

AT Family of Data Collectors

Uptime. Reliability. Guaranteed quality of service. These are the benchmarks against which you measure the performance of multi-vendor voice networks.

The AT family* of alarm and traffic data collectors monitor multi-vendor networks — reporting alarms from PBXs and related peripheral equipment and capturing the traffic information that is essential to manage your network.

Note: * AT family refers to AT2 and *AT PLUS* data collectors.

The AT data collector is part of a Telecom Data Transport System. The AT is an intelligent device that attaches to and provides a common interface with various types of remote switches.

1.0 Telecom Data Transport System

The AT data collector is the alarms/traffic hardware component of the Telecom Data Transport System. Attached to individual PBXs in the network, the AT collects alarms and/or traffic from PBXs and transports this information over least cost, dial-up networks or over a hardwired connection to the SEM. SEM communications controller software interfaces with batch or real-time applications that process the raw data into a comprehensive form necessary for maintaining your voice network.

Switch Support Software, resident in the AT data collector, and *SEM Communications Controller* are the software components of the Telecom Data Transport System.

AT switch support software is downloaded from the Host and empowers AT data collectors with the ability to distinguish between different types of PBXs and apply user-defined data collection parameters used to filter alarms and/or traffic.

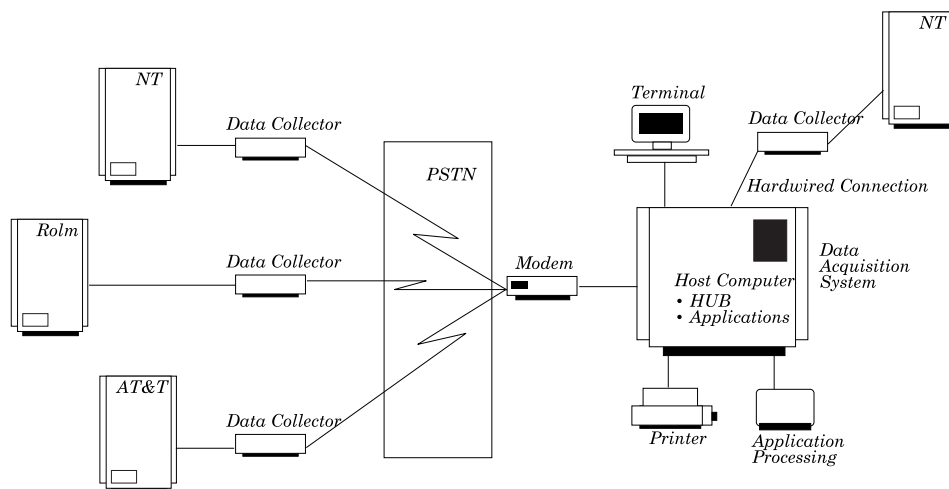


Figure 1. The Telecom Data Transport System

The Telecom Data Transport System is available for the Sun Solaris™ operating system.

2.0 Benefits

AT data collectors provide a number of important benefits to anyone managing or maintaining a telecom network.

Centralized Control

AT data collectors provide access to remote PBX software and information, allowing technicians to perform administration, diagnostics and maintenance from a central location.

Multi-Vendor Support

The AT data collector supports multi-vendor networks by providing a common interface to various makes and models of PBXs.

Switch support software is used to translate PBX output and allow the AT to recognize the PBX it is monitoring. Switch support enables the AT to interpret the data format of a specific type of PBX and transform it into a comprehensive record format.

Real-Time Reporting

PBX's and peripheral equipment are capable of producing alarms describing problems with the network. The AT collects this information and sends critical alarms, in real-time, to the Network Control Centre.

When failures occur, timely notification enables you to perform remote maintenance or dispatch a technician before problems become service affecting.

Prioritize Alarms

Using switch specific software, AT data collectors filter the data generated by network equipment, determining if this information qualifies as an alarm. If the information qualifies as an alarm, the AT classifies it as critical, potential or minor according to user-defined instructions.

Critical alarms imply actual or pending PBX failure and are immediately reported to the Network Control Centre.

Potential alarms are not hard failures but identify conditions that, if recurring, could result in the interruption of service. If a potential alarm exceeds a threshold within a specific time frame, it is escalated to a critical alarm.

Inverse potential alarms are reported on the first occurrence, subsequent occurrences, falling within the user-defined threshold, are logged and stored.

Minor alarms indicate that the PBX has discovered a minor problem that does not threaten continued service. These alarms can be useful in identifying network service trends.

Measure Value

The AT can be configured to provide a summary count of the different types of alarms that have occurred since the previous poll, providing 'at-a-glance' detection of possible service affecting conditions.

Traffic data from the PBX can be captured by the AT, stored in its original format, and sent for processing into reports used to measure network performance and facilities usage.

The ATs memory is used efficiently by only storing the records you consider important. Critical alarm records are always stored, regardless of user-defined logging options.

The AT uses a data packing routine to compress alarm records stored in memory and ships these to the SEM in this state. At the SEM, these records are expanded to their original format.

Reliability

ATs operate year after year without failure or loss of data. AT data collectors contain back-up batteries to ensure continuous operation for a minimum of 4 hours (2 hours - *AT PLUS*) in case of a power outage.

ATs use a cyclic redundancy check (CRC-16) to ensure accurate reception of data at the Network Control Centre. Any corrupted data is automatically re-transmitted.

Alarm and traffic records are grouped into standard length blocks for transmission. Any corrupted blocks are automatically re-transmitted.

The *AT PLUS* provides CCITT v.32/v.42 protocols to ensure accurate high speed data transmission.

Internal Diagnostics

The AT data collector produces diagnostic alarms when it detects a problem internal to the unit. These alarms can be reported in real-time to the Network Control Centre and polled, notifying you of impending problems.

Whenever AT data collectors report critical alarms, they include a diagnostic record. This record:

- identifies the specific site.
- provides a count of the number of records stored in memory.
- provides an AT hardware and software diagnostic check list that identifies whether an AT alarm has occurred:

TSB001	user defined memory threshold exceeded
TSB002	memory is 100% full
TSB003	PBX is off-line. DSR not received from PBX
TSB004	memory failure detected
TSB005	date failure. PBX clock stuck or no PBX date record
TSB006	CMOS RAM failure
TSB007	device lost AC power
TSB008	device DC low
TSB009	unsuccessful login attempt, units locked out
TSB010	hash table full
TSB011	last dialout unsuccessful
TSB017	DTE port activated/deactivated
TSB018	reset button has been pressed at switch site

- identifies whether revertive dialing is enabled and whether a revertive dial-back is in progress.
- provides an integrity check of DRAM memory and checksum failures.
- confirms ROM integrity using a checksum calculation.
- confirms switch type.
- provides a count of records rejected.
- provides user with indication of % of memory used.
- provides ROM version number.
- provides firmware version number.

Remote Access

AT data collectors provide a Transparency feature used to access PBX software. Many PBX problems can be solved remotely using this feature. Transparency allows you to configure PBX and network equipment software from a remote site — saving the trouble and expense of on-site visits.

The AT can easily be configured to collect the data you want via remote access from the Network Control Centre.

Security

AT data collectors provide different levels of security which prevent unauthorized access to the data collector and the PBX. A **Primary Password** provides security for polling, downloading, remote diagnostics, logging options and access to stored data.

A second security level, **Revertive Dialing**, controls access to network equipment software and takes effect whenever access to Transparency is requested.

A third level, **20 minute lockout**, locks the user out for 20 minutes after 3 failed login attempts.

Flexibility

The AT is available in a variety of memory sizes and some models can be fitted with expansion boards to ensure they grow with your network needs.

Switch support software allows the AT to support many different types of PBXs. Each type of PBX produces unique formats of alarm records. The AT can distinguish between PBX types by the raw alarm record and translate this information into a consistent alarm classification system.

Alarm Reporting

The *AT PLUS* provides three different alarm reporting modes which allow you to direct critical alarms to the site of choice.

Single Location Reporting — the *AT PLUS* will only attempt to report the alarm to one location. Reporting is considered successful when the single location answers and acknowledges receipt of the alarm.

Dual Location Reporting — the *AT PLUS* attempts to report the same alarm to two different locations. The *AT PLUS* dials each location alternatively until both locations acknowledge receipt of the alarm.

First Location Reporting — similar to Dual Location Reporting, the *AT PLUS* attempts to report the same alarm alternatively to two locations until one location acknowledges receipt of the alarm.

Peripheral Equipment Support

The *AT PLUS* can be fitted with an optional OPRA (Other PBX Related Alarms) Card. The OPRA Card can monitor PBX room environment or peripheral equipment the same way the AT monitors the PBX.

The OPRA Card detects changes in voltage through the use of contact points. User-defined timing parameters generate alarms when the contact point is open or closed for a defined threshold of time.

OPRA also provides the *AT PLUS* with an additional RS-232C type port which can be used to accept data from multiple data streams. Special 'multi-port' type cables allow the *AT PLUS* to accept data from a total of three RS-232C type ports.

External Modem Support

The *AT PLUS* supports 9600 baud external modem support. If an external Hayes modem is plugged into the modem/DTE port of an *AT PLUS*, the *AT PLUS* supports all of its normal features and function through the external modem.

Local Terminal

The *AT PLUS* supports a permanent connection between a local terminal and the *AT PLUS* modem port. This enables users to log on or off the *AT PLUS* at anytime without plugging or unplugging the connection, provided the internal modem is idle.

Power Failure Transfer Support

The *AT PLUS* can operate from Power Failure Extensions on your PBX. If there is a power failure, the *AT PLUS* will switch to a ground start line and drop the access code normally used to dial out through the PBX to the Network Control Centre.

3.0 Hardware Specifications

	AT2	AT PLUS
Memory Capacities	64K 128K	256K 512K 1.256M
External Power Requirements	North America: 117VAC±10%, 60Hz±10%, 9.6 watts max Europe: 240VAC±10%, 50Hz, 9.6 watts max	117VAC±10%, 60Hz±10%, 19.2 watts max 240VAC±10%, 50Hz, 19.2 watts max
External Power Transformer	12VDC, 800mAmp	12VDC, 1.6 AMP
Internal Battery Backup	6VDC, 1.2 amp hour	8VDC, 3.2 amp hour
Internal Backup Duration	Fully Operational Back-up: 4 hours minimum Non-volatile Memory Backup: 1 year	Fully Operational Backup: 2 hours minimum Non-volatile Memory Backup: 1 year
Operating Temperature:	10° - 40°C (50° - 104°F)	10° - 40°C (50° - 104°F)
Dimensions	11 x 8.8 x 1.8 in (27.9 x 22.4 x 4.6 cm)	12.5 x 10.8 x 2.8 in (31.8 x 27.4 x 7.1 cm)
Weight	~6 lbs (2.7kg)	~15 lbs (6.8 kg)
Modem Standards	Bell 103/212 (1200/2400 baud)	CCITT v.32/v.42 (2400/4800/7200//9600 bps)

4.0 Test Specifications

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| 1) Low Temperature Storage: | IEC 68-2-1 Test Ab
-40°C @ 16 hours |
| 2) High Temperature Storage: | IEC 68-2-1 Test Bb & Bd
70°C @ 16 hours |
| 3) Low Temperature Operation: | IEC 68-2-1 Test Ab
-20°C @ 5 hours |
| 4) High Temperature Operation: | IEC 68-2-2 Test Bb & Bd
50°C @ 16 hours |
| 5) Temperature Shock: | IEC 68-2-14 Test Na
-60°C to + 60°C @ 1 hour |
| 6) Damp Heat, Steady State Operation: | IEC 68-2-3 Test Ca
40°C, 90% RH 5 days |
| 7) MTBF (Mean Time Between Failure): | (MIL STD 217 standard)
~7.5 years @ 40°C |