Windows OS Monitor for Distributed Network

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Abstract -In this paper we have depicted the design and development of windows desktop application which will monitor system's performance. One of the challenging things in enterprise world is to manage the performance of all the systems in enterprise efficiently. In any business enterprise we require to control and evaluate the system performance for each system. Thus we require an OS MONITOR which will measure the system state and provides up to date information about the system performance and generate reports and alerts accordingly. When any distributed network consists of thousand subsystems, then each system must be monitored from one centralized workstation. The system's performance can be monitored using various parameters. This paper presents the higher version of performance monitor which will monitor different systems in network from a central system. Monitoring the performance of operating systems and processes is essential to debug processes and systems, so that to manage system resources, system decisions, and evaluating status and monitoring systems. Different parameters that will be used to monitor OS performance are processes, applications, networking, users, CPU usage and physical memory.

1. INTRODUCTION

Task manager is the most well-known tool for monitoring processes on the Windows Operating System. Each system with Windows Operating System have performance monitor within the system itself. Performance Monitor is the tool for getting thorough information, logging data for extended investigation, and collecting performance information based on performance events that occur within your system. Task Manager provides a quick look into what is occurring on your system. However, Task Manager lets you manage applications (that is, processes) that might be adversely degrading your system.

Operating System (OS) Monitor system works for distributed network of multiple system with data fetching technique from the desired location. It analyses the performance of corresponding system and it generates report according for each individual system. Different parameters like processes, CPU time, Physical Memory, Applications, Network Interface are monitored for individual system in the distributed network. These parameters are used to check the performance of system and based on this monitoring reports are generated for foe each selected system in different form like status bar, time charts, graphs, etc.

2. SYSTEM FEATURES

2.1 Data Collection

For every client in network, real time data regarding the systems performance parameters is collected. This real time data is stored in database to predict the system performance. The data will be fetched using the classes exposed by Microsoft.

2.2 Data analyzer

Data collected from the data collector have to be stored in the database. Here both the real-time as well as historical data is stored which helps in analyzing system's performance. For every performance parameter a threshold value is set. Thus for any system in the distributed environment if the generated values exceed its threshold then administrator will be notified about it.

2.3 Report Generation

The real time and historical data in the database will be used to depict the overall performance of the systems in the environment. Report will be generated.

3. SYSTEM ARCHITECTURE

Figure 1. Proposed system architecture

The figure above shows the proposed System Architecture for OS Monitor. It includes data collector for each system present in the distributed network. This fetched data is transferred to analyzer which analyses system performance. It generates alert for those system which exceeds the set threshold value of each parameter. This fetched data is real time data. It is stored in database. It also keeps the historical data. This alert will be given to manage console which in return suggest action to improve the client system performance. Managed console will also generate report for each client system.

4. REAL TIME PERFORMANCE MONITORING TOOLS

Real Time Monitoring Tools are concerned with monitoring and showing the current system status. They recapitulate the performance for a particular factor. Typically, these tools rely on system calls which are built into the operating system to extract the performance readings. Because these calls are built into the operating system, this system calls affect the operating system in a proper way. They are also very difficult to modify since the operating system source code is not usually available so easily. Real time performance monitoring tools for operating systems and processes are generally concerned with the way user wants to use them. Data resolution and presentation are the main issues with real time performance monitoring tools. The real time performance tools try to select all data that will be useful without presenting unnecessary data that it is difficult to find what exactly to use. The common tools used to perform real time performance monitoring include Task Manager and Performance Monitor for Windows-operating system.

4.1 Task Manager

Task Manager is the most well-known tool for monitoring processes and whole system on the Windows operating system. Task Manager was introduced with Windows NT to monitor the performance. It provides a fast look into the current system state. It shows all applications (one or more processes running within a single application context) and their state, all processes and some of their most frequently used performance measures, and some general system performance measurements. Newer versions also show networking performance measurements. All performance measurements for system are made by directly calling functions in the operating system to retrieve system counters and to judge the speed, status of the system..

In addition, Task Manager gives users the ability to control the system by stopping the running process and applications. This is the function general computer users typically use Task Manager for when an application or process slows down the computer or enters a "hung" state due to errors in the code which cannot be closed normally as hogging of CPU occurs. In addition to ending a process,

Task Manager also allows users to end a process tree killing all threads associated with the selected process, set a processes' priority to reduce or increase its CPU consumption, and set a processes affinity to certain CPUs to control which CPUs a process will execute on in a multi-CPU system.
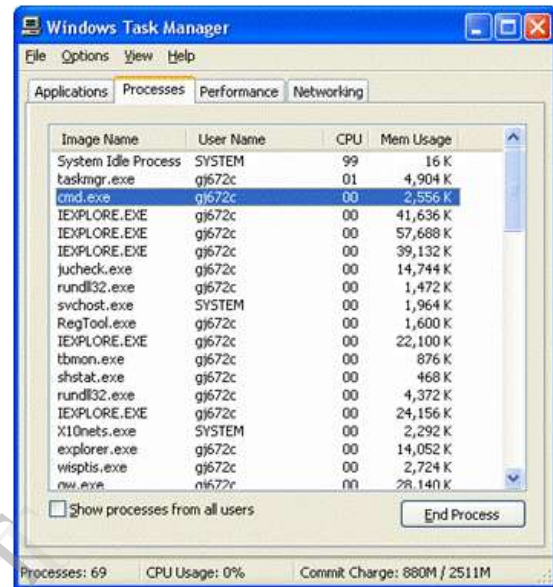

Figure 2. Task Manager- Processes Tab

The Processes tab shows the current memory and percentage of CPU usage of every process running on the computer. It is easy to use and even allow speeding up the processes and can be sorted by name, size, etc.
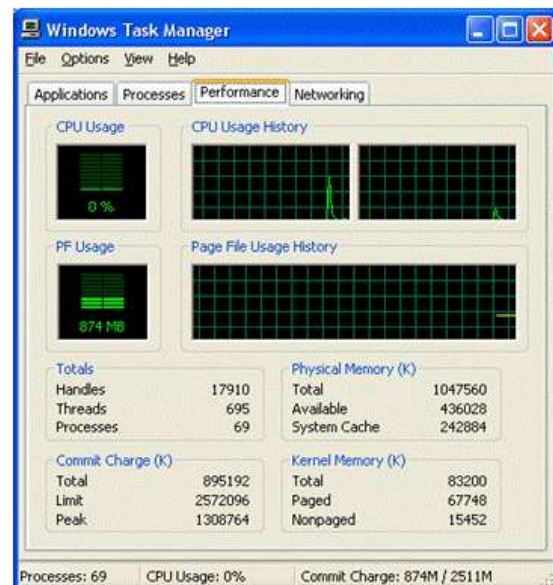

Figure 3. Task Manager- Performance Tab

The Performance tab in Task Manager provides a top level view of the system in terms of CPU usage and memory usage as physical memory and kernel memory.

Task Manager's data is updated every one second by default, but it can be changed to preset values. It is highly integrated into the operating system, and it is not designed to log any of its performance measures for performance analysis or system evaluation [Moore]. However, it is a precious tool in monitoring and adjusting the processes running on a computer as well on operating system. Task Manager is also the standard for real time operating system and process monitoring tools for Windows systems that all other tools must be evaluated against, because another tool must provide some features not available in Task Manager for it to be considered useful.

4.2 Performance monitor

Performance Monitor is the second most familiar operating system performance monitoring tool for Windows. Performance Monitor acts as not only a real time performance monitoring tool but also a log-based performance monitoring tool for operating systems. Unlike Task Manager, Performance Monitor does not measure performance by making system calls to recover system counters, but Performance Monitor makes these calls using a performance library that also provides taking down of the counters.

In addition to this, Performance Monitor provides an interface to scrutinize any selection of a huge set of system counters on a graph in real time, rather than just the narrow set Task Manager uses. The various counters are like percentage of processor time, thread count, page fault rate, memory size, and elapsed time for processes. Likewise, there are counters that propose state for threads, the processor, the system, network interfaces, memory, physical disks, and many others. This level of thorough information accessible for monitoring from Performance Monitor is very wide-ranging and makes Performance Monitor ultimate for monitoring resource handling and presentation of almost all pieces of a Windows system.
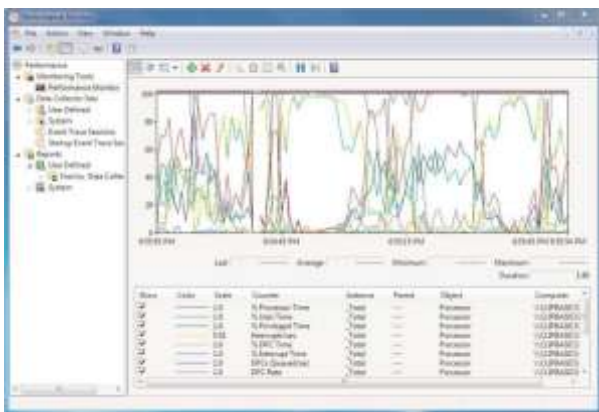

Figure 4. Performance Monitor

Almost everything on display of performance monitor can be customized from whether it is a graph or a histogram to the colours assigned to various counters. As the graph updates, the current reading and statistical information is displayed for the selected counter. Only one counter can be selected at a time for displaying numerical data, but any number of counters can be integrated on the graph at once. In addition to detailed monitors of a large set of system counters, Performance Monitor also allows the user to generate alerts that will lead to an action when a specified counter exceeds a defined threshold values. Alerts can be set up to log an entry, send a message, or run any command or program whenever a counter exceeds a threshold defined by the user.

5. FUTURE SCOPE

In this paper we have introduced a System Monitoring tool OS Monitor whose main task is to monitor the performance for distributed network and generate report for individual system in the network. This application also generates alert and expert advice for overriding the threshold values. In Future, we can give exact solution without causing any degradation in the current activity of the system. As well, we can introduce monitoring for more parameter like remote services, internet server statistics, etc.

6. CONCLUSION

In this paper, we have presented a solution to monitor performance of the multiple systems. In distributed Network, parameters like CPU time, processes, physical memory, applications, etc are monitored and reports are generated for each individual system using OS Monitor.

7. REFERENCES

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