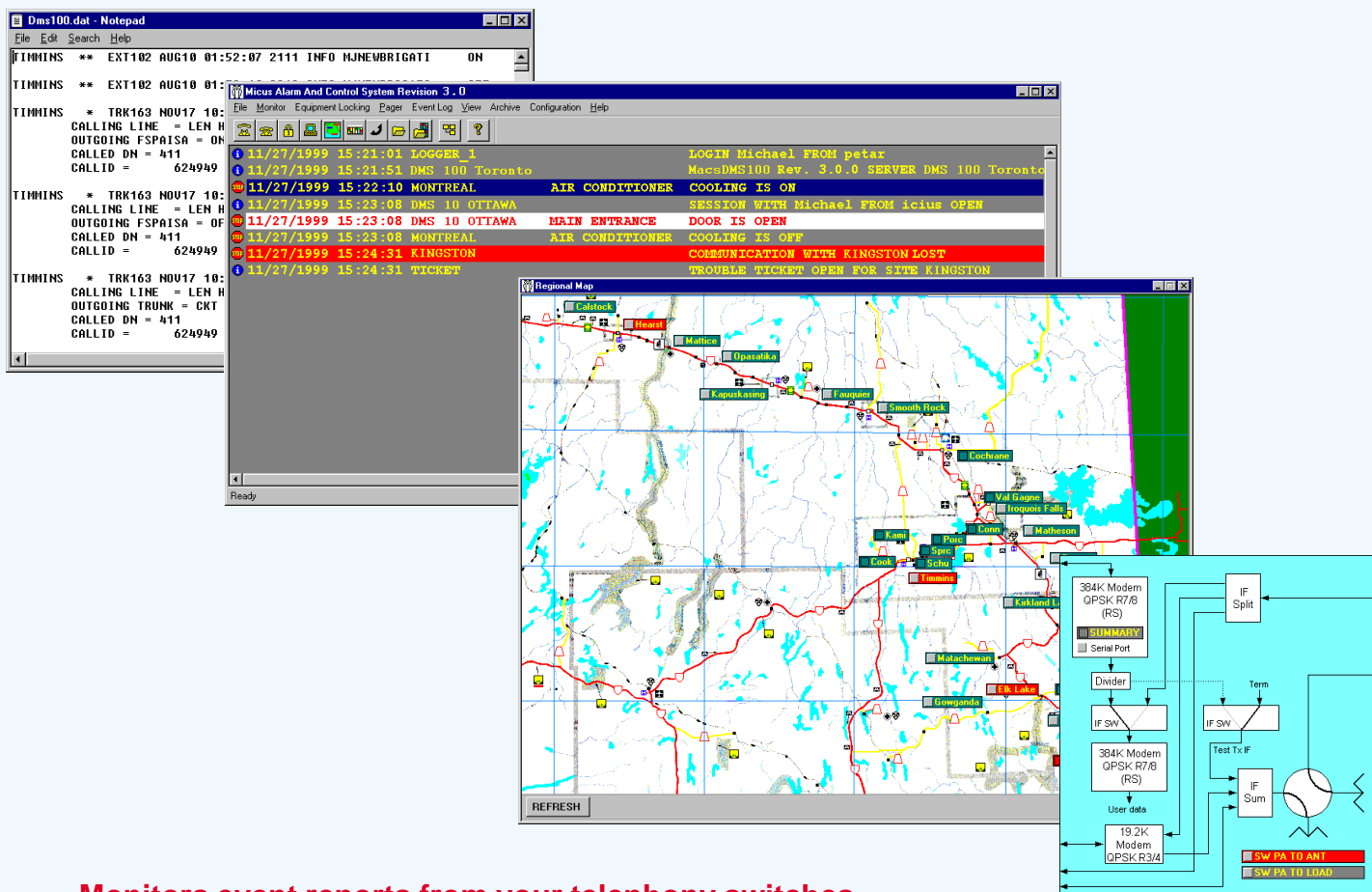




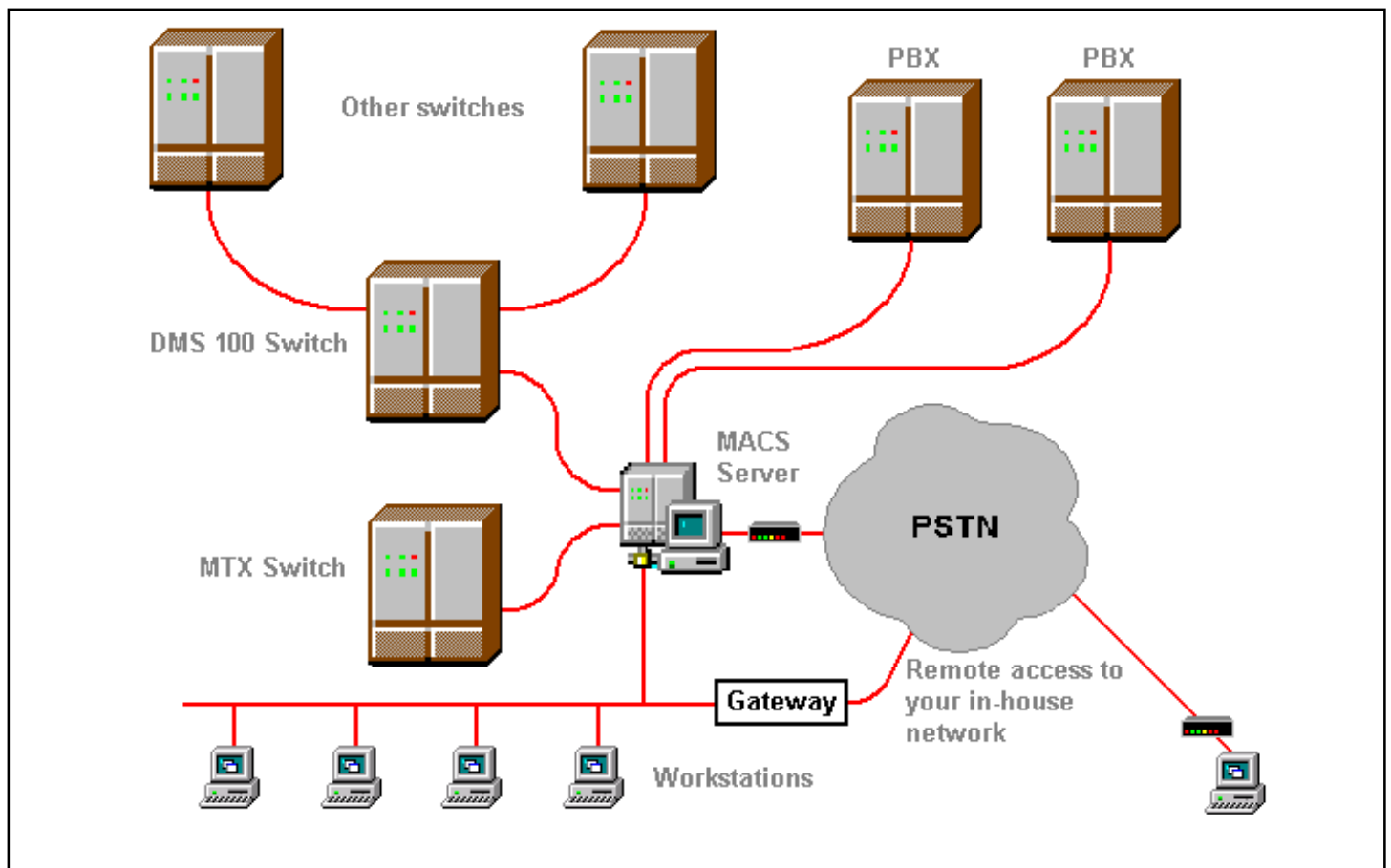
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Frustrated by the cryptic messages from your telephony switch?
Prefer to define your own text messages and graphical images?
Want to be paged when your equipment needs attention?
Need reliable tracking for your equipment repairs?

Let Micus Alarm and Control System (MACS) monitor your telephony switches



- Monitors event reports from your telephony switches
- Presents your switches using graphical images which you can easily create yourself
- Reports changes in the switch status as text messages you define on your own
- Maintains the event log
- Pages personnel responsible for equipment that needs attention
- Automatically opens and tracks trouble tickets
- Lets you and your colleagues carry on your tasks seamlessly and independently



The Problem

A typical telephony switch generates a lot of event reports and sends them to a serial printer. Every day you get a stack of paper, with important messages about the equipment faults buried amongst pages and pages of non-critical information. Wouldn't it be nice to filter only the mission critical events?

The event reports from a typical switch are seldom user-friendly. To decipher them quite often requires frequent references to the printed documentation, which typically contains explanations for the error codes, abbreviations, and so on. Wouldn't you prefer to rephrase those cryptic messages into clear and simple text all personnel will immediately understand?

You can learn about equipment failures only by reading the printout. If your switch is unattended overnight or over the weekend, a mission critical equipment failure will wait until the next business day to be discovered. Wouldn't you prefer to get a pager message as soon as an alarm is detected?

Normally, working from a printout, you manage your equipment repairs manually. You fill in a work order form, give it to one of your technicians and then follow up on a daily basis. The technician tracks down site documentation and equipment repair procedures through a shelf of binders and manuals. Wouldn't it be more efficient to automate this process?

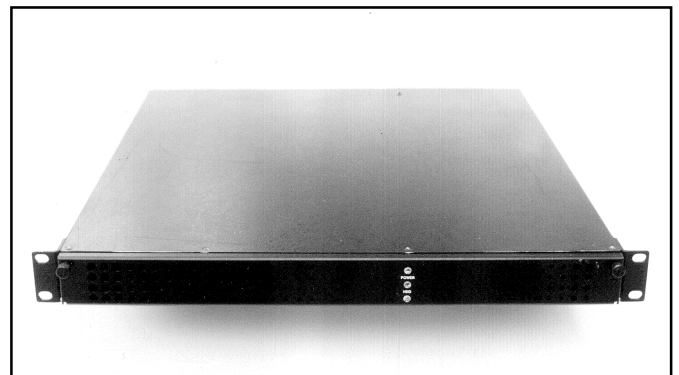
The Solution

As a solution we offer a Micus Alarm and Control System application that specifically addresses fault management for the telephony switches and PBXes. It automates, simplifies and optimizes the entire process of receiving alarms, presenting them on the screen, archiving them, alerting personnel, and managing the equipment repairs using trouble tickets.

Micus Alarm And Control System (MACS) is a computer based system which configures, controls and monitors various pieces of equipment, and collects and processes alarms generated by the equipment. For more information on MACS itself, please refer to the related marketing material.

Telephony Switch Monitoring Key Features:

- Support for a variety of equipment, including Nortel DMS 10, DMS 100 and MTX switches, connected to a computer using either serial lines or network connections. There is no limitation on the number of switches connected to MACS.
- Optional monitoring for the dry contacts, using external equipment and/or plug-in PC boards.
- Simple, friendly and intuitive *Graphical User Interface (GUI)*.
- Custom monitor screens implemented as graphical images, which can be added to the system by the end-user.
- Field-configurable status or alarm points allow end-users to define point name, text, severity, and color for each status or alarm point state.
- For the equipment which supports commands from the terminal, the system provides command line mode of operation and terminal emulation.
- The system always shows up to 100 of the most recent events in a scrollable window.
- All reported events are saved in the event log files created on a daily basis. The system provides means to view, search, copy, print, and archive the event log.
- Output from the switch is saved in a separate set of raw text files created on a daily basis. The system provides means to view, search, copy, print, and archive raw files.
- Paging module automatically calls all personnel responsible for the equipment. Each alarm, depending on whether it is related to telephony, power, building environment, or security can be directed to different individuals.
- A user configurable trouble ticket event can be assigned to each individual alarm point.
- The system opens trouble tickets automatically, upon detecting alarm conditions.
- Operators can manually open ad hoc trouble tickets for the conditions which are not hardware related.
- The system always shows a list of all open but unassigned trouble tickets, and a list of open trouble tickets already assigned to technicians. Both lists are dynamically updated as new tickets are opened, or changes in the existing tickets are made.
- Operators can query trouble tickets from the database selectively, by applying filtering criteria such as ticket status, site name, alarm condition, and date and time range.
- Operators can select a trouble ticket, view ticket details, update ticket data, accept, and close the ticket. Tickets can be printed or e-mailed to a list of technicians and managers.
- Operators can view, archive, and delete closed trouble tickets.
- Multi-user support allows operators on the network to access the system independently and simultaneously. Trouble ticket locking prevents conflicting changes in a multi-user environment.
- Access over the LAN, dial-up and ISDN networking, using the TCP/IP protocol.
- Available as a software only package or preloaded on a 1U or 2U rack mounted PC units.



Rack mounted 1U MACS unit

STATUS AND ALARM POINTS

MACS defines any equipment in terms of units, slots, and points. Status and alarm points represent equipment parameters, which can be read to determine equipment status.

Point name, text, color, and severity for each point state are defined by the end-user through the system configuration process.

STATUS AND ALARM PROCESSING

When monitoring telephony switches and PBXes, MACS detects status changes and alarm conditions by monitoring the event reports from the equipment. These unsolicited messages are then translated into the user-defined status and alarm messages.

Typically, the user interface runs on one or more workstations on the local or wide area network. Status messages and/or alarms received from the equipment are reported to all user interfaces. The user interface provides extensive buffering capability, thus allowing operators to browse through several pages of the collected records.

In addition to the textual messages displayed in the scrollable window, changes in the equipment status and alarms are also shown in all graphical monitor and control windows. Each time a given point changes its status, the color and/or the shape of the point displayed in the window changes accordingly.

MONITOR AND CONTROL WINDOWS

To monitor and control the equipment, the users can create any number of monitor and control windows. Typically, these windows contain geographical maps, building layouts, equipment racks, equipment diagrams, equipment front panels, etc.

EVENT LOG MANAGEMENT

All MACS event reports are stored into log files. This feature allows static analysis of the recorded alarm conditions. The system automatically creates and maintains log files on a daily basis.

Since all event reports are stored into the files, the simplest way of analyzing events is to view log files. While viewing any given file, the operator can search for specific keywords or text strings, such as time stamps or equipment names. In addition, the operator can selectively print relevant sections of the file, or the entire file.

SWITCH OUTPUT MANAGEMENT

Raw data received from each switch is stored into a separate set of files. These files are used to archive the actual output from the switch. The system automatically creates and maintains switch output files on a daily basis.

PAGER

Any status change or alarm may be configured to send a pager message. Based on the event being reported, MACS selects from the database a list of personnel responsible for that event and sends pager messages to all individuals on the list.

FAX AND E-MAIL

Any status change or alarm may be configured to send a fax or e-mail. Based on the event being reported, MACS selects from the database a list of responsible personnel for that event and sends fax and/or e-mail messages to all individuals on the list.

TROUBLE TICKETING

The Trouble Ticketing System (TTS) MACS components detect equipment failures, and automatically open trouble tickets used to document and track equipment repairs. The trouble tickets allow users to select the repair procedure, to assign a technician responsible for the repair, to track the action taken and, upon completion of the repair, to close the ticket.

Through the configuration process, users create a list of events causing the TTS to open a trouble ticket, a list of suggested repair procedures for the equipment and a list of technicians responsible for the repairs.

The *TTS server* receives all event reports from MACS and checks them against the trouble ticketing database. If the event is on the list and there is no ticket already open for that event, the server opens a new trouble ticket. The ticket contains an automatically assigned ID, date and time of occurrence, site name and address, alarm point name and address, and fault description.

The *TTS User Interface* allows users to select a recommended repair procedure, assign a technician to do the repair, accept the repair assignment, enter notes about the repair, suspend, resume, and close the ticket, view and print individual trouble tickets, and create a variety of user-defined reports.

MULTIUSER SUPPORT

MACS is a multiuser system. Any number of users can monitor alarms, or perform various control and configuration tasks concurrently. Each instance of the user interface is a completely independent program which may run on any computer on the TCP/IP network.

NETWORKING AND REMOTE ACCESS

MACS provides full LAN and WAN support, as well as dial-in modem connections. The system may be configured to use any physical network topology as long as TCP/IP protocol is available for that network. Therefore, the system may run on token ring and ethernet networks, and across wide area networks, using bridges and routers. In addition, clients and servers may use Remote Access Service (RAS) and Point To Point Protocol (PPP), to communicate using TCP/IP over dial-up serial lines.

ON-LINE DIAGNOSTICS

All MACS programs have powerful built-in real time on-line diagnostics which can be used in the field to verify system configuration and to monitor operation of the external system interfaces.

On-line diagnostics can be accessed remotely by our customer support personnel, to assist operators in configuring and running the system.