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## **Graphic Performance Monitor GPM - An Overview**

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## Introduction

GPM™, the Graphic Performance Monitor, is a tool that allows you to view system performance via a graphic display monitor. GPM displays system, workload, transaction, and database and other performance information real-time on IBM or IBM compatible PCs.

GPM consists of two parts – the host module and the PC module. The diagram below shows the relationship of these two modules and their component parts. The host module runs on a Unisys A Series or ClearPath host. It collects performance data from various sources and transmits that data to one or more PCs that are running the PC module.

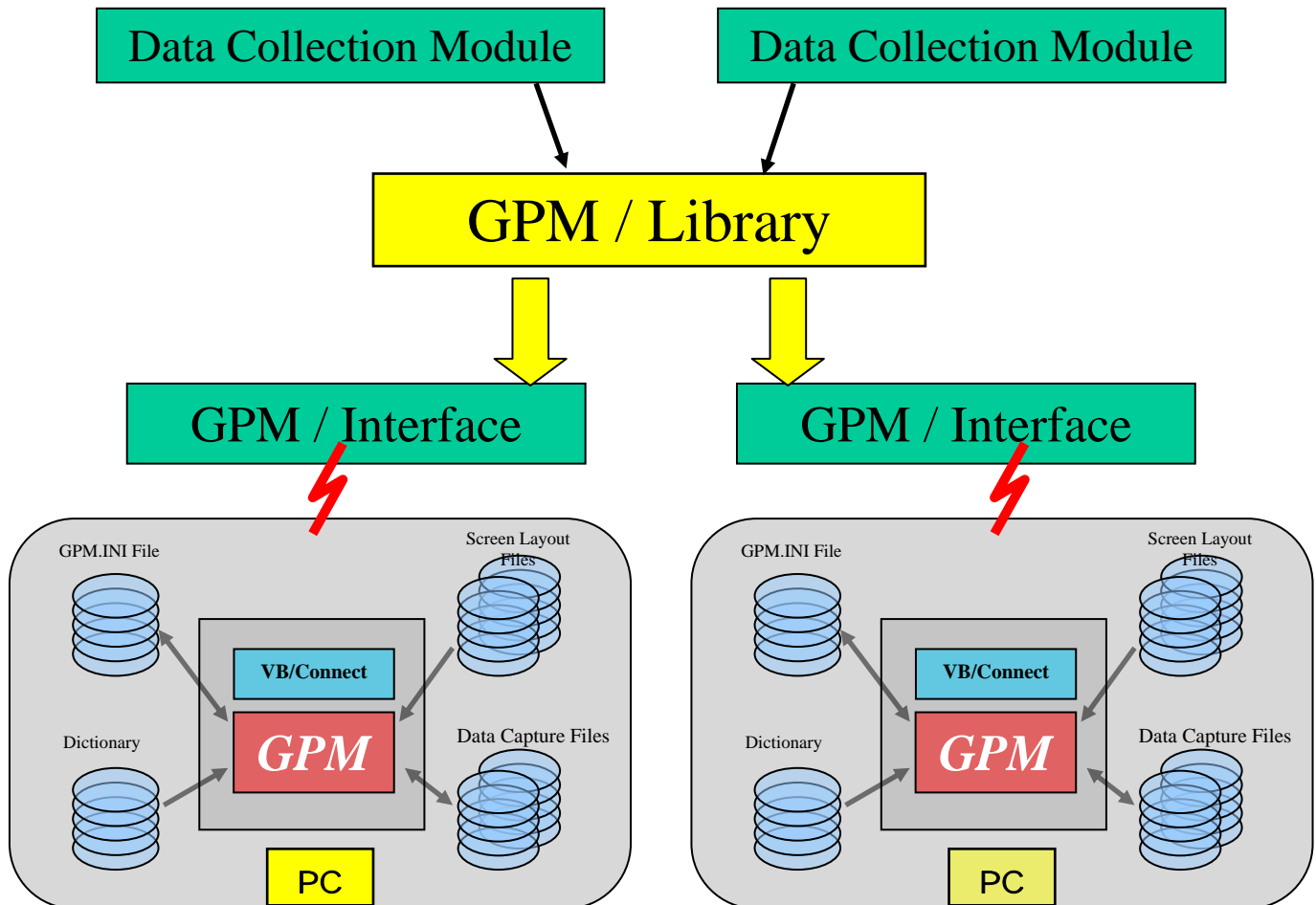
GPM is intended as a real-time display mechanism. However, data is captured on the host, and optionally on the PC, for later review and analysis. Typically, data for a short period of time only, perhaps a shift or a day, is captured on the PC. Data for longer time periods, perhaps several days to a week, can be stored on the host. This allows you to look back at a particular performance issue to resolve the cause of the problem. In addition, detailed data captured on the host can be summarized and stored in long-term historical data files that can be replayed via the PC.

Warning and alarm thresholds can be set up for critical machine and system resources which affect customer service and can even cause the system to stop. On a NAP system alarms could be raised on items such as CPU usage, AIM response times, TSP Board Status, Audit File space and Ratio of Calls Connected/ Received.

A wide range of alarm options is available once one of these thresholds is reached. These options include audible and visual alerts, activating an object, writing to a file etc. If required, alarms can be passed to a systems management package such as TeMip, CA Unicenter or NetCool.

# GPM Components

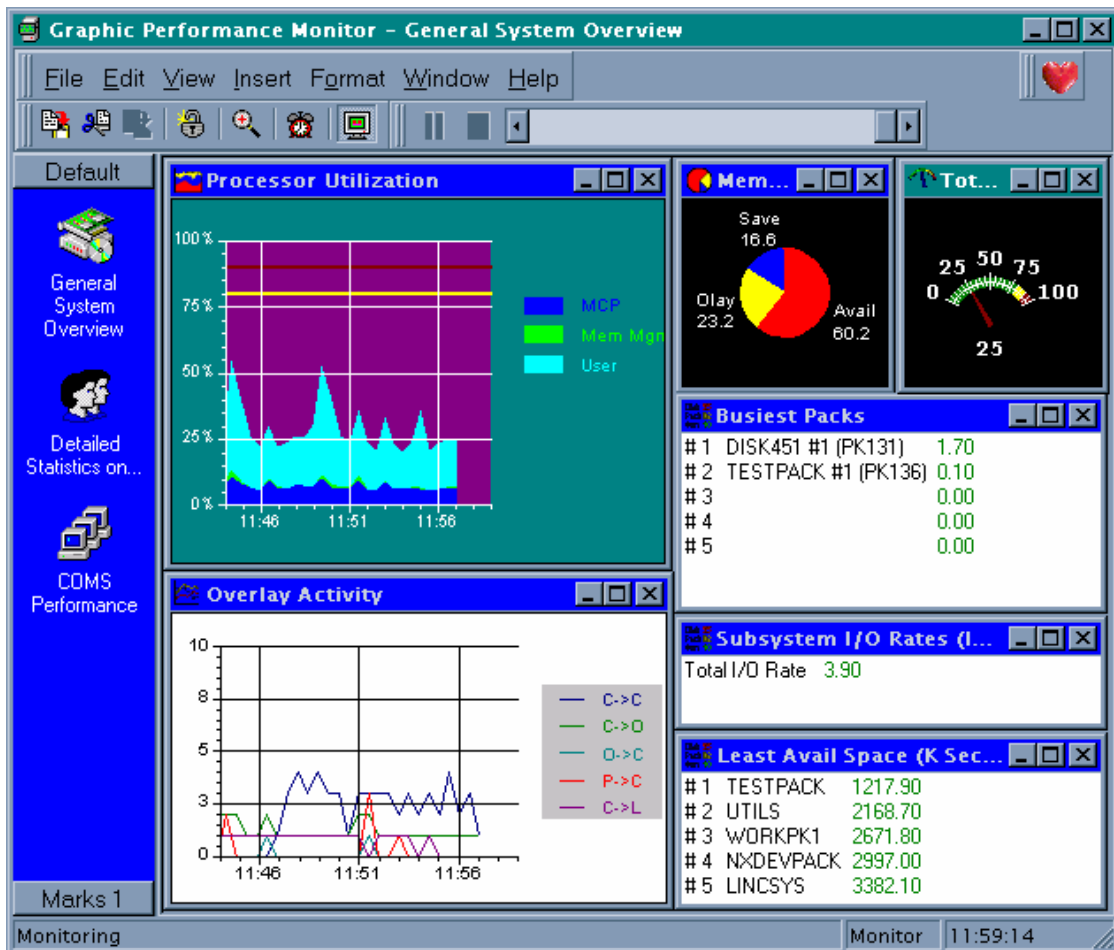
The various GPM components are shown in the diagram below.



GPM uses VB/Connect, the Affinité VBX/OCX, to communicate to the A Series. VB/Connect eliminates the overhead of program-to-program communication and gives the stability of a single Windows application. VB/Connect supports various communications transports. This includes Unisys' INFOConnect, Core Technologies Driver Access and Affinité's Telnet transports. You can select any one of these data communication transports to provide the connection between the A Series host and PC. The communications transport provided with GPM is the Affinité's Telnet transport. If you do not have TCP/IP, Affinité can provide one of the other supported transports. A more complete description of VB/Connect can be found in the VB/Connect User's Guide available on request from Affinité.

The PC module is responsible for receiving the data and updating the appropriate windows on the screen. Data is displayed in one of twelve easily defined graph formats. The screen layouts, window formats, colors and patterns, etc., are all under user control.

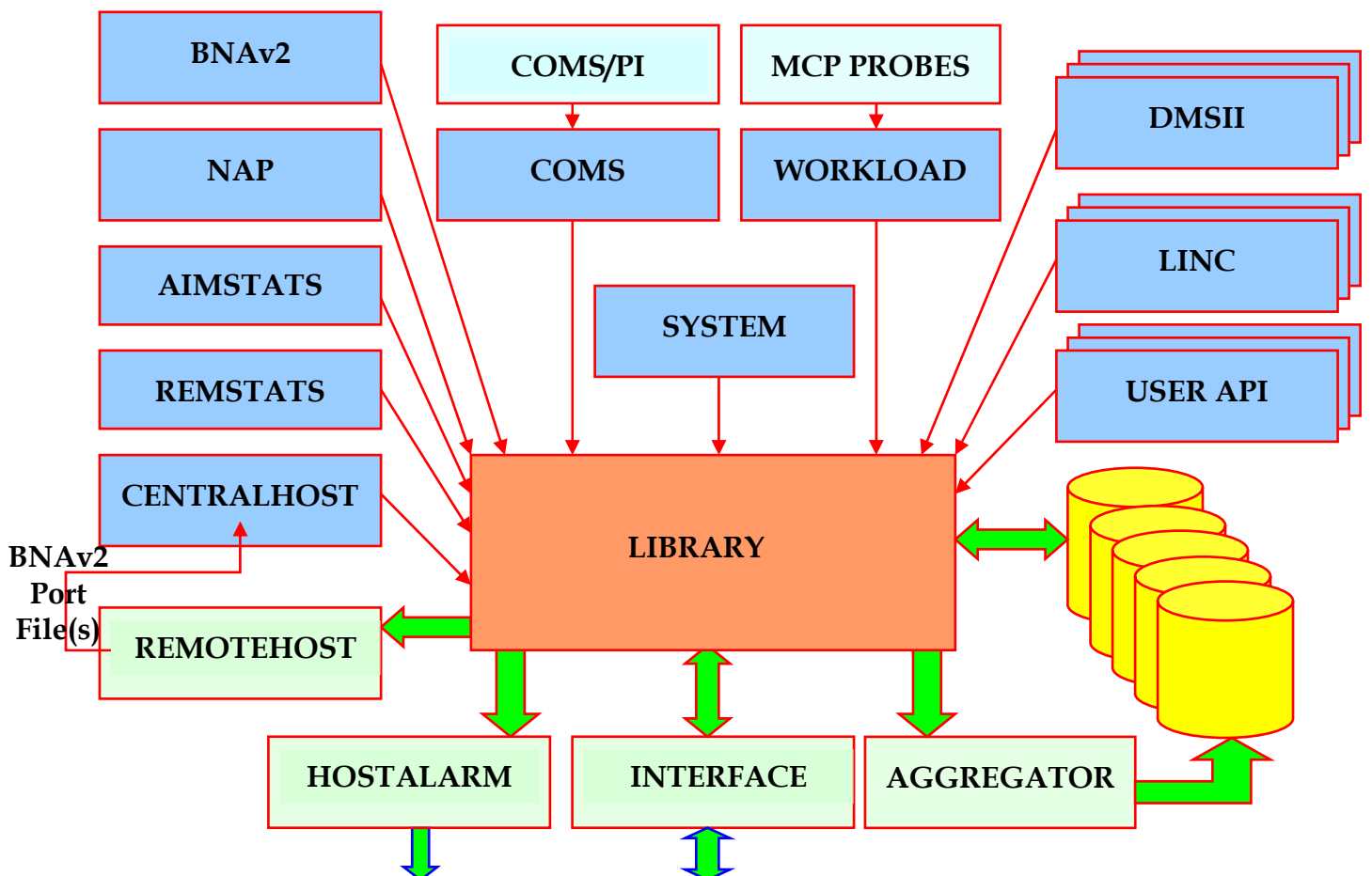
An example of a GPM/PC display is shown below.



# Data Collection Modules

GPM provides a number of data collection modules – the Base package allows you to monitor overall system utilization, database activities, workloads and COMS performance. Optional add-on modules can be installed to allow the monitoring of NAP, LINC application system performance, end-user response time and BNAv2 network activity. GPM also provides a mechanism to install user-written data collection modules so that installation-specific performance data can be monitored (i.e. a locally developed application can be modified to "feed" GPM performance data specific to that application).

The diagram below shows all the current data collection modules. Affinité continues to develop additional data collection modules to analyze other aspects of system performance.



## **System Performance Module**

The System Performance Module collects information about overall utilization of system resources including CPU, I/O, memory, and disk packs. This information allows you to quickly identify any performance bottlenecks.

## **Database Analysis Module**

This module allows monitoring of resource usage and I/O activity for any or all of your databases. It monitors memory usage, overlay, I/O, and audit activity. Database structures with the highest I/Os per seconds are also easily identified. This information allows you to change database parameters such as Allowed Core and Overlay Goal and immediately see the impact on transaction response time and overall system performance.

## **Workload Analysis Module**

This module monitors the utilization of system resources broken down by user-defined workload classifications. Individual tasks or workloads that are consuming excessive amounts of CPU, I/O and memory can be quickly identified. In addition, this module calculates the components of transaction response times and program elapsed time to help identify bottlenecks degrading performance.

## **COMS Analysis Module**

The COMS Analysis Module provides you with detailed information about the performance of COMS transaction processing programs, windows, stations and transaction codes. By default, you can monitor the transaction rate of all COMS windows and the response time and queue depth of all COMS direct windows. This module provides you with information about the COMS programs with the worst response times, highest queue depths or highest transaction rates. This allows you to quickly identify programs with poor response time or programs that are unable to keep up with the transaction rate.

Through the use of a COMS processing item, additional information can be gathered about COMS windows, stations and transaction codes. The processing item is added to the agenda of each program for which you would like to gather detailed statistics. As each message is received and processed by the program, additional statistics are gathered by the processing item and passed to the GPM COMS Analysis Module. This includes counts and response times for windows, stations, and transaction codes as well as transaction queuing times and CPU times for COMS programs.

## **LINC Analysis Module**

The LINC Analysis Module provides you with detailed information on the performance and throughput of one or more LINC application systems. Using standard programs provided with LINC, you can view the performance of your LINC application systems in real-time at the subsystem and ISPEC level. This information helps you to monitor and optimize your LINC application systems.

## **BNAv2 Analysis Module**

The BNAv2 Analysis Module provides performance information about your BNAv2 network. This module monitors specific line and device throughput and error rates on any node in the network. It can be installed on one A Series host in the network while monitoring nodes throughout the network. With this information, you can monitor the network's performance in real-time and react to problems before your users start to see the effects.

## **NAP Analysis Module**

The NAP Analysis Module provides performance information about systems using the Network Application Platform. This module monitors the activities of network applications, resource groups, TSP and Network Interface Unit (NIU) port activities. With this information, you can optimize the performance of network applications and adjust configurations to provide optimal service to the network.

## **Multi-host Modules**

If you have multiple A Series hosts and have licensed GPM to run on each of these hosts, you can use the multi-host modules provided with GPM to integrate data from each of the hosts into a consolidated data collection file. This consolidation of data allows you to use a single PC to monitor data from multiple hosts on a single display screen or within a single chart window. In addition, this facility allows the data collected to be replicated on multiple hosts for backup purposes.

## **RemStats Module**

The RemStats Module gathers performance information about network transmission time statistics for selected stations in a network.

The Remote Statistics module measures network times by “echoing” messages to a terminal and back again boomerang fashion. This allows you to identify exactly where any delays are occurring - in your host system or in the network.

GPM/REMSTATS comprises a COMS program and a COMS Processing Item that run on the host. It sends special messages of

varying lengths to any of your A Series terminals which automatically return these messages. The facility works on any standard A Series terminal or PC terminal emulator, the system uses a standard TD830/T27 technique that retransmits a received message.

GPM/REMSTATS measures the time taken for these messages to respond, providing a true measure of the time taken for a message to traverse the network. The sum of this time and the COMS program response time gives a true measure of the actual response time.

## **User-Written Modules**

In addition to the modules described above, you can also build your own data collection modules to provide installation-specific performance data to GPM. GPM provides a simple library interface that can be used to monitor data from custom MCSs, application programs, etc. This interface, sometimes called an Application Programming Interface (API), allows you to "feed" specific performance information about a custom application or MCS directly into GPM. Thus, you gain the ability to tailor GPM's data collection capabilities to your own needs.

## **Windows NT/Windows 2000**

The NTHost module running on the host, together with GPMServer running on Windows NT/Windows 2000, provide data collection for one or more NT/2000 servers.

GPMServer uses the Performance Registry API to collect data – this means that it has access to the performance objects and counters from any application that uses this Registry interface. This will include basic system data, data from standard Windows applications such as Microsoft Exchange and SQL Server, and data from other more specialised applications such as the Universal Messaging product from Unisys.

The configuration database contains all of the standard NT performance objects, along with any objects added by application software. As part of its initialisation, GPM Server always enumerates all of the objects available, and where necessary, adds objects to the configuration database, making it easy to administer.

GPM Server is configured using an MMC (Microsoft Management Console) snap-in and so is easy to set-up and administer. Through this mechanism, servers can be added, workload definitions maintained, and sample sets enabled or disabled.

Full details of all the items collected can be found in the GPM User's Guide.



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## **GPM/PC Operations**

GPM is used mainly by computer operations and technical staff day to day.

### **Real-Time Mode**

Real-time mode displays and updates the selected performance data on the PC screen as the host module collects and sends it. Typically, performance information is updated every 30 to 60 seconds. A quick glance at the GPM display indicates whether the system is performing optimally. Most graph formats provide a mechanism to indicate whether the performance information is acceptable through the use of threshold lines, colors and/or audible alarms.

It is possible to capture the performance information collected on the host into a host file or local file on the PC while in real-time mode. This captured data can be viewed via GPM at a later time. Even though only select information is being displayed on the screen, all performance information can be recorded in the capture file to allow a more detailed off-line analysis. You can easily switch back and forth between real-time monitoring and replay mode.

### **Replay Mode**

Replay mode displays and updates the selected performance data on the screen as the PC module reads the data capture files. These data capture files reside on the PC, on the host, or both. This allows you to store data for longer periods of time on the host while more recent data can be stored on the PC. GPM locates and replays the data from the appropriate source during replay mode.

The display screen format can be easily modified to display information in the way that provides the best feedback on system performance regardless of the format used in data capture mode. That is, you can display the data differently during replay mode than when you displayed the data during real-time mode.

You can pause the display at any time, page back and forth through the display screens, and look at longer or shorter time intervals through the use of simple keystrokes. In this way, you can easily examine a specific trend or identify exactly when a performance change occurred.

### **Host Control Window**

This gives you a dialog within GPM/PC for communicating with and controlling the GPM host software. This provides a simple method for the management of the GPM host modules.

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# Alarms

GPM offers both PC Based and Host Based alarms so that Operations and Technical staff can be alerted to any potential performance problems.

## PC Based Alarms

Each PC running GPM/PC can have it's own set of definitions for alarm conditions and the required alerts. There is a facility available to prohibit staff from changing these definitions by the use of a password.

There are a number of possible warning/alarm actions available and you can perform multiple actions on one condition.. These include:

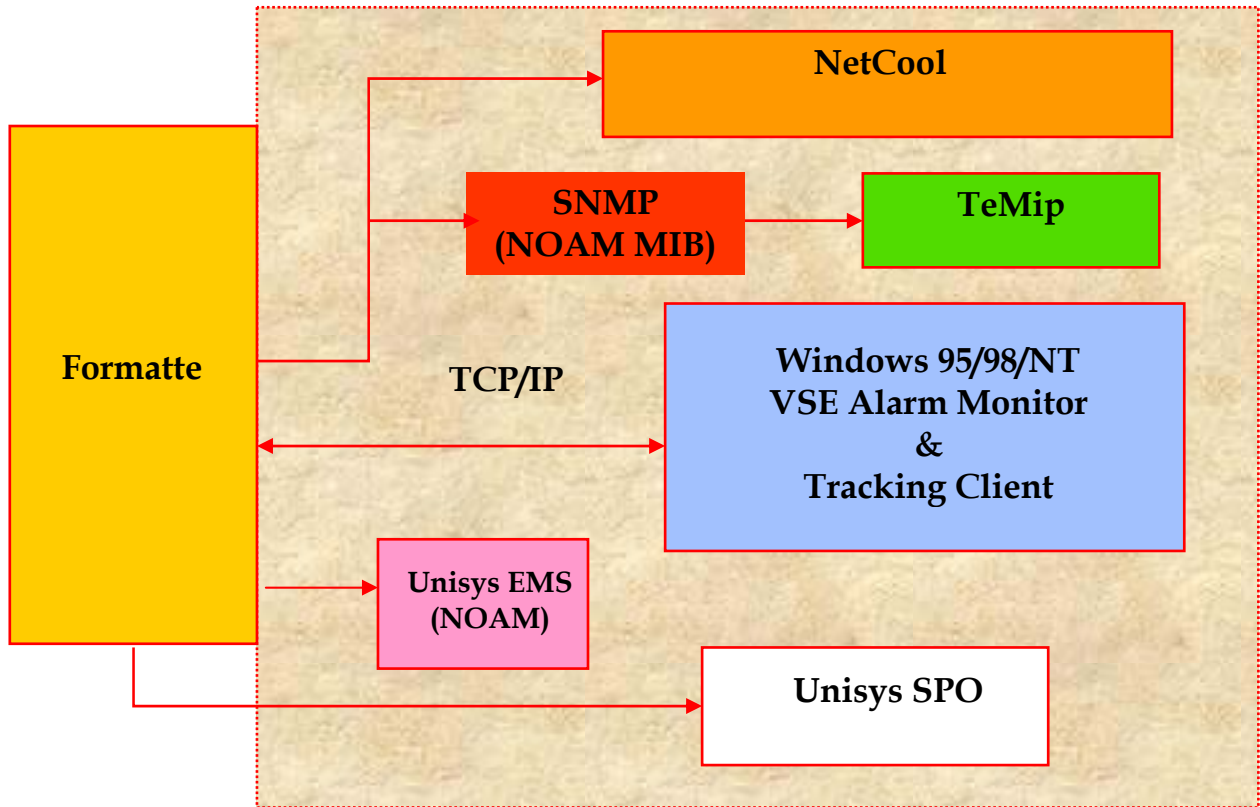
- Audible “beep” via the PC speaker
- Pop-up window which will stay displayed until the user responds
- Log message - the text of the alarm condition for this item is written to a file
- Send a message – to a serial device or to a TCP/IP port
- Activate object – you can attach an OLE2 object to any warning or alarm condition. This gives you a high degree of flexibility to tailor alerts to your own environment

## Host Based Alarms

The Host Alarm Module is an optional module that provides the ability to monitor data collected by GPM on the host and determine whether any item values are beyond user-defined warning and alarm thresholds. This provides central control of alarm conditions. If warning or alarm conditions are detected, a message is sent to a remote monitoring device to inform the device of new or continuing warning or alarm conditions. In addition, the remote monitoring device is informed when a previously existing warning or alarm condition no longer exists.

The Host Alarm interface allows you to customise the module to send alarm messages to your chosen System Management package. The interface formats already offered by the Host Alarm are shown in the diagram below.

# Host Alarm Interfaces



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# Reporting

## **GPM/Aggregator**

This GPM utility provides a means of summarising the data collected by GPM into longer term history files. It does this by averaging each sample in the specified period making the data much more manageable for reporting purposes. Typically data would be aggregated from 30 or 60 second samples to 15 minute samples for weekly or monthly management reporting.

Aggregator can also be used to summarise and extract data into flat files suitable for importing into spreadsheet packages.

## **GPM/PC**

A graph from a GPM/PC display can be printed, or copied and pasted.

The data tables underlying the graphs can be displayed

The alarms log is available for viewing or printing.

## **GPM/Query**

GPM/Query provides you with both regular automatic and ad hoc performance reports. GPM/Query allows you to perform queries on any data collected or aggregated by the GPM host software. The Query architecture allows you to directly analyse your mainframe data from Microsoft's Excel.

GPM/Query offers:

- 80+ Standard Tabular Reports per host
- 20+ Standard Graphs per host
- Over 2000 Items per host

Both Tabular and Graphical Reports are customisable based on any of the available data items

Each report can provide information on one or more time periods – for example - On-Line Day, Nightly Batch, or 24 hours. You can define your own time periods with your own start and end times.

A hard copy of reports can be automatically printed and/or emailed.