

# Monitoring and Troubleshooting Cisco Unified Communications Manager 6.0 High CPU, using Real Time Monitoring Tool (RTMT)

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**Introduction**

**Prerequisites**

Requirements

Components Used

Conventions

**System Time, User Time, IOWait, Soft IRQ, and IRQ**

**CPU Pegging Alerts**

**Identification of Process that Uses the Most CPU**

**High IOWait**

**High IOWait due to Common Partition**

**Identification of Process Responsible for Disk I/O**

**Code Yellow**

**CodeYellow but Total CPU Usage is Only 25% – Why?**

**NetPro Discussion Forums – Featured Conversations**

**Related Information**

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## Introduction

This document provides steps to assist in monitoring and troubleshooting issues related to high processor utilization on Cisco Unified Communications Manager 6.0 with RTMT.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of this topic:

- Cisco Unified Communications Manager

### Components Used

The information in this document is based on these agenda items:

- System Time, User Time, IOWait, Soft IRQ, and IRQ
- CPU Pegging Alerts
- Identification of Process that Uses the Most CPU
- High IOWait
- HighIOWait due to Common Partition
- Identification of Process Responsible for Disk I/O
- Code Yellow
- Code Yellow but Total CPU Usage is Only 25% – Why?

The information in this document is based on the Cisco Unified Communications Manager 6.0.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

## System Time, User Time, IOWait, Soft IRQ, and IRQ

The utilization of RTMT to isolate potential problems with CPU can be a very useful troubleshooting step.

These terms represent the usage of RTMT CPU and Memory page reports:

- %System: the percentage of CPU utilization that occurred in execution at the system level (kernel)
- %User: the percentage of CPU utilization that occurred in execution at the user level (application)
- %IOWait: the percentage of time that the CPU was idle as it waited for an outstanding disk I/O request
- %SoftIRQ: the percentage of time that the processor executes deferred IRQ processing (for example, processing of network packets)
- %IRQ the percentage of time that the processor executes the interrupt request, which is assigned to devices for interrupt, or sends a signal to the computer when it is finished processing

## CPU Pegging Alerts

CPUpegging/CallProcessNodeCPUpegging alerts monitor CPU usage based on configured thresholds:

**Note:** %CPU is calculated as %system + %user + %nice + %iowait + %softirq + %irq

Alert messages include these:

- %system, %user, %nice, %iowait, %softirq, and %irq
- The process that uses the most CPU
- The processes that wait on Uninterruptible disk sleep

## Identification of Process that Uses the Most CPU

If %system and/or %user is high enough to generate CpuPegging alert, check the alert message to see which processes use the most CPU.

**Note:** Go to the RTMT Process page and sort by %CPU to identify the high CPU processes.

Real Time Monitoring Tool For Cisco Unified Communications Solutions

System Summary

Server

Process at Host: CCMG-Pub

ProcName	PID	% CPU	Status	Share	Nice	VmR	VmSz	VmDa	Threa	Data	Page
java	5579	8	SLEEP...	6440	0	125700	914168	792340	99	782751	41029
RisDC	6803	8	SLEEP...	11304	0	23872	357504	307196	28	224296	1992
sappagt	5982	1	SLEEP...	708	0	920	2132	264	0	4064829	255
cmronini	5331	1	SLEEP...	74380	0	74800	214152	980	0	72322	49581
kscand	7	1	SLEEP...	0	0	0	0	0	0	0	0
ame	6820	1	SLEEP...	6184	0	41656	311920	239084	40	180544	4486
cdmrep	6758	1	SLEEP...	3644	0	22436	336480	271248	19	205104	2903
tracecoll...	6704	0	SLEEP...	6224	0	25944	517280	420492	27	385904	3808
ntp_star...	5275	0	SLEEP...	1092	0	1092	4520	272	0	4066814	0
stnetd	1339	0	SLEEP...	112	0	112	2416	420	0	4065219	101
cmronini...	5360	0	SLEEP...	8920	0	9088	209892	952	0	68062	527
cmronini...	5359	0	SLEEP...	9420	0	9584	209892	952	0	68062	686
cmronini...	5358	0	SLEEP...	9956	0	10116	209892	952	0	68062	834
portmap	1205	0	SLEEP...	72	0	72	1864	172	0	4064782	65
cmronini...	5357	0	SLEEP...	10312	0	10472	209892	952	0	68062	935
ciscose	4516	0	SLEEP...	1224	0	2508	120508	116076	8	4182144	209
cmronini...	5356	0	SLEEP...	10608	0	10768	209892	952	0	68062	1046
mingetty	11250	0	SLEEP...	456	0	460	1788	248	0	4064723	450
enStart	6550	0	SLEEP...	3280	0	3536	263412	201000	15	132048	3015
migratio...	2	0	SLEEP...	0	0	0	0	0	0	0	0
cmronini...	5355	0	SLEEP...	11544	0	11704	209892	952	0	68062	1316
naagt	5953	0	SLEEP...	564	0	564	2056	256	0	4064811	230
cmronini...	5354	0	SLEEP...	10736	0	10932	209892	952	0	68062	1152

CallManager successfully pulled data from server side running

System Su... CPU and M... Process... Disk Usage... Critical Se... Performance... Performan... SysLog Vi... Job Status... Trace & Lo...

**Note:** For postmortem analysis, the RIS Troubleshooting PerfMon Log tracks the process %CPU usage, and it tracks at the system level.

## High IOWait

High %IOWait indicates high disk I/O activities. Consider these:

- IOWait is due to heavy memory swapping.

Check the %CPU Time for Swap Partition to see if there is high level of memory swapping activity. Since Muster has at least 2G RAM, high memory swapping is likely due to a memory leak.

- IOWait is due to DB activity.

DB is primarily the only one that accesses Active Partition. If %CPU Time for Active Partition is high, likely there is a lot of DB activity.

## High IOWait due to Common Partition

Common (or Log) Partition is the location in which trace and log files are stored.

**Note:** Check these:

- Trace & Log Central ??? Is there any trace collection activity? If call processing is impacted (that is, CodeYellow), adjust the trace collection schedule. Also, if the zip option is used, turn that off.
- Trace setting ??? At the Detailed level, CallManager generates quite a bit of trace. If high %IOWait and/or CCM is in the CodeYellow state and the CallManager service trace setting is at Detailed, try to change it to ???Error.???

## Identification of Process Responsible for Disk I/O

There is no direct way to find out the %IOWait usage per process. Currently, the best way is to check the processes waiting on the disk.

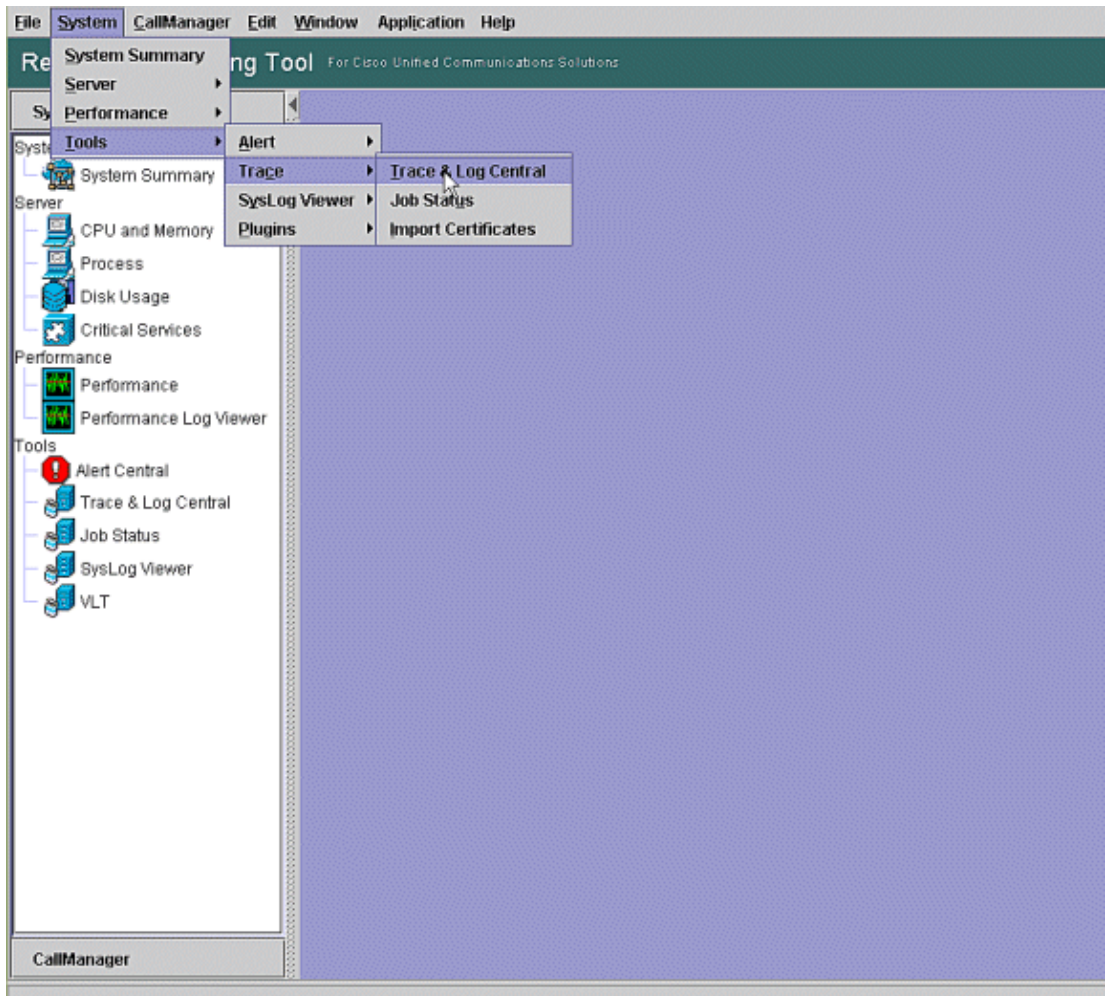
If %IOWait is high enough to cause a CpuPegging alert, check the alert message to determine the processes waiting for disk I/O.

- Go to RTMT Process page and sort by Status. Check for processes in the Uninterruptible disk sleep state. The SFTP process used by TLC for scheduled collection is in the Uninterruptible disk sleep state.

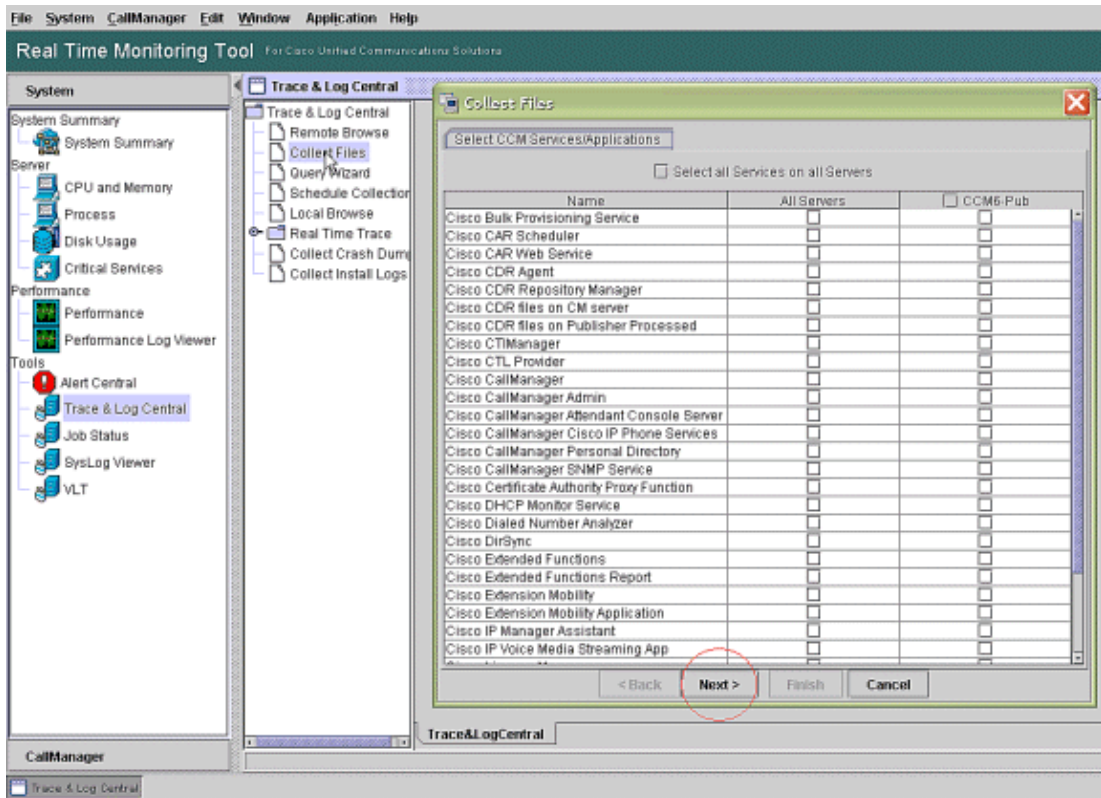
Process	PID	% CPU	Status	Shared Memory	Nice (Level)	VmRSS (KB)	VmSize (KB)
sftp	7813	2	UNINTERRUPTIBLE DISK SLEEP	832	0	1260	3628
ijournald#2	282	0	SLEEPING	0	0	0	0
ijournald#1	281	0	SLEEPING	0	0	0	0
snmpd	1426	0	SLEEPING	2744	0	6356	22996
ksosfingd_3	10	0	SLEEPING	0	19	0	0
ksosfingd_2	9	0	SLEEPING	0	19	0	0
ksosfingd_1	8	0	SLEEPING	0	19	0	0
certM	6109	0	SLEEPING	9160	0	29384	256216
ksosfingd_0	7	0	SLEEPING	0	19	0	0
crasm2d#1	2098	0	SLEEPING	652	0	872	12524
CiscoSyslogSubA	5702	0	SLEEPING	4440	0	6220	42892

**Note:** The RIS Troubleshooting PerfMon Log file can be downloaded to examine the process status for longer periods of time.

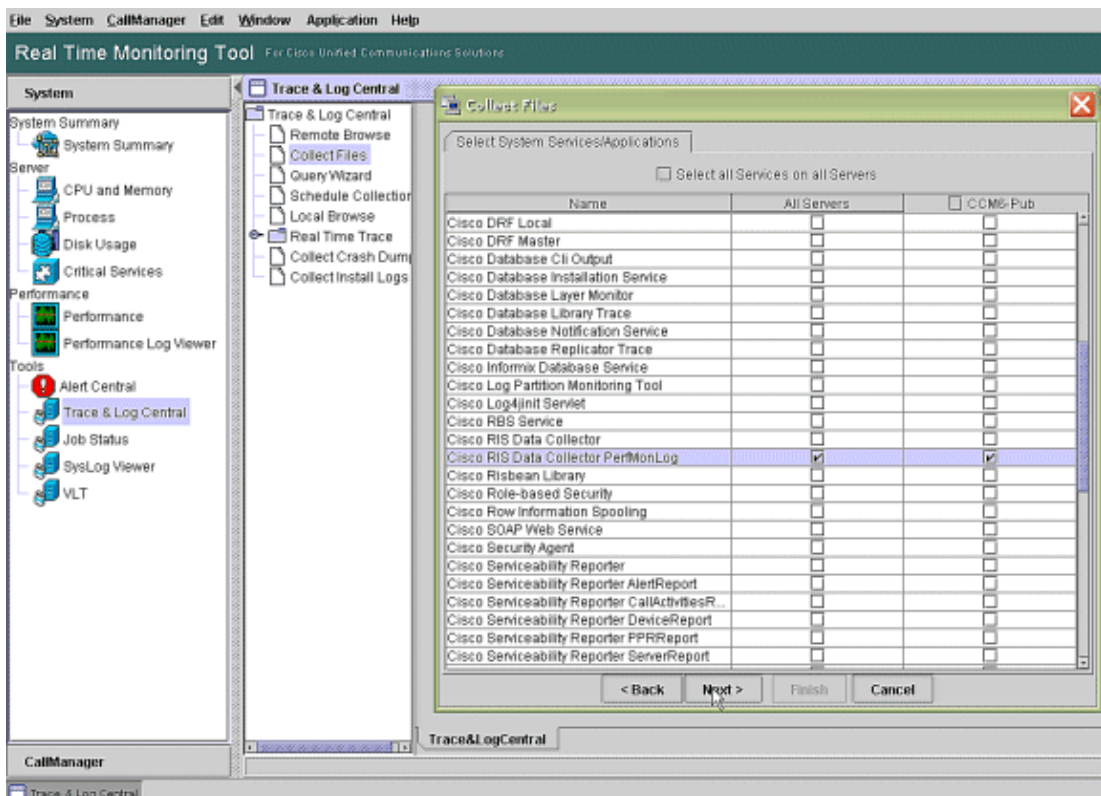
1. In the Real Time Monitoring Tool, go to **System > Tools > Trace > Trace & Log Central**.



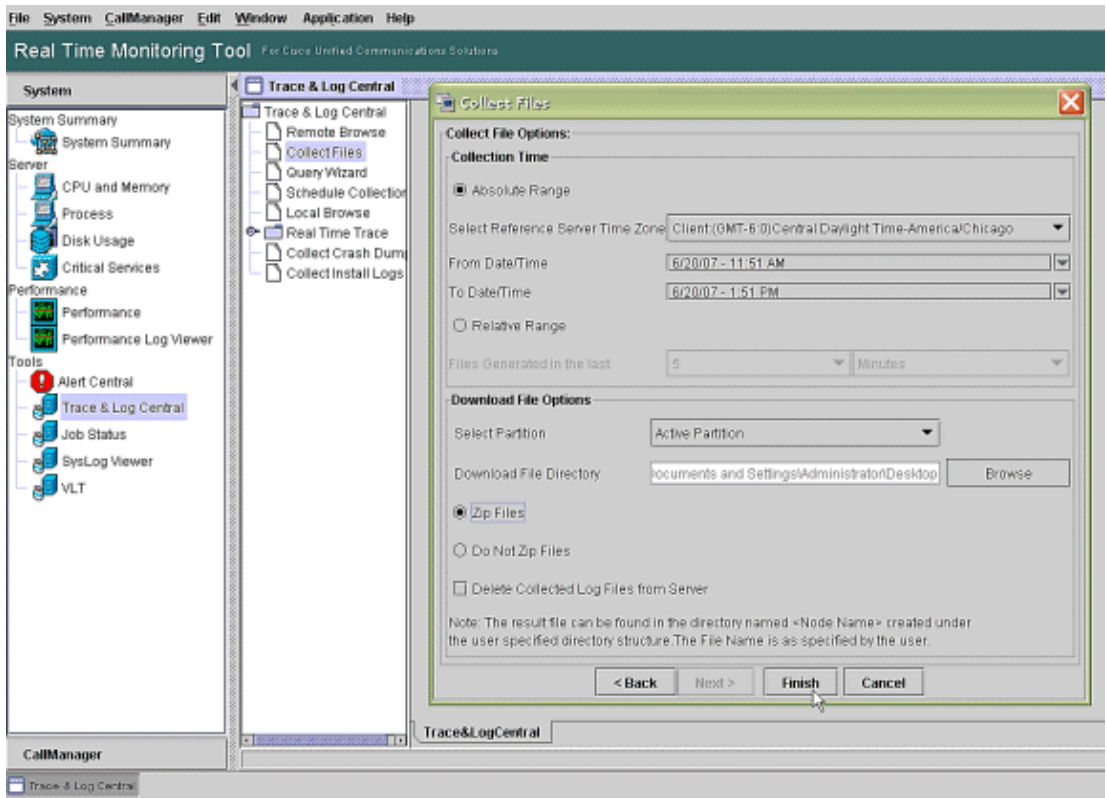
2. Double click **Collect Files** and choose **Next**.



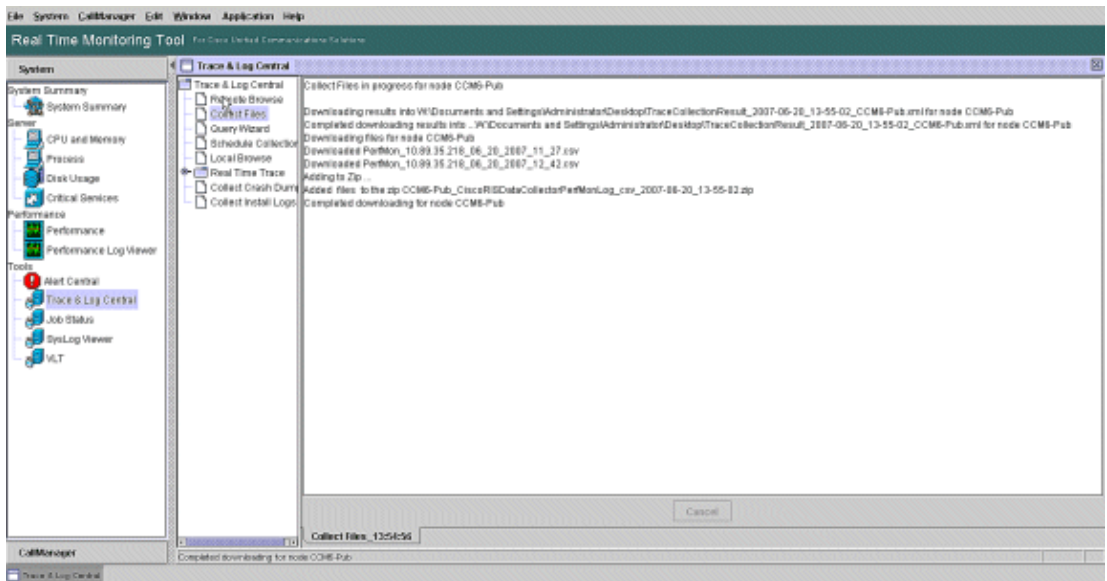
3. Choose **Cisco RIS Data Collector PerfMonLog** and choose **Next**.



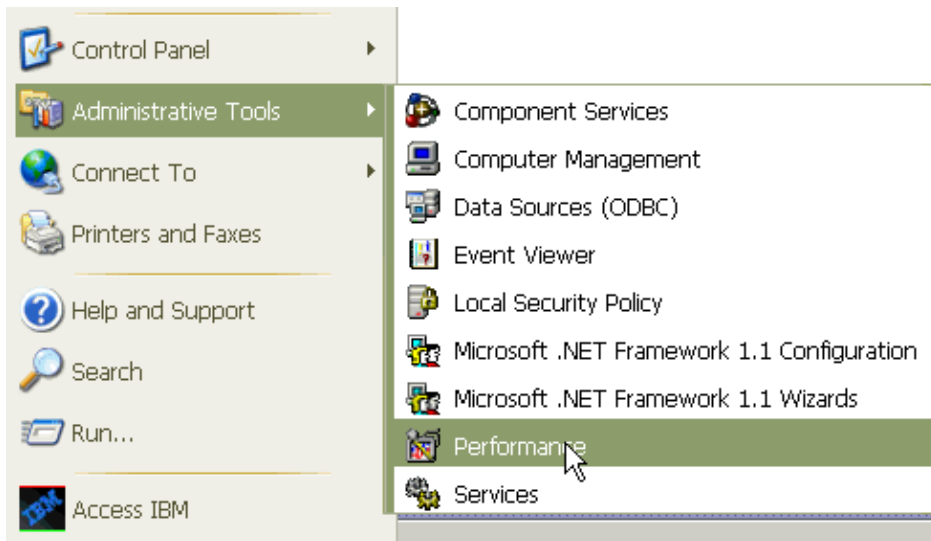
4. In the **Collection Time** field, configure the time required to view log files for the period in question. In the **Download File Options** field, browse to your download path (a location from which you can launch the Windows Performance Monitor to view the log file), choose **Zip Files**, and choose **Finish**.



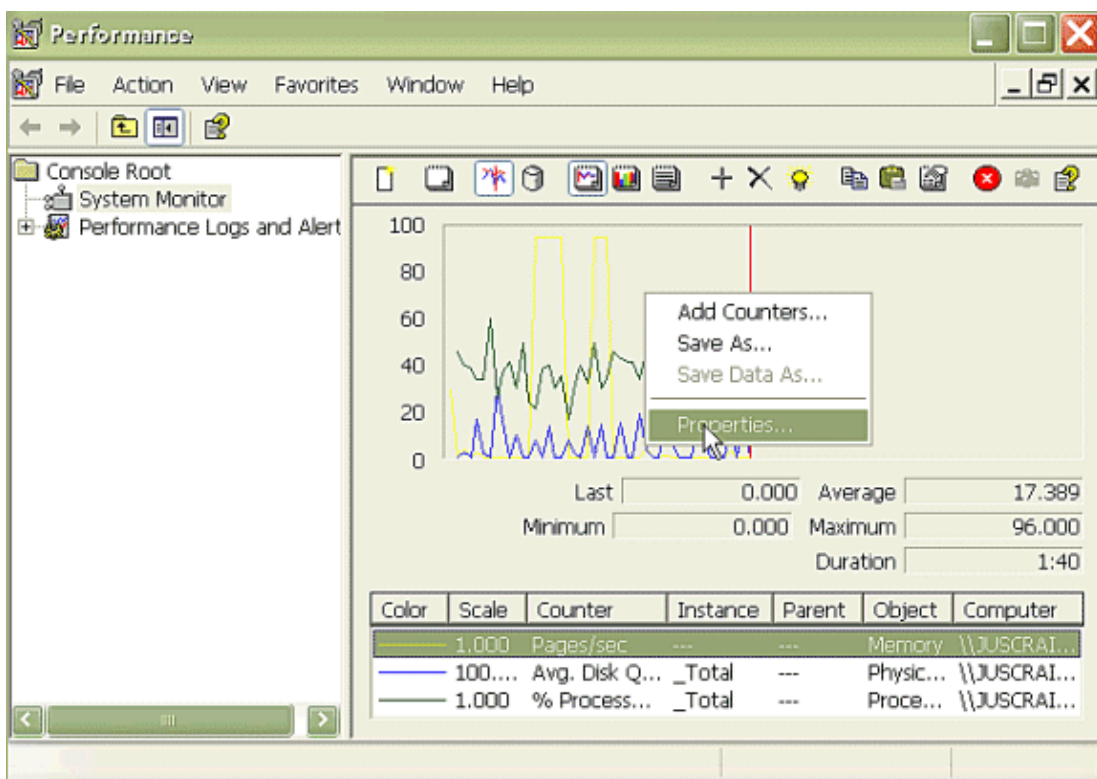
5. Note the Collect Files progress and download path. No errors should be reported here.



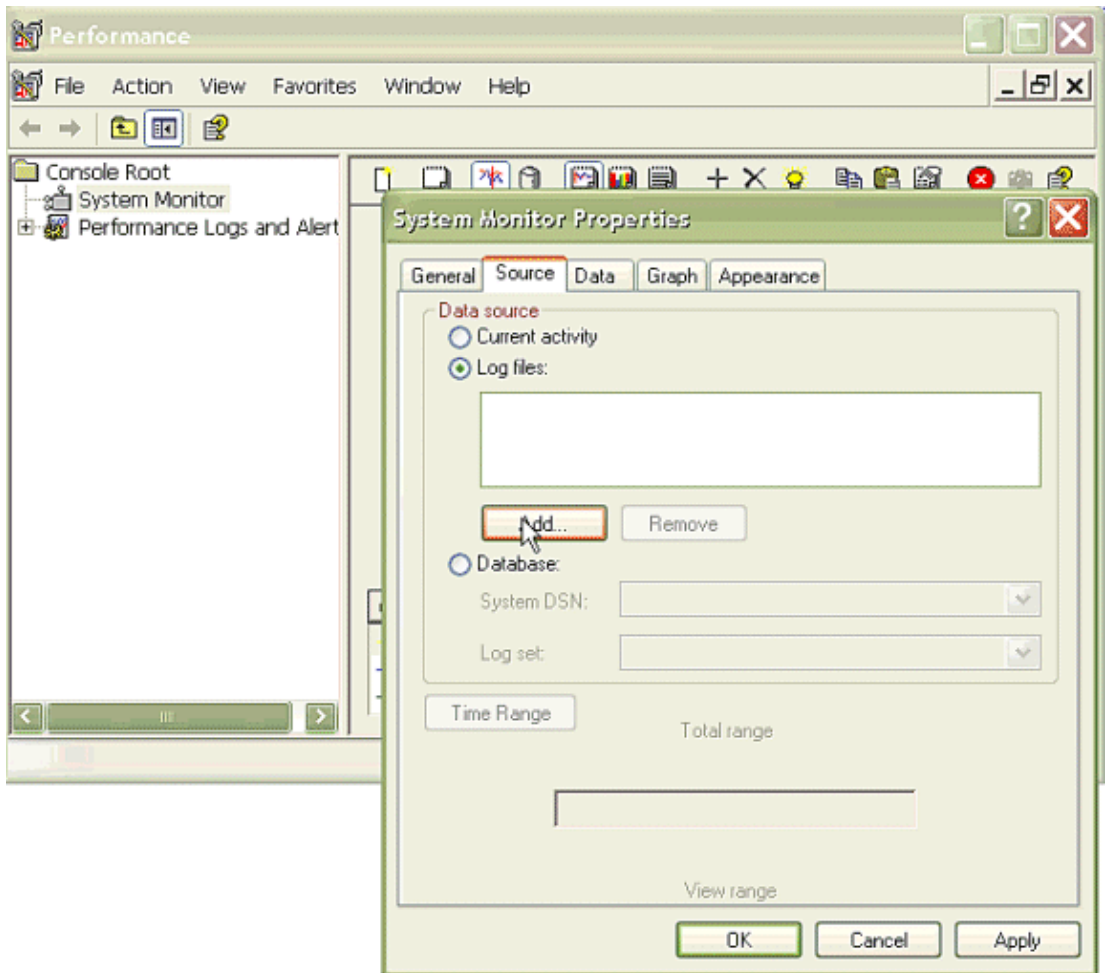
6. View the Performance Log Files with the Microsoft Performance Monitor Tool. Choose **Start > Settings > Control Panel > Administrative Tools > Performance**.



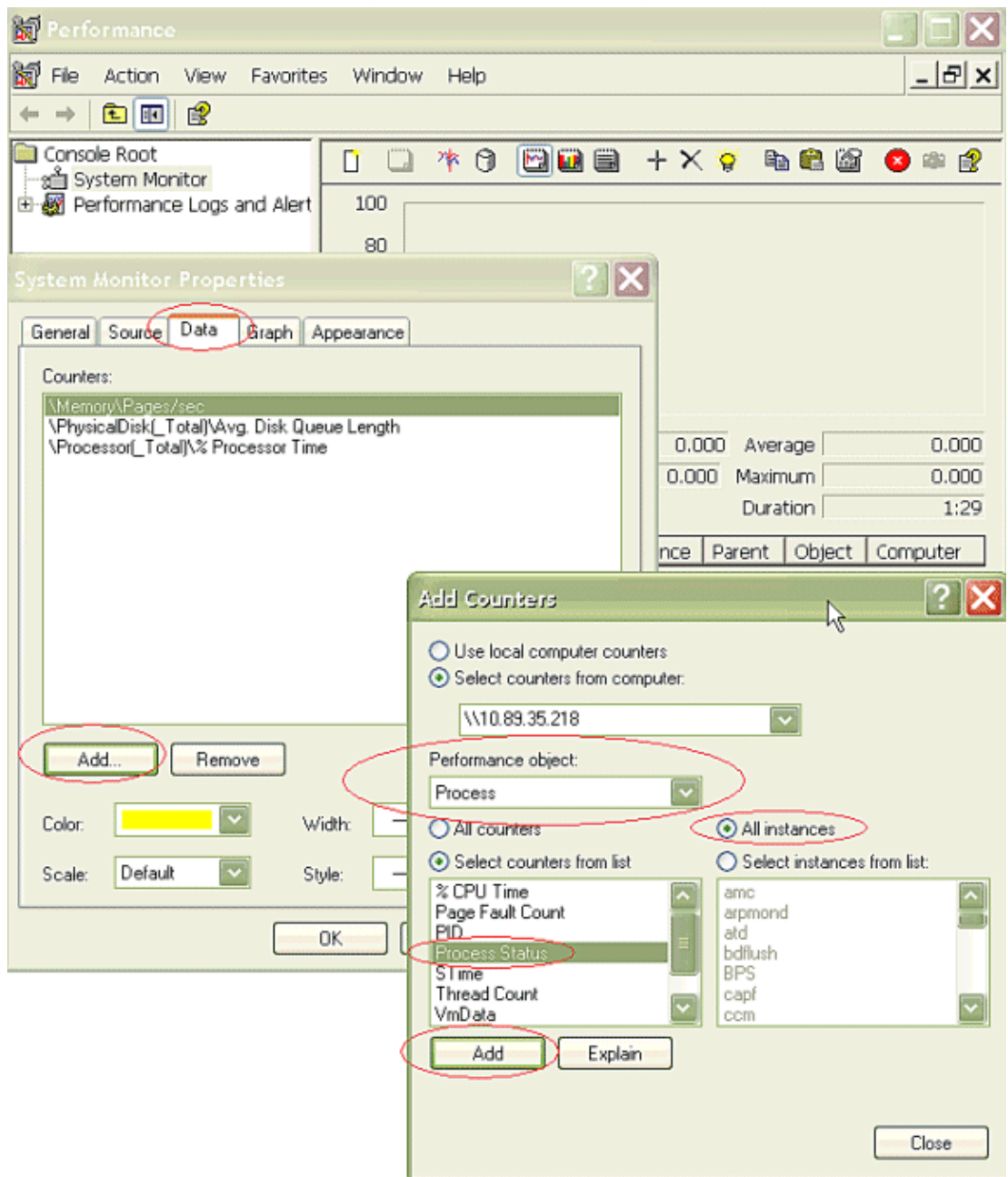
7. In the application window, right click and choose **Properties**.



8. Choose the **Source** tab in the System Monitor Properties dialog box. Choose **Log files:** as the data source, and click the **Add** button.

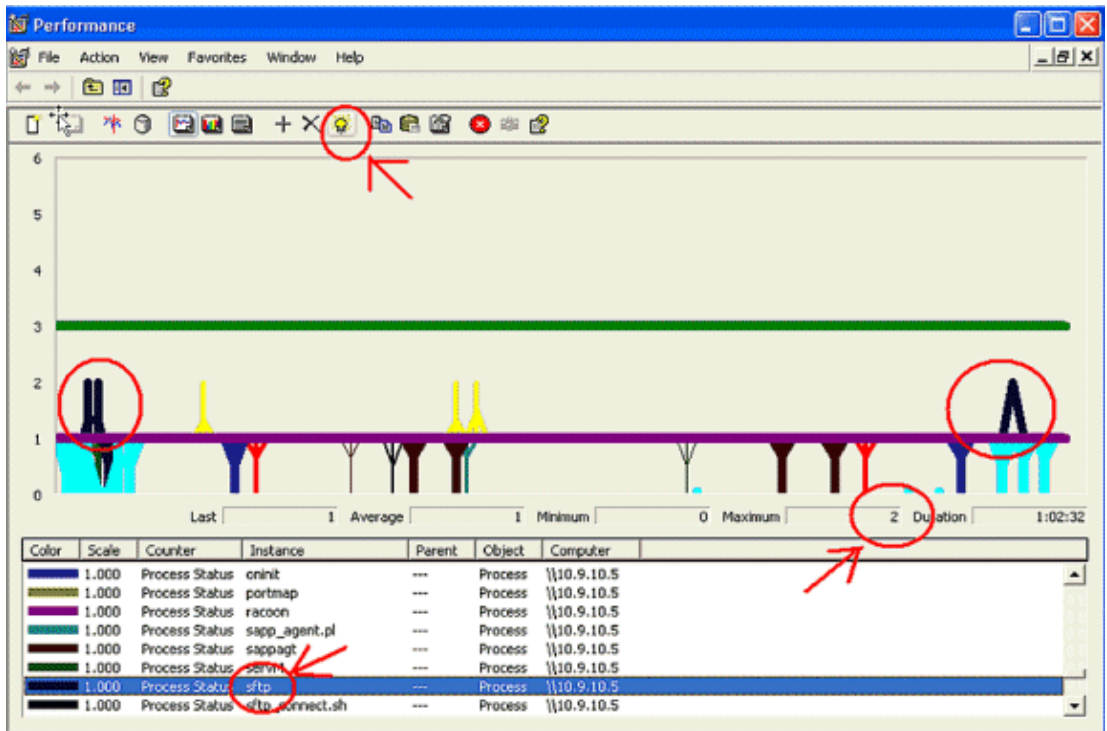


9. Browse to the directory where you downloaded the PerfMon Log file and choose the **perfmon csv** file. The log file includes this naming convention:  
  
PerfMon\_<node>\_<month>\_<day>\_<year>\_<hour>\_<minute>.csv; for example,  
PerfMon\_10.89.35.218\_6\_20\_2005\_11\_27.csv.
10. Click **Apply**.
11. Click the **Time Range** button. In order to specify the time range in the PerfMon Log file that you want to view, drag the bar to the appropriate start and end times.
12. In order to open the Add Counters dialog box, click the **Data** tab and click **Add**. From the Performance Object drop-down box, add **Process**. Choose **Process Status** and click **All instances**. When you finish the counters choices, click **Close**.



### 13. Tips for when you view the log:

- ◆ Set the graph vertical scale to Maximum 6.
- ◆ Focus on each process and look at the Maximum value of 2 or greater.
- ◆ Delete processes that are not in Uninterruptible disk sleep.
- ◆ Use the highlight option.



**Note:** Process Status 2 = Uninterruptible disk sleep are suspect. Other status possibilities are 0 ???running, 1 ???sleeping, 2 ??? Uninterruptible disk sleep, 3–Zombie, 4–Traced or stopped, 5 Paging, 6– Unknown

## Code Yellow

The Code Yellow alert is generated when CallManager service goes into the Code Yellow state. For more information on the Code Yellow State, refer to Call Throttling and the Code Yellow State. The CodeYellow alert can be configured to download Trace files for troubleshooting purposes.

The AverageExpectedDelay counter represents the current average expected delay to handle any inbound message. If the value is above the value specified in the "Code Yellow Entry Latency" service parameter, the CodeYellow alarm is generated. This counter can be one key indicator of call processing performance.

## CodeYellow but Total CPU Usage is Only 25% – Why?

It is possible for CallManager to go into the CodeYellow state due to a lack of processor resources when the total CPU usage is only around 25–35 percent in a 4–virtual–processor box.

**Note:** With Hyper–Threading turned on, a server with two physical processors has four virtual processors.

**Note:** Similarly, on a two–processor server, CodeYellow is possible at around 50 percent total CPU usage.

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Voice & Video: IP Telephony
Voice & Video: IP Phone Services for End Users
Voice & Video: Unified Communications
Voice & Video: IP Phone Services for Developers
Voice & Video: General

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## Related Information

- **Voice Technology Support**
- **Voice and Unified Communications Product Support**
- **Recommended Reading: Troubleshooting Cisco IP Telephony**
- **Technical Support & Documentation – Cisco Systems**

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