering the mailbox. After dialing the VP 100, the caller enters to activate or record a new greeting for the mailbox identified by calling extension.

9.2 TYPES OF ADAPTIVE INTEGRATION

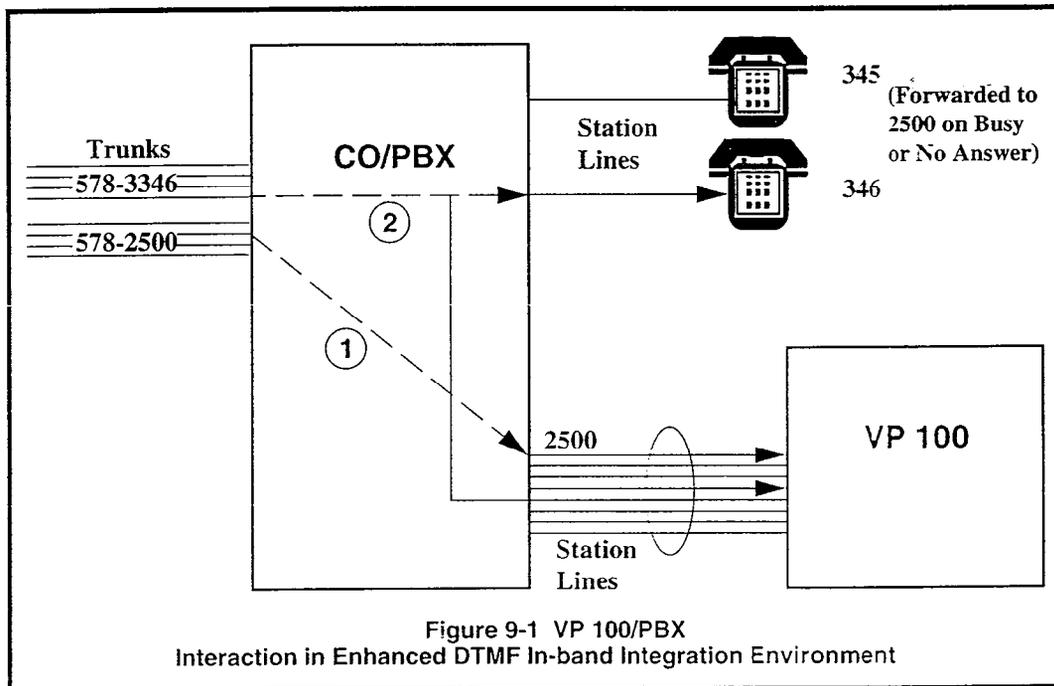
There are several types of data exchange that the VP 100 can process to perform integration:

- Enhanced DTMF In-band signalling.
- RS-232C data link, including CO Centrex.
- Proprietary display set emulation.

■ Enhanced DTMF In-band Integration

While Standard DTMF Integration processes DTMF mailbox digits prefixed to a call, Enhanced DTMF In-band integration enlarges the scope of the data exchange to full detailed call records. Enhanced DTMF In-band integrations require a unique call type identifier for each type of call. These identifiers determine the VP 100 responses. For greater system efficiency, Enhanced DTMF In-band integration uses ports in AX mode, which does not require system ports to be split into groups.

Figure 9-1 illustrates the interaction between the VP 100 and the PBX in an Enhanced DTMF In-band Integration environment. An explanation of Figure 9-1 follows the diagram.



1. The VP 100 can receive direct calls to the pilot number.
2. The VP 100 can also receive forwarded calls from busy or unanswered extensions.

With Enhanced DTMF In-band Integration, the PBX sends a call record to the VP 100 containing additional information about the call. The call record is sent **over the ports** in the form of DTMF tones. MWI commands are sent by the VP 100 over the ports as well. All ports can be placed in a single hunt group because the information in the call record determines how the call will be answered.

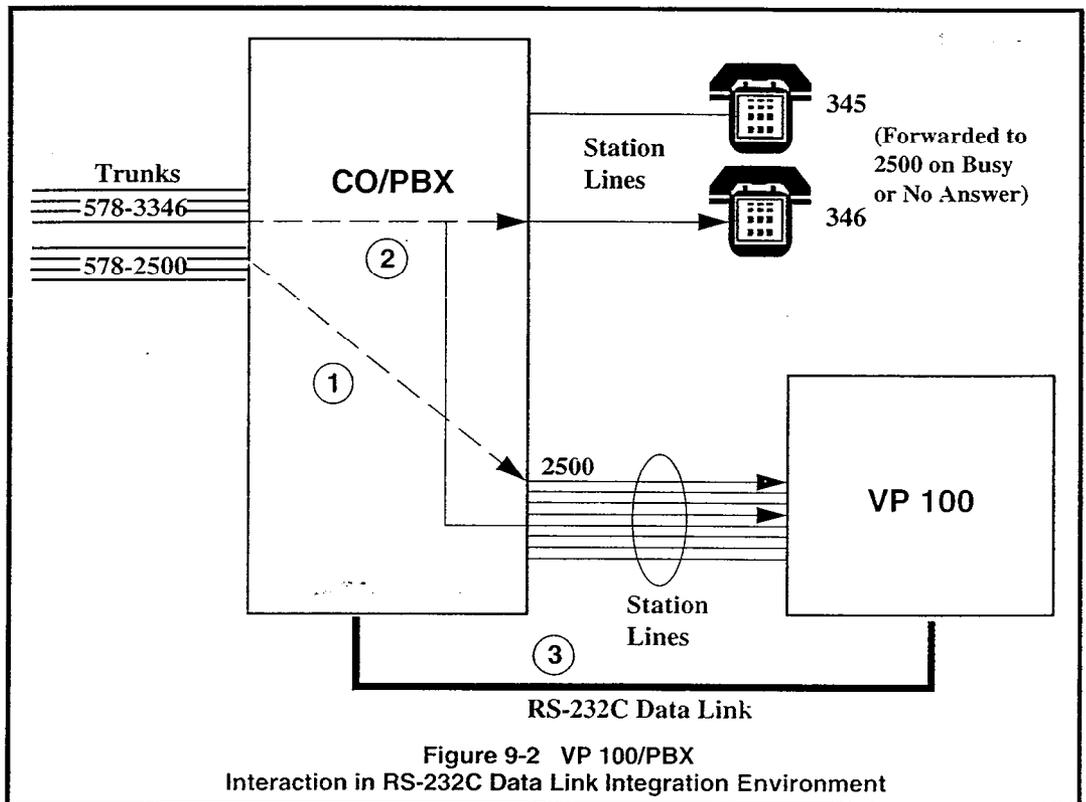
In the case of a direct call, the VP 100 answers with the Company Greeting corresponding to the trunk group the call came in on, if trunk group ID is provided in the call record.

Calls placed to extensions from the Company Greeting are typically **released to ringing**. If DID service is available, calls may also be placed directly to extensions. In either case, on a busy or no answer, the call is automatically forwarded back to the VP 100 pilot number (e.g., 2500), along with a call record. Depending on the information in the call record (called party ID, called party status, calling party ID), the VP 100 can customize how the call is answered, letting the caller know that the person was **busy or didn't answer**, as well as provide identification of an internal caller in the message.

■ RS-232C Data Link Integrations

RS-232C data link integrations transmit encoded call records with information about the port on which the call is received. The separate data and call signals are associated and processed by the VP 100. CO Centrex is one type of RS-232C data link integration. Several PBX manufacturers also use a call record similar to Centrex SMDI, or some proprietary call record scheme. See Chapter 10, Centrex SMDI/SMSI Adaptive Integration, for detailed information.

Figure 9-2 illustrates the interaction between the VP 100 and the PBX in an RS-232C Data Link Integration environment. An explanation of Figure 9-2 follows the diagram.



1. In an RS-232C Data Link Integration, the VP 100 can receive direct calls to the pilot number.
2. The VP 100 can also receive forwarded calls from busy or unanswered extensions.

3. With this method of Adaptive Integration, the corresponding call record is sent by the CO or PBX over an RS-232C data link as a series of data bits. Depending on the distance between the VP 100 and the PBX/CO, modems and/or cables are required. All ports can be placed in a single hunt group because the information in the call record determines how the call will be answered.

If the call record contains trunk group ID, the VP 100 answers direct calls with the corresponding Company Greeting.

On a call to a busy or unanswered station, if the call is forwarded back to the VP 100 pilot number (e.g., 2500) and a call record is sent across the data link, Secondary Answering is then customized based on the information provided in the call record.

For MWI, the VP 100 sends a call record over the data link to the CO or PBX, telling it which stations' lamp (or stutter dial tone) to turn ON or OFF.

9.3 VP 100 SYSTEM RESPONSES FOR INTEGRATED CALLS

The following shows the different responses possible with direct and forwarded calls when the system is integrated.

If the call record contains ...	And the call is ...	
	Direct	Forwarded
Called Party ID	—	<ul style="list-style-type: none"> • Mailbox greeting • Name and status • Mailbox and status
Called Party Status ¹	—	
Calling Party ID Internal	Logon prompt Quick logon Quick Greeting Activation ² Company Greeting ³	Called party hears name or mailbox identifying sender before message is played.
External		—
No Data ⁴ (unidentified)	Company Greeting	Company Greeting
<ol style="list-style-type: none"> 1. Refer to the following section for a description of Called Party Status. 2. Requires configuration for each mailbox. 3. External trunks answered directly by the VP 100 play the Company Greeting. Calls may be handled differently depending on how the trunk groups are configured. 4. When a call record fails to be transmitted, the VP 100 reverts to standard operation. The call is answered with the Company Greeting since there is no available information about the call. 		

■ Called Party Status

The VP 100 announces the status of the called party's extension to the caller, indicating that the extension is busy, unanswered, or unavailable. Some telephone systems do not differentiate between busy or ring-no-answer (RNA) conditions, indicating only that the extension was unavailable.

For the following conditions, the prompts played to the caller are:

RNA *"Mailbox number/name does not answer. Please leave a private message..."*

BUSY *"Mailbox number/name is busy. Please leave a private message..."¹*

ALL FORWARD *"Mailbox number/name is unavailable. Please leave a private message..."*

or

Unidentified Call

1. The exact prompt varies according to how the VP 100 is configured. When an extension is busy and the mailbox has a name recorded, the prompt can be either *"(name) is busy"* or *"(name) is on the phone."* System Parameter 115 must be set to YES for the prompt *"is on the phone"* to be spoken. If a name is not recorded, regardless of the setting in System Parameter 115, the prompt is *"extension (xx) is in use."*

■ Calling Party Identification

With Calling Party Identification, the VP 100 distinguishes between direct and forwarded calls as well as between internal and external calls, if this information is provided by the PBX. In the following descriptions of integrated call processing, operation that has not been customized is described.

■ Direct Calls

For direct calls, if the calling party's identification is provided in the call record, the VP 100 responds differently for internal and external calls.

Internal Callers Internal callers are prompted to log on to their mailbox or press for assistance. Internal callers may also use the Quick Logon or Quick Greeting Activation features.

External Callers External callers hear the Company Greeting or may have some other response configured. Trunks handling external calls may be divided into different groups for appropriate handling.

■ Forwarded Calls

When an internal or external caller reaches an unavailable extension that is forwarded to the VP 100, the caller is directed to the called party's mailbox.

If the person called has recorded a greeting, and the greeting is turned ON, the caller hears the greeting and then is prompted to leave a message or dial for assistance. If the person called has a name recorded for the mailbox, and has no greeting recorded, or if the greeting is turned OFF, the caller hears "*(name)*" and the status of the call, followed by a prompt to leave a message.

If there are no personalized responses for a mailbox, the caller hears "*(mailbox number)*" and the status of the call, followed by a prompt to leave a message.

In the case of internal callers, when the person called listens to their message, the caller's name (or mailbox number if no name is recorded) is spoken to identify the sender before the message is played. This case is distinct from a standard VP 100 because the original internal call was made completely within the PBX. The call record accompanying the forwarded call to the VP 100 is the source of the information about which name to speak.

■ Mailbox Features Available with Adaptive Integration

Several mailbox features are enhanced or added by Adaptive Integration, as shown in the chart below.

Mailbox Features with Adaptive Integration		
Feature	Description	Configuration
PA	Personal Assistant	COS, Mailbox Option
Auto-Transfer	Optional – Automatically transfers callers to assistance when an extension is unavailable.	INFORMATION Table
Quick Logon to Mailbox	Do not have to enter mailbox number.	Adaptive Integration
Quick Greeting Activation	Optional – Do not have to enter mailbox to activate greeting.	INFORMATION Table
Announce Calls to Intercepts	Optional – Identify who the call was for and why it was forwarded to assistance. Automatic for the Personal Assistance; configurable for the intercept position.	INFORMATION

Personal Assistance, Auto-Transfer to Assistance, and Announce Calls to Intercept features announce the calling party's name or mailbox number when Adaptive Integration is installed.

Quick Logon to Mailbox and Quick Greeting Activation allow shortcuts for mailbox logon and mailbox greeting by accessing the mailbox identified by the calling extension immediately, without requiring the standard logon procedure.

CENTREX SMDI/SMSI ADAPTIVE INTEGRATION

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INTRODUCTION

The Centrex SMDI SMSI Adaptive Integration chapter explains how to integrate the VP 100 with Centrex systems including:

- Centrex SMDI Operation.
- Centrex limitations.
- Centrex configuration.
- VP 100 configuration.
- Installation.
- Call record explanation and examples.

The sources for information contained in this chapter are:

- AT&T 231-390-176, Issue 1, September 1984, SMDI Feature Document 1A ESS Switch.
- AT&T 8405-231-099-006TD, August 1984, Technical Description, Switching Systems.
- Chesapeake & Potomac Telephone Company of Virginia, Centrex Service, General Services Tariff S.C.C.-Va. -No 203.
- Ed Diamond, Telcorp, Inc., Chicago.

CENTREX SMDI OPERATION

SMDI stands for Simplified Message Desk Interface and, SMSI stands for Simplified Message Service Interface.¹ These are optional services available on some Centrex systems. They provide a connection between Centrex and the VP 100 on the customer's premise. This connection is in the form of a 1200 baud serial data link.

Calls to unanswered or busy Centrex lines are forwarded via Centrex call forwarding to the VP 100 multiline hunt group. The SMDI/SMSI feature provides the VP 100 with the number of the forwarded Centrex line and the condition upon which it was forwarded.

The Centrex must be equipped with Simplified Message Desk Interface (SMDI) or Simplified Message Service Interface (SMSI) for MVI and CPI to operate.

This chapter refers to SMDI, but also applies to SMSI.

 As of this publication date, SMDI is available on the AT&T 1AESS, the Northern Telecom SL-100, and the Northern Telecom DMS 100 central office (CO) switches. SMSI is available on the AT&T 5ESS. Even if the switch is a 1AESS, 5ESS, SL-100 or DMS 100, SMDI or SMSI may not be available at a particular location. Inquire with the RBOC to see if SMDI/SMSI is available and at what cost. The RBOC may require the stations associated with the SMDI/SMSI link (the VP 100 ports) to be in a UCD group. In addition, there is an installation charge associated with the UCD feature and a one-time charge associated with each station in a UCD group. There is also a small monthly charge for the UCD.

Fujitsu Focus 9600 PBXs also use the SMDI protocol.

Intercom IBX and Telari PBXs use a protocol similar to SMDI. Since these PBXs send call records with ASCII periods (.) preceding the station number, use the PREFIX DIGITS Table to remove the leading ASCII periods.

¹ As stated in the Bell Communications Research Technical Reference TR-TSY-000283: "The word *simplified* as used to describe this feature, does not imply that there is an alternate feature that is more complex or comprehensive. It is only used to emphasize the simplicity of the design."

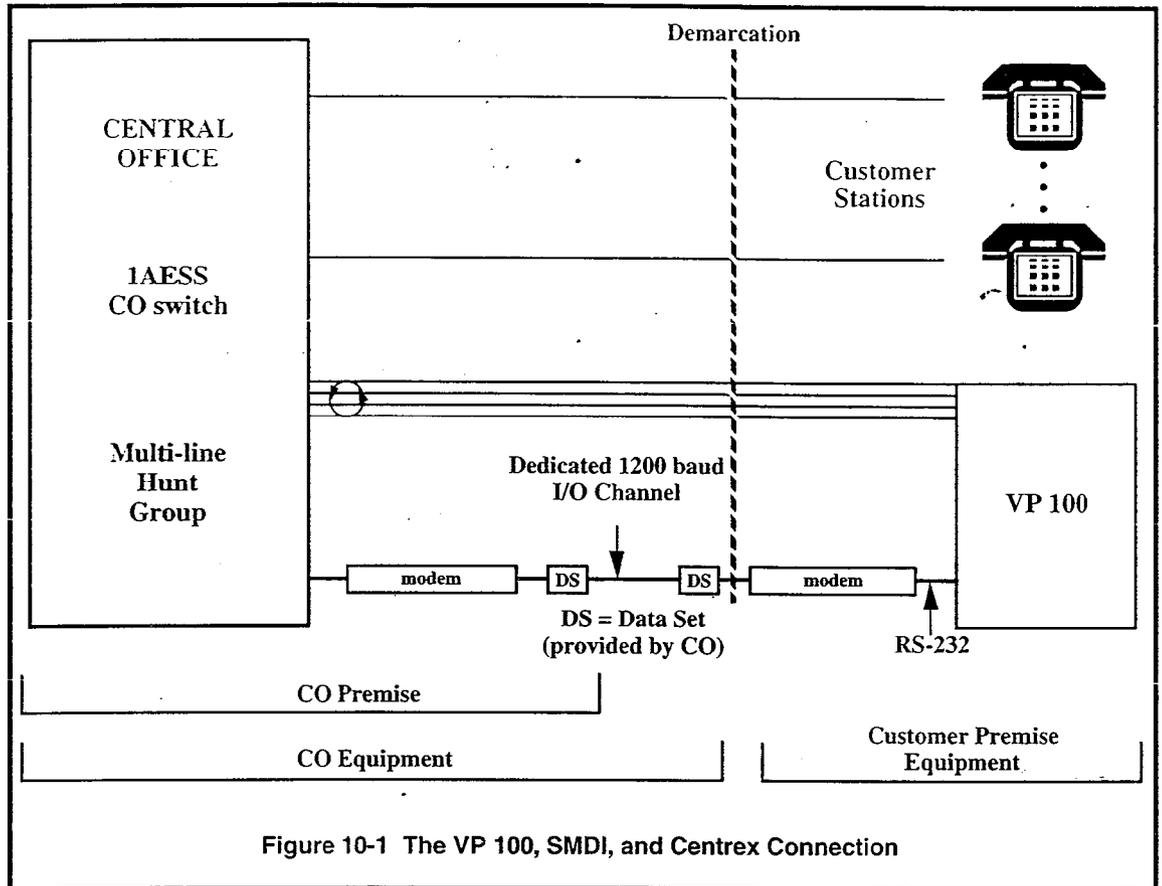


Figure 10-1 The VP 100, SMDI, and Centrex Connection

Figure 10-1 is a block diagram showing the VP 100, the Centrex, and the connections between the two. For integration via SMDI, a 1200 baud serial data link provides information to the VP 100 regarding calls that have been forwarded to the VP 100 ports. In addition, the VP 100 can activate and deactivate Message Waiting Indication via this link. The data link connects to a customer-provided modem at the customer's premise.

- The following describes Centrex SMDI MWI and CPI operation.

Message Waiting Indication

SMDI tells the Centrex to provide a message waiting indicator in the form of a stutter tone that can be activated by the VP 100 (for mailboxes with a COS containing Attribute 9).

When the first new message is received in a mailbox, the VP 100 sends information to the CO to activate the MWI. If MWI is activated, whenever that station is used to originate a call, stutter dial tone is heard for approximately two seconds after which regular dial tone is heard. The stutter dial tone indicates that the mailbox associated with the station has new messages. Stutter dial tone is given each time an attempt to originate a call occurs until the mailbox is accessed. When the mailbox is accessed, the VP 100 sends information back to the CO to turn OFF the MWI, even if the messages are not listened to and erased.

Called Party Identification

When a call comes to a Centrex line that is forwarded¹ to the VP 100, the SMDI sends the call record over the data link to the VP 100. In most cases, the VP 100 receives the call record within the first ring of the forwarded call. The VP 100 answers the call as soon as it receives the call record. The call record provides the VP 100 with the following information:

- The called number.
- The type of call forwarding.
- The calling number, if within the Centrex system.
- The SMDI ID number corresponding to the VP 100 port.

Refer to the VP 100 Configuration for Centrex SMDI, in this chapter.

The VP 100 then responds with the called party's name, if it is recorded, or station number and status (i.e. "*name/station doesn't answer/is busy*") and offers the caller choices such as leaving a private voice message, calling another station, or reaching assistance.

If a call record is not received after a configured number of rings (defined in System Parameters), the VP 100 processes the call according to the mode of the port, i.e., playing the company greeting for that port.

Direct Call

If a Centrex station calls directly to the VP 100 port group, the VP 100 receives a call record that indicates the station is from within the Centrex. If the calling station has a mailbox in the USER Table, the caller is prompted: "*To enter your mailbox, press pound.*" The person calling may then enter the mailbox.

Refer to the SMDI Call Records section in this chapter, for more detailed information regarding how specific types of calls are handled.

- 1
 - Call Forwarding - Don't Answer.
 - Call Forwarding - Busy Line.
 - Call Forwarding - Variable.

10.2 CENTREX SMDI LIMITATIONS

The VP 100 is restricted in how it interfaces with Centrex. The customer should be advised on these issues and care should be taken not to forward all stations to the VP 100, depending on who typically calls the station.

Sequential Forwarding

Sequential Forwarding is illustrated by the following:

Station 2311 is forwarded to 2312 and 2312 is in turn forwarded to the VP 100. When a call is forwarded from 2311 to 2312, and then to the VP 100, the Centrex SMDI software tells the VP 100 that the call came from 2312, not the originally called station, 2311. The VP 100 treats the call as though the caller had intended to dial 2312, and gives the wrong name or greeting. Sequential forwarding **should be avoided!**

SMDI Performance

When Centrex becomes busy, sending data to the VP 100 is slowed down. The VP 100 can wait up to the amount of rings defined in System Parameter 99, 100, or 117 for information sent from the CO. If the information is not sent, the VP 100 answers with the company greeting, not the called party's mailbox information. Refer to the Centrex Configuration section.

SMDI Link

If more than one VP 100 cabinet is required, additional SMDI links and customer-supplied hardware are required for each cabinet. Stations must be forwarded to the appropriate cabinet.

DMS-100 and SL-100

In the past, the DMS-100 and SL-100 did not send call records on direct external calls. For this reason, the VP 100 took longer to answer the port because it was waiting for the call record. This was improved with corrected software release BCS 26 for the DMS-100 and SL-100.

- When a caller accesses the VP 100, then abandons the call, the DMS-100 and the SL-100 will route the VP 100 port, which is off hook, to a recorded announcement. The announcement will be recorded as a message in the called party's mailbox. This can cause the disk to fill up.

The DMS-100/SL-100 has a feature available called COD, which offers the VP 100 a momentary disconnect. With System Parameter 77 set to YES, the VP 100 uses that momentary disconnect to determine when the called party abandons, and this problem is eliminated.

- Transfer for Uniform Call Distribution (UCD) has been expanded beyond the original call transfer capability of UCD groups. It now allows UCD group members and non-UCD group members to transfer calls to other UCD groups. This expanded capability increases the customer's call handling flexibility. For example, a three-way call chain can include a transferred call to a UCD group.

This feature, included in the NTX101AA package available with BCS 27, on DMS-100, now permits transfer into the UCD that contains ports for a voice mail system. Formerly, this transfer could not be done because it involved Call Forwarding Busy (CFB) and Call Forwarding Universal (CFU).

An enhancement in BCS 28, on DMS-100 feature #AG 1541, enables this transfer for Call Forward Do Not Answer conditions. Feature #AG 1541 can be patched to BCS 27.

Extension Numbers Beginning with "0" To accommodate Centrex extension numbers that begin with "0," the VP 100 TRANSLATION Table may be required. Contact Toshiba technical support for details.

10.3 CENTREX CONFIGURATION

Each VP 100 port requires a 2500-type Centrex station extension. The appropriate number of Centrex station lines for the VP 100 ports must be provided and programmed as a multi-line hunt group (MLHG) with SMDI.

All stations to be call forwarded to the VP 100/SMDI ports require each of the following to be programmed at the CO. Adaptive Integration includes both Called Party Identification (CPI) and Message Waiting Indication (MWI) features.

- All Centrex lines that forward to the VP 100 must be programmed by the CO to generate a call record over the SMDI link.
- The lines must also be programmed to forward to the VP 100 multiline hunt group on the desired condition.
 - Ring no answer forwarding to the SMDI group. (For Called Party Identification).
 - Busy Forwarding to the SMDI group. (For Called Party Identification).
 - C.F.U.S. (Call Forward Unrestricted Source) This enables internal call forwarding to follow the same routing as external forwarding. (For Called Party Identification).

► WARNING ◀

The following applies to 1AESS and some DMS 100 central offices:

Do not forward a station/extension to another station that subsequently forwards to the VP 100. The SMDI record shows only the last station that forwarded before going to the VP 100 hunt group, and the prompt gives that last station number, not the original number dialed.

However, for some DMS 100 central offices using BCS 30 software, or higher, and for 5ESS central offices, sequential forwarding is supported, and the call record will reflect the originally called extension.

- Phones that have mailboxes on the VP 100 should be set up in the Centrex switch to have stutter dial tone, if MWI is desired. (For Message Waiting Indication).

VP 100 CONFIGURATION FOR CENTREX SMDI

Mailbox and station numbers must match in the USER Table for Message Waiting Indication (MWI) and/or Called Party Identification (CPI) to operate correctly. This is required for the following reasons:

- For Message Waiting Indication. Centrex activates and deactivates the MWI for the station number associated with the mailbox.
- For Called Party Identification. Centrex uses the station number in the SMDI call record to identify the calling and called mailbox numbers.

 If you need to implement seven-digit mailbox numbers, contact Toshiba technical support.

■ Configuration Changes Required for Both MWI and CPI

The following System Parameter modification is required for both MWI and CPI.

System Parameters **System Parameter 51 — RS-232 INTEGRATED WITH PBX**

Modify the value of this System Parameter to be YES.

PREFIX DIGITS Table Configure this table as described in the *Configuration* manual – PREFIX DIGITS Table.

■ Configuration Requirements for MWI

The following COS modification is required for MWI.

COS **COS Attribute 9 — LAMP OR DISPLAY PHONE MESSAGE WAITING**

Assign COS Attribute 9 **only** to mailboxes that should have MWI activated. Instead of a message waiting call, stutter dial tone is given. Calls may still be made offsite.

■ Configuration Requirements for CPI

Use the following requirements when configuring the VP 100.

System Parameters **System Parameter 99 — RINGBACKS BEFORE ANSWERING CX PORT**

It is recommended that the value be set at five. Refer to System Parameter 117.

System Parameter 100 — RINGBACKS BEFORE ANSWERING MX PORT

It is recommended that the value be set at five. Refer to System Parameter 117.

System Parameter 117 — RINGBACKS BEFORE ANSWERING AX PORT

In most cases, the VP 100 receives the call record within the first ring of the forwarded call. The VP 100 answers the call as soon as the call record is received. If after “n” rings (defined in System Parameters 99, 100, and 117) the call record

has still not been received, the caller hears the company greeting instead of the called party's station/name or greeting. As a fail-safe measure, it is recommended that the value of System Parameters 99, 100, and 117 be set at five.

System Parameter 130 — SEND DTMF A FOR FORWARDED CALLS

Modify the value of this System Parameter to be YES. This enables the Toshiba VP System to identify when a Message Waiting call or screened transfer has forwarded back to a VP port.

System Parameter 180 — RS-232 BYTE FORMAT FOR PBX INTEGRATION

This parameter can be set 0 or 1:

0 = 7 bits/even parity

1 = 8 bits/no parity

Contact the providing telephone company to determine what data type is used.

7 bits/even parity is most commonly used for AT&T 1AESS and 5 ESS.

8 bits/no parity is most commonly used for Northern Telecom SL-100 and DMS 100.

PORTS Table The PORTS Table is used to configure ports in Centrex.

Configure all ports that answer calls forwarded to the VP 100 for either AX, CX, or MX mode. Configure the PORTS Table as follows:

In the station field for each port answering the Centrex lines, the station number must be the exact Message Desk Number plus the Message Desk Terminal Number assigned by the CO. It is a total of seven digits as described below.

- Message Desk number = three digits with a range of 001-063.
- Message Desk Terminal = four digits with a range of 0001-2047.

The Message Desk Terminal ID is supplied by the CO. The VP 100 treats this number as a VP 100 port's station number.

 If the Message Desk terminals are configured for ground start, they cannot be configured for outcall.

Refer to the *Configuration* manual — PORTS Table, for further information on configuring the PORTS Table.

PREFIX DIGITS Table

Configure the PREFIX DIGITS Table to include all valid mailbox first digits. Refer to the *Configuration* manual — PREFIX DIGITS Table.

Multiple Prefixes

With Release 6.1 and higher, the use of multiple prefixes in integrated Centrex installations can be supported.

The following is an example of a large Centrex installation where the number banks associated with the existing 294 prefix are exhausted, indicating the need for the use of a second prefix. The existing 294 prefix includes the number banks 294-

57XX and 294-59XX. In the example, a second prefix, 286, is added to support numbers in the 286-55XX number bank.

In the existing system, the first digit 1 is used; however, mailboxes beginning with 1 are not integrated. The first digit 6 is used only for network locations. The first digits 9 and 0 are not used.

The existing FIRSTDIGIT Table is shown below:

FIRST DIGIT	MAILBOX LENGTH
1	6
2	4
3	4
4	4
5	4
6	
7	4
8	4
0	

The existing PREFIX DIGITS Table is shown below:

FIRST DIGIT	PREFIX DIGITS
1	
2	294
3	294
4	294
5	294
6	
7	294
8	294
9	
0	

Centrex numbers to be supported are:

294-2XXX	294-59XX
294-3XXX	294-7XXX
294-4XXX	294-8XXX
294-57XX	286-55XX

The CPI portion of this application could be supported prior to Release 6.1, but Release 6.1 or higher is required for the MWI part of the application.

The following Release 6.1 changes are important in understanding how the additional prefix is to be supported:

- Prior to Release 6.1, when translation of digits was needed to support integrated systems, choice 1 (DID) was used to translate incoming call records (CPI). With Release 6.1 and higher, two new choices are available: CPI INT (choice 4) and MWI INT (choice 5).
- Prior to Release 6.1, the TRANSLATION Table was not used in the creation of the MWI command. The MWI record was obtained by looking at the first digit of the mailbox, searching the PREFIX DIGITS Table to obtain the digits associated with that first digit, and appending the extension number (from the USER Table) to those digits. In the above example, if the mailbox entry to the USER Table is 5700, 5700, 1, the Toshiba VP System identifies that the leading digits associated with first digit 5 are 294 and precedes the extension number

(5700) with 294, sending a call record to the CO to turn ON message waiting for extension 294-5700.

With Release 6.1, two changes to the above process occur. First, the TRANSLATION Table can now be used to alter the extension as it appears in the USER Table in preparation for creating a message waiting command. Second, the first digit of the translated **extension**, not the mailbox, is used to identify leading digits from the PREFIX DIGITS Table.

In our example, the CPI INT and MWI INT sections of the TRANSLATION Table would be configured as shown in the screens below:

DEVICE TYPE	DIGIT(S) ABSORBED	DIGIT(S) INSERTED
CPI INT	942	2
CPI INT	943	3
CPI INT	944	4
CPI INT	945	5
CPI INT	947	7
CPI INT	948	8

DEVICE TYPE	DIGIT(S) ABSORBED	DIGIT(S) INSERTED
MWI INT	2	942
MWI INT	3	943
MWI INT	4	944
MWI INT	57	9457
MWI INT	59	9459
MWI INT	7	947
MWI INT	8	948

Also, the PREFIX DIGITS Table would be configured as shown in the example below:

FIRST DIGIT	PREFIX DIGITS
1	
2	
3	
4	
5	286
6	
7	
8	
9	2
0	

Refer to the *Configuration* manual — FIRSTDIGIT Table, PREFIX DIGITS Table, and TRANSLATION Table, for further information on configuring these tables.

When an incoming call is received for 286-5500, the PREFIX DIGITS Table is searched to find that 5 preceded by 286 is a valid digit combination. The digits 286 are then stripped off, leaving mailbox number 5500. Since there is no entry in the TRANSLATION Table for any of the first digits of 5500 (i.e., 5, 55, 550, ...), no translation is performed, and the USER Table for 5500 is searched to process the call.

When a call comes in for 294-5700, the PREFIX DIGITS Table indicates that the digit 9 preceded by the digit 2 is a valid combination, and the digit 2 is stripped

off, leaving a mailbox number 945700. Checking the TRANSLATION Table, the system absorbs the 945 and replaces those digits with a 5. This leaves mailbox 5700, which is a valid entry in the USER Table, and the call is processed accordingly.

To create an outgoing message waiting command, the system checks the extension number associated with mailbox 5500 and finds that it is also 5500. There is no entry in the TRANSLATION Table for the first digits 55, so the system checks the PREFIX DIGITS Table to find that the digits 286 must precede the extension number to construct a valid message waiting call record. Using this information, an MWI command is sent for extension 286-5500.

Construction of the outgoing message waiting command for mailbox 5700 also begins with the associated extension number 5700. When the system reviews the TRANSLATION Table, it sees that extension 5700 must be translated to 945700. The digit 9, which is the first digit of the translated number, is then used to reference the PREFIX DIGITS Table. In that table, the digit that must precede an extension beginning with 9 is a 2, and from there a full seven-digit call record (294-5700) is produced and an MWI call record is sent to tell the CO to turn ON message waiting for extension 294-5700.

Different Company Greetings

Trunk group numbers are not available with Centrex SMDI. In order to provide different company greetings, different intercept numbers, call blocking, etc., configure the following:

- Assign unique Centrex numbers and stations for each type of incoming call that should receive different treatment.
- Forward each of these stations to the VP 100 ports.
- Set up mailboxes for each station.
- Record and turn ON a greeting that acts as a company greeting for each mailbox.
- Assign a COS to each mailbox that specifies: Attribute 1 — NO MESSAGES MAY BE RECORDED FOR THIS MAILBOX, and Attribute 20 — MAY USE GREETING INSERT/SWAP. Attribute 3 — ASK FOR SECURITY CODE BEFORE CALLING EXTENSION and Attribute 27 — NEXT MAILBOX (intercept), etc. may also be used where appropriate. After the greeting plays, the caller may dial an extension.
- If the Centrex provides loop current interruption when the calling party abandons, with System Parameter 77 set to YES, rotary callers will be transferred to the intercept operator.

Since each mailbox acts as a company greeting, there is no need to split ports into multiple groups.

■ After All Changes Have Been Made for MWI and CPI

After all changes have been made for MWI and/or CPI, remember to restart the system and test all functions.

Restart After the changes have been made, exit the UPDATE program. The VP 100 prompts:

FOR CHANGES TO TAKE EFFECT, SYSTEM MUST BE RESTARTED

Restart the system.

Test Test to ensure that MWI and/or CPI are operational.

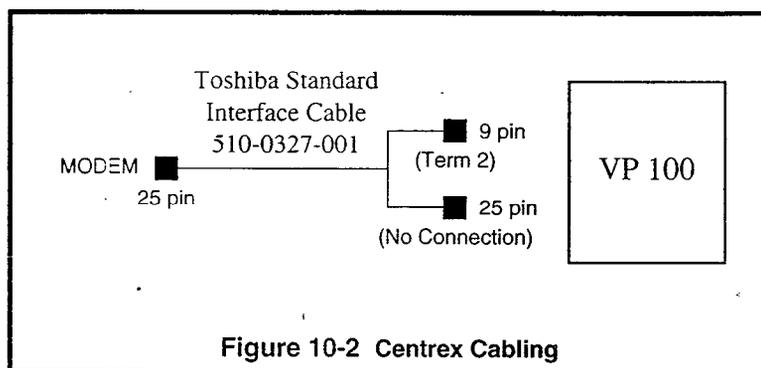
10.5 VP 100/CENTREX INSTALLATION

The VP 100 is connected to the Centrex data link from the CO via a modem connected to the VP 100's RS-232C interface port, System Terminal Port.

One data link must be configured for each VP 100 cabinet. Every port/station associated with the data link must be in the same VP 100 hunt group. In a multi-cabinet VP 100 installation, each cabinet must have a dedicated data link and customer-supplied hardware.

Cable

Connect a 510-0327-001 standard interface cable (or equivalent RS232C Null modem cable) between the VP 100 RS-232C port, System Terminal Port, and the appropriate modem (Fig 10-2 Centrex cabling). The cable can be purchased from Toshiba.



Modem

Either a 202T or 212A compatible modem is required on the customer premise to connect to the VP 100. It is not supplied by the phone company. Either the distributor or the customer must supply the modem and cable. The modem must conform to the Electrical Industries Association (EIA) RS-232C standard interface requirements. Contact the CO for the type of modem required. Install the modem according to the vendor's instructions. Be sure it is set for 4-wire operation. The CO will provide information regarding other options that must be configured.

The modem must:

- Operate at 1200 baud speed.
- Operate in a half or full duplex (must be same as CO modem).
- Be set for asynchronous mode.
- Use standard ASCII code.
- Set seven data bits to Centrex specification.
- Have parity set to match the setting in System Parameter 180 — RS-232 BYTE FORMAT FOR PBX INTEGRATION.

10.6 SMDI CALL RECORDS

The call record the VP 100 receives from the CO contains a combination of ASCII characters. The first two or three characters indicate whether the call regards a call directed to the VP 100 or message waiting information (an error condition regarding message waiting).

Call records beginning with "MD" have the following format —

MDgggmmmmxxxxxxx yyyyyyy

Call records indicating an error with message waiting begin with MWI and have the following format —

MWI zzzzzz INV

where the information is represented by the following abbreviations:

MD	message desk (incoming call record)
MWI	message waiting indication (error record)
ggg	message desk number
mmmm	message desk terminal number

The message desk number (ggg) and the message desk terminal number (mmmm) together correspond to the port station of the VP 100.

a	is any of four letters: A, B, N, or D, where: A = forwarded all calls (" <i>is unavailable</i> ") B = forwarded on a busy call (" <i>is busy</i> ") N = forwarded on ring no answer (" <i>doesn't answer</i> ") D = direct call to the VP 100 (" <i>to enter your mailbox...</i> ")
xxxxxxx	called party station number followed by a space. If no called party, then just a space.
yyyyyyy	calling party station number (if known) followed by a space. If no called party, then just a space.
zzzzzzz	message waiting failed for this station number
—	indicates a space separating information

■ Message Desk (Calls Directed to the VP 100)

The following are a few examples of actual records and their description:

MD0010002D_

This is a direct call into the VP 100 (the message desk) from outside of the Centrex. It came into the VP 100 port having 0010002 defined as the station number in the PORTS Table. In this type of call, the caller hears the company greeting.

MD0010002D_2948395_

This is also a call direct to the VP 100 but with a calling party number from within the SMDI Centrex. The call originated from station 8395 with prefix 294. If the calling number does not have a mailbox, the caller hears the company greeting. If the calling number has a mailbox, the caller hears "To enter your mailbox, press pound..."

MD0010001N2944377_

This is a call to station 4377 that was forwarded on no answer and there is no calling party number. The caller hears "name/station doesn't answer" or the greeting, if it is ON.

MD0010001N2944377_2948395_

Same as previous, except it includes the calling party number. This call was all within Centrex. The calling party is always last in the line and is separated with a space.

MD0010001B2944377_

This is a call to station 4377 from outside the Centrex, forwarded on a busy. The caller hears "name/station is busy" or hears the greeting, if one exists.

MD000002B2944377_2948385_

Same as previous, except it includes the calling party number.

MD0010001A2944377_

This is a call from station 4377 forwarded on all calls. The caller hears "name/station is unavailable."

MD0010001A2944377_2948385_

Same as previous, except it includes the calling party number.

■ Message Waiting (Response to Command the VP 100 Sent to SMDI)

Another type of call record received is for an error on a message waiting command to the SMDI. It means that the station number indicated is not a valid Centrex MWI number and has not been programmed as such.

The following is an example of an error record:

MWI2948395 INV

MWI is message waiting. 2948395 is the station for which message waiting stutter dial tone was to be activated. INV indicates the station is invalid.

■ If a Call Record is Not Received

If after “n” rings, as defined in System Parameter 99, 100 and 117, the call record has still not been received, the caller hears the company greeting instead of the called party’s station/name or greeting. If this occurs, check whether:

- The data link is out of operation — check all connections. Once connections are verified, test to see if information can successfully be sent to or received over the link using a serial terminal.
- The phone system has a hardware problem.
- The call is not programmed within SMDI to send call information to the VP 100 multi-line hunt group.

 The maintenance command MON2 allows incoming SMDI records to be monitored over the RS-232C link.