



@server

iSeries

Performance Tools reports

Version 5 Release 3





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Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 111.

Fifth Edition (August 2005)

This edition applies to version 5, release 3, modification 0 of IBM Operating System/400 (product number 5722-SS1) and IBM Performance Tools for iSeries (product number 5722-PT1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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Performance Tools reports

The Performance Tools reports provide an easy way for you to look at your collected data and isolate performance problems. After you have collected performance data over time, you can “Print the performance reports” on page 3 the reports to see how and where system resources are being used. The reports can direct you to specific application programs, users, or inefficient workloads that are causing slower overall response times.

Collection Services provides data for most of the Performance Tools reports with the exception of the Transaction, Lock, and Trace reports. You must use the STRPFRTTC and ENDPFRTTC commands to collect the trace information for those three reports.

The following list describes each report, gives a brief overview as to why you would use a particular report, and links to samples of each report. In addition, each report is discussed in detail in the

Performance Tools book  .

Overview of Performance Tools reports

Report	Description	What is shown	How you use the information
“Example: System Report” on page 3	Uses Collection Services data to provide an overview of how the system is operating. The report contains summary information on the workload, resource use, storage pool utilization, disk utilization, and communications. Run and print this report often to give you a general idea of your system use.	System workload. The report includes the database capabilities data.	Workload projection
“Example: Component Report” on page 11	Uses Collection Services data to provide information about the same components of system performance as a System Report, but at a greater level of detail. This report helps you find which jobs are consuming high amounts of system resources, such as CPU, disk, and so on.	Resource use, communications, system and user jobs. The report includes the database capabilities data and the Interactive Feature utilization.	Hardware growth and configuration processing trends
“Example: Transaction Reports” on page 24	Uses trace data to provide detailed information about the transactions that occurred during the performance data collection.	Workload and utilization of CPU, disk, main storage, transaction workload, object contention	Workload projection, pool configuration, application design, file contention, and program use

<p>“Example: Lock Report” on page 41</p>	<p>Uses trace data to provide information about lock and seize conflicts during system operation. With this information you can determine if jobs are being delayed during processing because of unsatisfied lock requests or internal machine seize conflicts. These conditions are also called waits. If they are occurring, you can determine which objects the jobs are waiting for and the length of the wait.</p>	<p>File, record, or object contention by time; the holding job or object name; the requesting job or object name</p>	<p>Problem analysis. Reduction or elimination of object contention.</p>
<p>“Example: Batch Job Trace Report” on page 43</p>	<p>Uses trace data to show the progression of different job types (for example, batch jobs) traced through time. Resources utilized, exceptions, and state transitions are reported.</p>	<p>Job class time-slice end and trace data</p>	<p>Problem analysis and batch job progress</p>
<p>“Example: Job Interval Report” on page 44</p>	<p>Uses Collection Services data to show information on all or selected intervals and jobs, including detail and summary information for interactive jobs and for noninteractive jobs. Because the report can be long, you may want to limit the output by selecting the intervals and jobs you want to include.</p>	<p>Jobs by interval</p>	<p>Job data</p>
<p>“Example: Pool Interval Report” on page 49</p>	<p>Uses Collection Services data to provide a section on subsystem activity and a section on pool activity. Data is shown for each sample interval. Because the report can be long, you may want to limit the output by selecting the intervals and jobs you want to include.</p>	<p>Pools by interval</p>	<p>Pool data</p>
<p>“Example: Resource Interval Report” on page 51</p>	<p>Uses Collection Services data to provide resource information on all or selected intervals. Because the report can be long, you may want to limit the output by selecting the intervals you want to include.</p>	<p>Resources by interval</p>	<p>System resource use</p>

Performance explorer and Collection Services are separate collecting agents. Each one produces its own set of database files that contain grouped sets of collected data. You can run both collections at the same time.

For a list of reports for other tools, see the following:

- Performance explorer reports
- PM iSeries reports

Print the performance reports

You can print reports using the performance data that you collected. Prior to V5R1, Option 3 (Print performance report) displayed a list of performance members that were located in the QAPMCONF file. This list included both sample data and trace data that was collected by the Start Performance Monitor (STRPFRMON) command. Collection Services does not collect trace data. However, you can use the STRPFRTRC and TRCINT commands to collect trace data. This data is located in the QAPMDMPT file. Therefore, in V5R1 and later, you see two views of the Print Performance Report display, one for sample data and one for trace data.

Note: If your trace data and sample data are both in the current library, you can use F20 to toggle between the two Print Performance Report displays.

After you have collected your data, you must create a set of performance data files from the performance information stored in a management collection (*MGTCOL) object. Use the Create Performance Data (CRTPFRDTA) command. After you have created the data files, you can request to print your reports.

Use the following commands to print reports for sample data that you collected with Collection Services:

- Print System Report (PRTSYSRPT)
- Print Component Report (PRTCPTTRPT)
- Print Job Interval Report (PRTJOBTRPT)
- Print Pool Report (PRTPOLRPT)
- Print Resource Report (PRTRSCRPT)

Use the following commands to print reports for trace data that you collected with the Start Performance Trace (STRPFRTRC) and Trace Internal (TRCINT) commands:

- Print Transaction Report (PRTTNSRPT)
- Print Lock Report (PRTLCKRPT)
- Print Job Trace Report (PRTRCRPT)

Note: You must use the End Performance Trace (ENDPFRTRC) command to stop the collection of performance trace data and then optionally write performance trace data to a database file before you can print the Transaction reports.

Example: System Report

Refer to the following to view samples of each section of the system report:

- “System Report - Workload” on page 4
- “System Report - Resource Utilization” on page 5
- “System Report - Resource Utilization Expansion” on page 6
- “System Report - Storage Pool Utilization” on page 7
- “System Report - Disk Utilization” on page 8
- “System Report - Communications Summary” on page 8
- “System Report - TCP/IP Summary” on page 9

- “System Report - HTTP Server Summary” on page 10

Related information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

System Report - Workload

➤ Changes to the workload section of the System Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.
- Server job types , for example, HTTP, COLLECTION, MANAGED, DIRSRV, or any “uppercase” job type, are now reported in the Non-Interactive Workload subsection.
- The Job Type column in the Non-Interactive Workload subsection displays a new job type, *iSeries Access-Bch*.
- A new row to show *Time exceeding Int CPU Threshold (in seconds)* was added.
- A new row to show *Shared processor pool utilization* was added. This row only prints for performance data collected on partitions by using shared processor pool.

Example

The first part of the Workload section of the System Report displays the Interactive Workload of the system. The second part of the Workload section displays the Non-Interactive Workload of the system. An example showing both sections follow:

System Report							10/02/03 16:
Workload							P
Perf data from 14:00 to 16:00 at 1 min							
Member :	Q275140000	Model/Serial . . :	890/10-3907F	Main storage . . . :	56.4 GB	Started :	10/02/03
Library :	PTLIBV5R3	System name . . . :	ABSYSTEM	Version/Release . . :	5/ 3.0	Stopped :	10/02/03
Partition ID :	003	Feature Code . . . :	7427-2498-7427	Int Threshold . . . :	.00 %		
Virtual Processors:	4	Processor Units :	4.0				
QPFRADJ :	2	QDYNPTYSCD . . . :	1	QDYNPTYADJ :	1		
Interactive Workload							
Job Type	Number Transactions	Average Response	Logical DB I/O Count	----- Printer Lines	----- Pages	Communications I/O Count	M
-----	-----	-----	-----	-----	-----	-----	-----
PassThru	3,593	3.17	160,003	40,783	743	0	
Total	3,593		160,003	40,783	743	0	
Average		3.17					

Non-Interactive Workload							
Job Type	Number Of Jobs	Logical DB I/O Count	----- Printer Lines	----- Pages	Communications I/O Count	CPU Per Logical I/O	Lo I/O
-----	-----	-----	-----	-----	-----	-----	-----
Batch	1,863	6,354,471	125,581	2,394	0	.0004	
iSeries Access	99	593	4,896	136	0	.1395	
HTTP	21	1,522	82	4	0	.1373	
COLLECTION	1	1,366	0	0	0	.0078	
MANAGED	1	0	0	0	0	.0000	
DIRSRV	3	0	0	0	0	.0000	
SYSTEM	1	0	0	0	0	.0000	
OS400	4	0	0	0	0	.0000	
SNMP	3	0	0	0	0	.0000	
SQL	82	4,734,415	4,867	131	0	.0101	
TOC	1	0	0	0	0	.0000	
FTP	24	1,302	0	0	0	.0127	

QOS	2	0	0	0	0	.0000
SMTP	2	0	0	0	0	.0000
TELNET	16	0	0	0	0	.0000
REMOTE	1	0	0	0	0	.0000
MGMTCENTRAL	1	11	0	0	0	7.2768
NETSERVER	1	0	0	0	0	.0000
WSA	2	399	0	0	0	9.3617
Total	2,128	11,094,079	135,426	2,665	0	
Average						.0009
Average CPU Utilization : 98.6					
CPU 1 Utilization : 97.2					
CPU 2 Utilization : 96.9					
CPU 3 Utilization : 95.6					
CPU 4 Utilization : 97.0					
Total CPU Utilization (Interactive Feature)	. . . : .0					
Time exceeding Int CPU Threshold (in seconds)	. . . : 0					
Total CPU Utilization (Database Capability)	. . . : .0					
Shared processor pool utilization : .0					



System Report - Resource Utilization

» The Resource Utilization section of the System Report shows the average resource utilization per interactive transaction. Use it to note changes in resource utilization from one measurement period to another and to determine resource utilization trends.

Changes to the Resource Utilization section of the System Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.
- The Job Type column in the second part of the Resource Utilization section displays a new job type, *iSeries Access-Bch*.
- Server job types, for example, HTTP, COLLECTION, MANAGED, DIRSRV, or any "uppercase" job type, are now reported in the second part of the Resource Utilization section.

An example showing the two parts of the Resource Utilization section follow:

System Report												10/02/00
Resource Utilization												
Perf data from 14:00 to 16:00 at 1 min												
Member	Q275140000	Model/Serial	890/10-3907F	Main storage	56.4 GB	Started	10/02/00	Stopped	10/02/00			
Library	PTLIBV5R3	System name	ABSYSTEM	Version/Release	5/ 3.0							
Partition ID	003	Feature Code	7427-2498-7427	Int Threshold00 %							
Virtual Processors:	4	Processor Units :	4.0									
----- Average Per Transaction -----												
Job Type	Response Seconds	CPU Seconds	Sync Disk I/O	Async Disk I/O	DB I/O	Faults						
PassThru	3.17	.06	33.6	17.2	44.5	46,260						
Average	3.17	.06	33.6	17.2	44.5	46,260						

Job Type	CPU Util	Tns /Hour Rate	Active Jobs Per Interval	Total I/O	----- Disk I/O Per Second -----							
					----- Synchronous -----				----- Asynchronous -----			
					DBR	DBW	NDBR	NDBW	DBR	DBW	NDBR	
PassThru	.4	900	1	12.7	.5	1.0	3.7	3.1	.3	1.6		
Batch	5.0	0	7	43.9	.6	5.7	2.1	1.9	1.6	30.1		
iSeries Access-Bch	.1	0	0	.6	.0	.0	.1	.2	.0	.0		
HTTP	.3	0	0	1.4	.0	.0	.9	.3	.0	.0		

COLLECTION	.0	0	0	.6	.1	.1	.0	.0	.1	.1	.0
MANAGED	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
DIRSRV	.6	0	0	2.4	.0	.0	.0	1.4	.0	.3	.0
SYSTEM	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
OS400	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
SNMP	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
SQL	83.9	0	0	182.4	1.7	4.8	1.3	3.4	1.1	8.8	.0
TOC	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
FTP	.0	0	0	1.3	.1	.0	.3	.1	.0	.0	.3
QOS	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
SMTP	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
TELNET	.0	0	0	.1	.0	.0	.0	.0	.0	.0	.0
REMOTE	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
MGMTCENTRAL	.1	0	0	.2	.0	.0	.1	.0	.0	.0	.0
NETSERVER	.0	0	0	.0	.0	.0	.0	.0	.0	.0	.0
WSA	6.5	0	0	11.4	.0	.0	1.3	2.6	.0	5.3	.0
Average	97.2	900	9	257.6	3.3	12.0	10.5	13.5	3.2	46.5	.8

System Report - Resource Utilization Expansion

➤ The Resource Utilization Expansion section of the System Report gives the average resource use per transaction by job type.

Changes to the Resource Utilization Expansion section of the System Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.
- The Job Type column in the second part of the Resource Utilization Expansion section displays a new job type, *iSeries Access-Bch*.
- Server job types, for example, HTTP, COLLECTION, MANAGED, DIRSRV, or any “uppercase” job type, are now reported in the Non-Interactive Resource Utilization Expansion subsection.

An example showing the two parts of the Resource Utilization Expansion section follow:

System Report													10/02/03 1
Resource Utilization Expansion													P
Perf data from 14:00 to 16:00 at 1 min													
Member	Q275140000 Model/Serial . . : 890/10-3907F				Main storage				56.4 GB Started				10/02/03
Library	PTLIBV5R3 System name . . : ABSYSTEM				Version/Release				5/ 3.0 Stopped				10/02/03
Partition ID	003 Feature Code . . : 7427-2498-7427				Int Threshold00 %				
Virtual Processors:	4 Processor Units :												
Interactive Resource Utilization Expansion													
	----- Average Per Transaction -----												
	----- Physical Disk I/O -----												
Job Type	Synchronous				Asynchronous				Logical Data Base I/O			Communicat I/O	
	DBR	DBW	NDBR	NDBW	DBR	DBW	NDBR	NDBW	Read	Write	Other	Get	
PassThru	2.11	4.09	14.94	12.54	1.44	6.49	.52	8.81	28.63	15.51	.38	.0	
Average	2.11	4.09	14.94	12.54	1.44	6.49	.52	8.81	28.63	15.51	.38	.0	

Non-Interactive Resource Utilization Expansion													
	----- Average Per Second -----												
	----- Physical Disk I/O -----												
Job Type	Synchronous				Asynchronous				Logical Data Base I/O			Communicat I/O	
	DBR	DBW	NDBR	NDBW	DBR	DBW	NDBR	NDBW	Read	Write	Other	Get	
Batch	.6	5.7	2.1	1.9	1.6	30.1	.3	1.3	331.9	3.7	106.6	.0	
iSeries Access	.0	.0	.1	.2	.0	.0	.0	.1	.0	.0	.0	.0	
HTTP	.0	.0	.9	.3	.0	.0	.0	.0	.0	.0	.0	.0	
COLLECTION	.1	.1	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0	
MANAGED	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
DIRSRV	.0	.0	.0	1.4	.0	.3	.0	.4	.0	.0	.0	.0	

SYSTEM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
OS400	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SNMP	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SQL	1.7	4.8	1.3	3.4	1.1	8.8	.0	161.1	144.5	2.6	182.4	.0
TOC	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
FTP	.1	.0	.3	.1	.0	.0	.3	.1	.0	.0	.0	.0
QOS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SMTP	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TELNET	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
REMOTE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MGMTCENTRAL	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
NETSERVER	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSA	.0	.0	1.3	2.6	.0	5.3	.0	1.9	.0	.0	.0	.0
Average	.7	5.7	2.3	2.1	1.6	30.2	.3	1.4	332.0	3.7	106.6	.0

Priority	Job Type	CPU Util	Cum Util	Faults	Sync	Disk I/O Async	Async	CPU Per Sync	I/O Async	DIO Sync
----------	----------	----------	----------	--------	------	----------------	-------	--------------	-----------	----------



System Report - Storage Pool Utilization

Use the Storage Pool Utilization section of the System Report to help you set the storage pool size and activity level. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

Pool ID	Expert Cache	Size (KB)	Act Lvl	CPU Util	Number Tns	Average Response	DB Fault	DB Pages	Non-DB Fault	Non-DB Pages	Act-Wait	Wait-Inel
*01	0	7,025,424	0	1.1	0	.00	.0	.0	2.4	3.3	24	0
*02	3	7,173,272	1,628	95.0	0	.00	1.9	17.2	5.9	31.6	35,513	0
*03	3	44,267,256	2,639	.7	0	3.17	1.1	11.8	2.0	4.8	34	0
*04	0	17,760	7	.0	0	.00	.0	.0	.0	.0	0	0
Total		58,483,712		96.9	3,593		3.1	29.1	10.4	39.9	35,572	0
Average						3.17						

* The pool did not exist for all of run, or the size or activity level changed during run.

- Pool ID -- Pool identifier
- Expert Cache -- Method used by the system to tune the storage pool
- Size (KB) -- Size of the pool in kilobytes at the time of the first sample interval
- Act Lvl -- Activity level at the time of the first sample interval
- CPU Util -- Percentage of available CPU time used. This is the average of all processors
- Number Tns -- Number of transactions processed by jobs in this pool
- Average Response -- Average transaction response time
- DB Fault -- Average number of data base faults per second
- DB Pages -- Average number of data base pages per second
- Non-DB Fault -- Average number of non-data base faults per second
- Non-DB Pages -- Average number of non-data base pages per second
- Act-Wait -- Average number of active to wait job state transitions per minute
- Wait-Inel -- Average number of wait to ineligible job state transitions per minute
- Act-Inel -- Average number of active to ineligible job state transitions per minute



System Report - Disk Utilization

» The Disk Utilization section of the System Report shows the utilization for each disk. Changes to this section of the System Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.
- A plus sign (+) displays next to the Unit column to identify multipath disk units. A multipath disk unit is a unit that has multiple redundant paths from the system to the disk unit.
- The *ASP Rsc Name* column was added in Version 5 Release 2 (V5R2) of the operating system to identify the ASP resource name to which the disk unit was allocated at collection.

A sample report is shown below:

System Report													10/02/03	
Disk Utilization														
Member :	Q119115948	Model/Serial . . :	840/10-3A6HM	Main storage . . . :	1024.0 GB	Started :	04/29/03						P	
Library :	MPLIB	System name . . . :	A103A6HM	Version/Release . . :	5/ 3.0	Stopped :	04/30/03							
Partition ID . . :	001	Feature Code . . . :	23FE-2420-1546	Int Threshold . . . :	10.00 %									
Virtual Processors:	4	Processor Units . . :	4.0											
Unit	Unit	Type	Size	IOP	IOP	Dsk CPU	ASP Rsc	ASP	--Percent--	Op Per	K Per	- Average	Time Per	
----	-----	----	----	----	----	----	----	----	----	----	----	----	----	
0001	DD002	6717	8,589	.0	CMB01	.8		1	39.8	.1	.96	5.3	.0010	
0002	DD003	6713	8,589	.0	CMB01	.8		1	36.4	.0	.78	7.8	.0000	
0003	DD001	6717	8,589	.0	CMB01	.8		1	36.4	.1	1.11	7.4	.0008	
+ 0004	DMP045	2105	8,589	.0	CMB05	4.4		5	.0	.0	.00	.0	.0000	
+ 0005	DMP039	2105	8,589	.0	CMB05	11.5		5	.0	.0	.00	16.0	.0000	
Total			42,945											
Average									12.5	.0	.31	6.8	.0000	
+ Multipath disk unit														
* Disk compression is active for the disk unit.														
Unit	-- Disk arm identifier													
Unit Name	-- Disk arm resource name													
Type	-- Type of disk													
Size (M)	-- Disk space capacity in millions of bytes													
IOP Util	-- Percentage of utilization for each Input/Output Processor													
IOP Name	-- Input/Output Processor resource name													
Dsk CPU Util	-- Percentage of Disk Processor Utilization													
ASP Rsc Name	-- ASP resource name to which the disk unit was allocated at collection time													
ASP ID	-- Auxiliary Storage Pool ID													
Percent Full	-- Percentage of disk space capacity in use													
Percent Util	-- Average disk operation utilization (busy)													
Op per Second	-- Average number of disk operations per second													
K Per I/O	-- Average number of kilobytes (1024) transferred per disk operation													
Average Service Time	-- Average disk service time per I/O operation													
Average Wait Time	-- Average disk wait time per I/O operation													
Average Response Time	-- Average disk response time per I/O operation													



System Report - Communications Summary

» The Communications Summary section of the System Report shows the use of the communications lines and processors. Changes to this section of the System Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics

obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

- The *Received* and *Transmitted* columns now show statistics in Kilobytes (KB) rather than Bytes

A sample report is shown below:

Note: The line utilization in the sample system report shown does not correspond with the “Component Report - IOP Utilizations” for an IOP running SDLC remote work stations. A low SDLC line utilization value results in a high IOP utilization value due to polling. However, because the SDLC line transfers a larger percentage of user data, an IOP polls less frequently. Usually this results in an overall increase in IOP utilization. In some cases, though, especially when the SDLC lines have a low utilization, this results in an overall decrease in IOP utilization. Thus, a high IOP utilization value is significant only if at least one of the attached SDLC lines is active.

System Report									
Communications Summary									
Perf data from 14:00 to 16:00 at 1 min									
Member	: Q275140000	Model/Serial . .	: 890/10-3907F	Main storage . . .	: 56.4 GB	Started	: 10/02/00		
Library	: PTLIBV5R3	System name . . .	: ABSYSTEM	Version/Release . .	: 5/ 3.0	Stopped	: 10/02/00		
Partition ID . .	: 003	Feature Code . . .	: 7427-2498-7427	Int Threshold . . .	: .00 %				
Virtual Processors:	4	Processor Units . .	: 4.0						
IOP Name/ Line	Protocol	Line Speed	Avg Util	Max Util	Active Devices	Number Transactions	Average Response	----- KB Per Sec Received	----- KB Per Sec Transmitted
CMB02 ()									
VGIBETH0	ELAN/F	1000000.0	0	0	0	0	.00	.0	
CMB07 (2843)									
AVALANCHE	ELAN/F	10000.0	0	0	0	0	.00	.0	
DPNX25B	X25	64.0	0	0	0	0	.00	.0	
DPNX25C	X25	64.0	0	0	0	0	.00	.0	
NTRN64BA	TRLAN/H	16000.0	0	0	0	0	.00	.2	
CMB10 (2843)									
DPNX25	X25	64.0	0	0	0	0	.00	.0	
DPNX25A	X25	64.0	0	0	0	0	.00	.0	
TRNLIN64B2	TRLAN/H	16000.0	0	0	0	0	.00	.2	
CMB11 (2843)									
ETHLIN64B2	ELAN/F	10000.0	0	0	0	0	.00	.6	
FAXLINT11	ASYN	115.2	0	0	0	0	.00	.0	
FAXLINT12	ASYN	115.2	0	0	0	0	.00	.0	
FAXLINT13	ASYN	115.2	0	0	0	0	.00	.0	
FAXLINT14	ASYN	115.2	0	0	0	0	.00	.0	
NETH64BA	ELAN/F	100000.0	0	2	0	0	.00	18.9	
IOP Name/Line	-- IOP Resource name and model number, Line ID								
Protocol	-- Line protocol (SDLC, ASYN, BSC, X25, TRLAN, ELAN, IDLC, DDI, FRLY, PPP) If /H the protocol is half duplex, if /F it is full duplex								
Line Speed	-- Line speed (1000 bits per second) (For IDLC this is the maximum over the measurement)								
Avg Util	-- Average line utilization								
Max Util	-- Maximum line utilization in all measurement intervals								
Active Devices	-- Average number of active devices on the line								
Number Transactions	-- Number of transactions								
Average Response	-- Average system response (service) time (seconds)								
KB /Sec Received	-- Average number of kilobytes (1024 bytes) received per second								
KB /Sec Transmitted	-- Average number of kilobytes (1024 bytes) transmitted per second								



System Report - TCP/IP Summary

» The TCP/IP Summary section of the System Report includes summary data at the TCP/IP interface level (line type and line description name). The summary includes information such as packets sent and received. This information is useful when investigating the reason for transmission errors. The values in

the unicast and non-unicast columns provide an indication as to where the problem resides. The problem can be related to transmissions sent to specific users (unicast) or in transmissions sent to many users (broadcast or multicast, which are instances of non-unicast transmissions).

New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

```

System Report
TCP/IP Summary
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started . . . . : 10/02/03
Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release : 5/ 3.0 Stopped . . . . : 10/02/03
Partition ID : 003 Feature Code . . : 7427-2498-7427 Int Threshold . . : .00 %
Virtual Processors: 4 Processor Units : 4.0

```

Line Type/ Line Name	MTU Size (bytes)	Received /Second	Unicast	Non-Unicast	Number Error	Pct Error	KB Transmitted /Second	Unicast	Non-Unicast
*LOOPBACK	576	0	9,469	0	0	.00	0	9,469	
*VIRTUALIP	576	0	0	0	0	.00	0	0	
X.25	1,024	0	0	0	0	.00	0	0	
DPNX25	1,492	0	0	142	0	.00	0	0	
ETHERNET AVALANCHE	1,492	161	5,060,350	24,155	0	.00	249	5,564,439	
ETHERNET NETH64BA	1,492	0	0	0	0	.00	0	4,315	
ETHERNET VGIBETH0									

```

Line Type/Line Name -- The type and name of the line description used by the interface.
MTU Size (bytes) -- Maximum Transmission Unit (MTU) size in bytes for interface
KB Received/Second -- Number of kilobytes (1024 bytes) received on interface per second
Unicast Packets Rcvd -- Number of unicast packets received
Non-Unicast Packet Rcvd -- Number of non-unicast packets received
Num Packets Received Er -- Number of packets received that contained errors
Pct Packets Received Er -- Percentage of inbound packets that contained errors
KB Transmitted/Second -- Number of kilobytes (1024 bytes) transmitted out of interface per second
Unicast Packets Sent -- Number of unicast packets sent
Non-unicast Packet Sent -- Number of non-unicast packets sent
Pct Packets Sent Error -- Percentage of outbound packets that could not be sent because of errors

```



System Report - HTTP Server Summary

» The HTTP Server Summary section of the System Report includes summary data at the server instance level for the IBM^(R) HTTP Server (powered by Apache). New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

```

System Report
HTTP Server Summary
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started . . . . : 10/02/03

```



```

Library . . . : PTLIBV5R3   System name . . . : ABSYSTEM           Version/Release : 5/ 3.0   Stopped . . . . : 10/02/
Partition ID  : 003         Feature Code . . : 7427-2498-7427   Int Threshold . . : .00 %
Virtual Processors: 4     Processor Units : 4.0
Server name   Server job user   Server job number   Server start date/time   Threads Active   Threads Idle   Inbound Connections Non-SSL   Inbound Connections SSL   Requests received
-----
ADMIN        QTMHHTTP   955725             10/02/03 08:58          2                5                133              0          132
KELLYMRA1   QTMHHTTP   952457             10/01/03 17:28          0                40               0                0           0
LAPCGI      QTMHHTTP   952458             10/01/03 17:28          0                40               0                0           0
TRADE3      QTMHHTTP   955713             10/02/03 08:56          44               36              112945           0          112945
Server name   -- The server job name. Identify the child job for the server.
Server job user -- The server job user. Identify the child job for the server.
Server job number -- The server job number. Identify the child job for the server.
Server start date/time -- The most recent start or restart time in format mm/dd/yy hh:mm:ss
Threads active -- The number of threads doing work when the data was sampled.
Threads idle -- The number of idle threads when the data was sampled.
Non-SSL Inbound Connect -- The number of non-SSL inbound connections accepted by the server.
SSL Inbound Connections -- The number of SSL inbound connections accepted by the server.
Requests received -- The number of requests of all types received by the server.
Responses sent -- The number of responses of all types sent by the server.

```



Example: Component Report

Refer to the following to view samples of each section of a Component report:

- “Component Report - Component Interval Activity”
- “Component Report - Job Workload Activity” on page 13
- “Component Report - Storage Pool Activity” on page 14
- “Component Report - Disk Activity” on page 15
- “Component Report - Input/Output Processor (IOP) Utilizations” on page 16
- “Component Report - Local Work Stations” on page 17
- “Component Report - Remote Work Stations” on page 18
- “Component Report - Exception Occurrence Summary and Interval Counts” on page 18
- “Component Report - Database Journaling Summary” on page 19
- “Component Report - TCP/IP Activity” on page 21
- “Component Report - HTTP Server Activity” on page 22
- “Component Report - Selection Criteria” on page 23

Related information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.



Component Report - Component Interval Activity

The Component Interval Activity section of the Component Report gives the use of the processing unit, disks, and pools at various time intervals. Changes to this section of the Component Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

- A new column, *Uncap CPU Avail*, was added. This column displays only for performance data that is collected on uncapped partitions.
- *High Disk Utilization* and *High Utilization Unit* columns display dash signs (-) if performance data is not available for the requested interval.

Sample report

Component Report															100203			
Component Interval Activity															P			
Perf data from 14:00 to 16:00 at 1 min																		
Member	: Q275140000 Model/Serial . . : 890/10-3907F				Main storage				: 56.4 GB Started			: 10/02/03						
Library	: PTLIBV5R3 System name . . : ABSYSTEM				Version/Release				: 5/ 3.0 Stopped			: 10/02/03						
Partition ID . .	: 003 Feature Code . . : 7427-2498-7427				Int Threshold				: .00 %									
Virtual Processors:	: 4 Processor Units : 4.0																	
Itv	Tns	Rsp	DDM	-CPU Utilization-			Uncap	Int	Int	DB	----- Disk I/O -----		High	Pool				
End	/Hour	/Tns	I/O	Total	Inter	Batch	CPU	Feat	CPU	Cpb	-----	Per Second	-----	Util	Unit	Mch	User	ID
							Avail	Util	>Thld	Util	Sync	Async	Util					
14:00	300	.00	0	98.0	.0	97.9	.0	.0	0	.0	27.8	74.6	2	0009	0	3	02	
14:01	0	.00	0	99.8	.0	99.8	.0	.0	0	.0	34.8	173.9	--	----	0	5	02	
14:02	0	.00	0	99.7	.0	99.7	.0	.0	0	.0	34.2	217.9	--	----	0	5	02	
14:03	1740	77.27	0	96.1	.4	95.6	.0	.0	0	.0	38.0	183.6	--	----	0	5	02	
14:04	549	.33	0	97.5	2.6	94.8	.0	.0	0	.0	79.8	95.8	--	----	7	30	03	
14:05	60	.00	0	99.9	2.2	97.6	.0	.0	0	.0	60.4	53.6	3	0030	1	30	03	
14:06	0	.00	0	99.9	1.6	98.2	.0	.0	0	.0	42.6	77.5	--	----	1	8	03	
14:07	0	.00	0	97.8	2.3	95.4	.0	.0	0	.0	66.5	121.3	--	----	1	11	02	
14:08	0	.00	0	99.6	1.9	97.6	.0	.0	0	.0	31.6	96.8	--	----	0	4	03	
14:09	0	.00	0	99.5	2.5	97.0	.0	.0	0	.0	156.3	300.4	--	----	9	67	02	
14:10	0	.00	0	99.9	2.1	97.8	.0	.0	0	.0	66.0	378.5	4	0006	6	16	02	
14:11	0	.00	0	99.2	2.3	96.9	.0	.0	0	.0	60.2	513.5	--	----	1	6	03	
14:12	0	.00	0	99.9	2.1	97.7	.0	.0	0	.0	41.6	335.7	--	----	1	5	03	
14:13	0	.00	0	99.8	2.4	97.4	.0	.0	0	.0	63.0	539.0	--	----	2	6	03	
14:14	600	.00	0	99.2	1.0	98.2	.0	.0	0	.0	42.3	378.7	--	----	1	4	03	
14:15	0	.00	0	97.8	.0	97.8	.0	.0	0	.0	41.2	263.8	22	0033	0	4	02	
14:16	0	.00	0	99.9	6.4	93.5	.0	.0	0	.0	48.2	484.0	--	----	1	15	03	
14:17	0	.00	0	99.7	11.5	88.1	.0	.0	0	.0	35.7	535.7	--	----	0	6	03	
14:18	60	99.90	0	96.6	.0	96.5	.0	.0	0	.0	44.7	422.4	--	----	0	5	02	
14:19	0	.00	0	96.9	.0	96.9	.0	.0	0	.0	9.5	60.9	--	----	0	1	02	
14:20	0	.00	0	99.1	.0	99.1	.0	.0	0	.0	6.8	16.6	3	0033	0	1	02	
14:21	120	.50	0	88.7	.0	88.6	.0	.0	0	.0	29.0	29.8	--	----	2	5	02	
14:22	0	.00	0	97.8	.0	97.8	.0	.0	0	.0	77.5	429.6	--	----	4	19	02	
14:23	0	.00	0	99.0	.0	99.0	.0	.0	0	.0	29.0	347.5	--	----	0	3	02	
14:24	0	.00	0	93.1	.0	93.1	.0	.0	0	.0	25.8	161.3	--	----	0	3	02	
Itv End	-- Interval end time (hour and minute)																	
Tns /Hour	-- Number of interactive transactions per hour																	
Rsp /Tns	-- Average interactive transaction response time in seconds																	
DDM I/O	-- Number of logical DB I/O operations for DDM server jobs																	
Total CPU Utilization	-- Percentage of available CPU time used by interactive and batch jobs. This is the average of all processors																	
Inter CPU Utilization	-- Percentage of available CPU time used by interactive jobs. This is the average of all processors																	
Batch CPU Utilization	-- Percentage of available CPU time used by batch jobs. This is the average of all processors																	
Uncap CPU Avail	-- Percentage of CPU time available to this partition in the shared processors pool during the interval in addition to its configured CPU. This value is relative to the configured CPU available for this partition.																	
Int Feat Util	-- Percentage of interactive feature used by all jobs																	
Int CPU >Thld	-- Interactive CPU time (in seconds) over threshold																	
DB Cpb Util	-- Percentage of database capability used to perform database processing																	
Sync Disk I/O Per Sec	-- Average synchronous disk I/O operations per second																	
Async Disk I/O Per Sec	-- Average asynchronous disk I/O operations per second																	
High Disk Utilization	-- Percent of utilization of the most utilized disk arm during this interval																	
High Utilization Unit	-- Disk arm which had the most utilization during this interval																	
Mch Pool Faults/Sec	-- Average number of machine pool faults per second																	
User Pool Faults/Sec	-- Average number of user pool page faults per second, for the user pool with highest fault rate during this interval																	
Pool ID	-- User pool that had the highest page fault rate																	
Excp per second	-- Number of program exceptions that occurred per second																	



Component Report - Job Workload Activity

The Job Workload Activity section of the Component Report gives the total number of transactions, the transactions per hour, the average response time, the number of disk operations, the number of communications operations, the number of PAG faults, the number of arithmetic overflows, and the number of permanent writes for each job. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY I3) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

Component Report															10/02/0
Job Workload Activity															
Perf data from 14:00 to 16:00 at 1 min															
Member	: Q275140000 Model/Serial . . : 890/10-3907F				Main storage . . . : 56.4 GB Started : 10/02/0						Version/Release . . : 5/ 3.0 Stopped : 10/02/0				
Library	: PTLIBV5R3 System name . . : ABSYSTEM				Int Threshold . . . : .00 %										
Partition ID . .	: 003 Feature Code . . : 7427-2498-7427														
Virtual Processors:	: 4 Processor Units : 4.0														
Job Name	User Name/Thread	Job Number	Typ	Pty	CPU Util	DB Cpb Util	Tns	Tns /Hour	Rsp	Sync	Disk I/O Async	Logical	Cmn I/O	PAG Fault	Ar Ov
ADMIN	QTMHHTTP	955725	B	02 25	.02	.0	0	0	.000	14771	615	0	0	0	
ADMIN	QTMHHTTP	955727	B	02 25	.00	.0	0	0	.000	24	0	0	0	0	
ADMIN	QTMHHTTP	955728	B	02 25	.00	.0	0	0	.000	0	0	165	0	0	
ADMIN	QTMHHTTP	956347	B	02 25	.14	.0	0	0	.000	959	343	1349	0	0	
AMQALMPX	QMQM	955751	B	02 35	.00	.0	0	0	.000	0	0	0	0	0	
AMQPCSEA	QMQM	955757	B	02 35	.00	.0	0	0	.000	0	0	0	0	0	
AMQRMPPA	QMQM	955773	B	02 35	.01	.0	0	0	.000	14	0	2	0	0	
AMQRRMFA	QMQM	955752	B	02 35	.00	.0	0	0	.000	1	0	0	0	0	
AMQZDMAA	QMQM	955753	B	02 35	.00	.0	0	0	.000	0	0	0	0	0	
AMQZLAA0	QMQM	955755	B	02 20	.02	.0	0	0	.000	7	0	0	0	0	
AMQZLAA0	QMQM	955774	B	02 20	.00	.0	0	0	.000	2	0	0	0	0	
AMQZXMA0	QMQM	955749	B	02 20	.00	.0	0	0	.000	1	0	0	0	0	
CFINT01			L	01 00	.26	.0	0	0	.000	0	0	0	0	0	
CFINT02			L	01 00	.06	.0	0	0	.000	0	0	0	0	0	
CFINT03			L	01 00	.08	.0	0	0	.000	0	0	0	0	0	
CFINT04			L	01 00	.08	.0	0	0	.000	0	0	0	0	0	
CFINT05			L	01 00	.00	.0	0	0	.000	0	0	0	0	0	
CFINT06			L	01 00	.00	.0	0	0	.000	0	0	0	0	0	
COLDQT			L	01 82	.00	.0	0	0	.000	0	0	0	0	0	
CPUTEST	WLCPU	953645	B	02 51	.00	.0	0	0	.000	0	0	0	0	0	
CPUTEST	WLCPU	953647	B	02 51	.00	.0	0	0	.000	0	0	0	0	0	
CPUTEST	WLCPU	953648	B	02 51	.00	.0	0	0	.000	0	0	0	0	0	
CPUTEST	WLCPU	953649	B	02 51	.00	.0	0	0	.000	0	0	0	0	0	
CPUTEST	WLCPU	953650	B	02 51	.00	.0	0	0	.000	0	0	0	0	0	
Job Name	-- Job name														
User Name/Thread	-- User name or secondary thread identifier														
Job Number	-- Job number														
Typ	-- Job type														
Pty	-- Pool that the job ran in														
Pty	-- Priority of the job														
CPU Util	-- Percentage of available CPU time used by the job. This is the average of all processors														
DB Cpb Util	-- Percentage of database capability used by the job to perform database processing														
Tns	-- Total number of transactions for the job														
Tns /Hour	-- Transactions per hour														
Rsp	-- Average interactive transaction response time in seconds														
Sync Disk I/O	-- Number of synchronous disk operations (reads and writes)														
Async Disk I/O	-- Number of asynchronous disk operations (reads and writes)														
Logical Disk I/O	-- Number of logical disk operations (Get, Put, Upd, Other)														
Cmn I/O	-- Number of communications operations (Get, Put)														
PAG Fault	-- Number of faults involving the Process Access Group														

```
Arith Ovrflw      -- Number of arithmetic overflow exceptions
Perm Write       -- Number of permanent writes
```

```
.
.
.
```

Column	Total	Average
CPU Util		98.740 *
DB Cpb Util		82.3
Tns	2,099	
Tns /Hour	1,043	
Resp		1.610
Sync Disk I/O	304,001	
Async Disk I/O	1,906,898	
Logical Disk I/O	6,257,174	
Cmn I/O	0	
PAG Fault	0	
Arith Ovrflw	3	
Perm Write	1,980,564	

* ---- Average based on the total elapsed time for the selected intervals



Component Report - Storage Pool Activity

The Storage Pool Activity section of the Component Report gives detailed information for each storage pool. This information includes the storage pool activity level, as well as the number of transactions processed in each pool.

The Pool Identifier, shown at the top of the Storage Pool Activity section, specifies the storage pool identifier (the value can be from 01 through 16). A separate Storage Pool Activity section exists for each pool that was in use during the measurement period and was selected on the PRTCPTTRPT command. Changes to the Storage Pool Activity section of the Component Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9.

A sample report is shown below:

Component Report											10/02/03	
Storage Pool Activity											P	
Perf data from 14:00 to 16:00 at 1 min												
Member	Q275140000	Model/Serial . .	890/10-3907F	Main storage . . .	56.4 GB	Started	10/02/03					
Library	PTLIBV5R3	System name . . .	ABSYSTEM	Version/Release . .	5/ 3.0	Stopped	10/02/03					
Partition ID . .	003	Feature Code . . .	7427-2498-7427	Int Threshold00 %							
Virtual Processors:	4	Processor Units :	4.0									
Pool identifier	01	Expert Cache	0									
Itv	Pool Size (KB)	Act Level	Total Tns	Avg Rsp Time	CPU Util	DB Faults	Avg Per Second Pages	Non-DB Faults	Pages	Act-Wait	Avg Per Minute Wait-Incl	
14:00	3,302,740	0	0	.00	.6	.0	0	.5	1	21	0	
14:01	3,236,684	0	0	.00	.8	.0	0	.6	1	30	0	
14:02	3,171,948	0	0	.00	1.0	.0	0	.2	2	14	0	
14:03	3,330,544	0	0	.00	1.2	.0	0	.5	1	41	0	
14:04	3,263,932	0	0	.00	.9	.0	0	7.3	7	14	0	
14:05	3,198,652	0	0	.00	.6	.0	0	1.6	2	16	0	
14:06	3,198,652	0	0	.00	.6	.0	0	1.7	2	30	0	
14:07	3,134,676	0	0	.00	1.1	.0	0	1.8	2	35	0	

14:08	3,134,676	0	0	.00	.8	.0	0	.7	1	18	0
14:09	3,291,408	0	0	.00	1.3	.0	0	9.0	15	259	0
14:10	3,225,580	0	0	.00	1.1	.0	0	6.6	7	110	0
14:11	3,161,068	0	0	.00	1.4	.0	0	1.5	2	27	0
14:12	3,319,120	0	0	.00	1.1	.0	0	1.0	2	24	0
14:13	3,252,736	0	0	.00	1.4	.0	0	2.4	3	32	0
14:14	3,187,680	0	0	.00	1.4	.0	0	1.6	2	16	0
14:15	3,123,924	0	0	.00	1.4	.0	0	.6	1	30	0
14:16	3,280,120	0	0	.00	1.1	.0	0	1.8	2	14	0
14:17	3,214,516	0	0	.00	1.5	.0	0	.6	1	12	0
14:18	3,150,224	0	0	.00	1.6	.0	0	.3	0	24	0
14:19	3,307,732	0	0	.00	.9	.0	0	.4	0	19	0
14:20	3,241,576	0	0	.00	.6	.0	0	.2	0	13	0
14:21	3,176,744	0	0	.00	.8	.0	0	2.0	2	17	0
14:22	3,335,580	0	0	.00	1.3	.0	0	4.1	5	31	0
14:23	3,268,868	0	0	.00	1.0	.0	0	.4	0	13	0
14:24	3,203,488	0	0	.00	1.1	.0	0	.4	0	25	0
Itv End	-- Interval end time (hour and minute)										
Pool Size (KB)	-- Initial pool size in kilobytes (1024)										
Act Level	-- Initial pool activity level										
Total Tns	-- Number of transactions processed in this pool										
Avg Resp Time	-- Average transaction response time										
CPU Util	-- Percentage of available CPU time used by the job. This is the average of all processors										
DB Faults	-- Database faults per second										
DB Pages	-- Database pages per second										
Non-DB Faults	-- Nondatabase faults per second										
Non-DB Pages	-- Nondatabase pages per second										
Act-Wait	-- Number of active-to-wait transitions per minute										
Wait-Inel	-- Number of wait-to-ineligible transitions per minute										
Act-Inel	-- Number of active-to-ineligible transitions per minute										



Component Report - Disk Activity

» The Disk Activity section of the Component Report gives the average disk activity per hour and the disk capacity for each disk. Changes to this section of the Component Report include:

- Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.
- A new column, *%Write Cache Overruns*, was added in V5R2.
- A plus sign (+) displays next to the *Unit* column to identify multipath disk units. A multipath disk unit is a unit that has multiple redundant paths from the system to the disk unit.

A sample report is shown below:

Component Report															10/03/00
Disk Activity															
Multipath disk data															
Member	: Q119115948 Model/Serial . . : 840/10-3A6HM				Main storage . . . : 1024.0 GB Started : 04/29/00										
Library	: MPLIB System name . . : ABSYSTEM				Version/Release : 5/ 3.0 Stopped : 04/30/00										
Partition ID : 001	Feature Code . : 23FE-2420-1546				Int Threshold . . : 10.00 %										
Virtual Processors:	4 Processor Units : 4.0														
----- Average Disk Activity Per Hour -----															
Unit	Util	Srv Time	Disk Arm Seek Distance					Device	Cache hit	Statistics			%Write	-Dis	
			0	1/12	1/6	1/3	2/3	>2/3	Read	Controller	Write	EACS	EACS	Cache	MI
									Read	Read	Effic	Read	Resp	Overruns	
0001	.1	.0346	516	564	8	111	0	0	23.0	25.6	86.1	.0	.0	.0	5
0002	.0	.0000	67	397	43	76	0	0	30.9	63.4	80.8	.0	.0	.0	5
0003	.1	.0189	228	388	96	93	10	6	38.9	57.1	81.2	.0	.0	.0	5
+ 0004	.0	.0000	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	8
+ 0005	.0	.0000	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	8

+ Multipath disk unit		Total	Average
Column			
Util			.0
Srv Time			.0000
Disk Arm Seek Distance			
0		813	
1/12		1,350	
1/6		148	
1/3		281	
2/3		10	
>2/3		6	
Cache hit Statistics			
Device Read			27.7
Controller Read			43.4
Write Efficiency			82.4
EACS Read			.0
EACS Resp			.0
%Write Cache Overruns			.0
Disk Capacity			
MB		67,606	
Percent		87.4	
Unit	-- Disk arm identifier		
Util	-- Drive utilization		
Srv Time	-- Average service time per request in seconds		
Disk Arm Seek Distance	-- Average seek distance distributions per hour		
0	-- Number of zero seeks		
1/12	-- Number of seeks between 0 and 1/12 of the disk		
1/6	-- Number of seeks between 1/12 and 1/6 of the disk		
1/3	-- Number of seeks between 1/6 and 1/3 of the disk		
2/3	-- Number of seeks between 1/3 and 2/3 of the disk		
>2/3	-- Number of seeks greater than 2/3 of the disk		
Cache hit Statistics	--		
Device Read	-- Percent of device read hits for each arm		
Controller Read	-- Percent of controller cache read hits for each arm		
Write Efficiency	-- Percent of efficiency of write cache		
EACS Read	-- Extended Adaptive Cache Simulator percent read hits		
EACS Resp	-- Extended Adaptive Cache Simulator estimated percent response time improvement		
%Write Cache Overruns	-- Percent of Write Cache Overruns		
Disk Capacity	-- Average amount of disk space used or available		
MB	-- Millions of bytes available on the disk		
Percent	-- Percent of space available on the disk		



Component Report - Input/Output Processor (IOP) Utilizations

» The IOP Utilizations section of the Component Report gives the input/output processor (IOP) utilization for communications, direct access storage devices (DASDs), multifunction (DASD, communication, and local work stations). Consistent utilization, at or above the threshold value of the DASD IOP and multifunction IOP, will affect system performance and cause longer response times or less throughput. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

See the utilization guidelines and thresholds in the Performance Tools book  for a list of threshold values.

A sample report is shown below:

Note: The total for the I/O processor utilization often times does not match the sum of the three

columns (IOP Processor Util Comm, IOP Processor Util LWSC, and IOP Processor Util DASD). This mismatch is caused by the utilization of other small components, such as system time.

```

Component Report
IOP Utilizations
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started . . . . : 10/02/
Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release : 5/ 3.0 Stopped . . . . : 10/02/
Partition ID : 003 Feature Code . : 7427-2498-7427 Int Threshold . . : .00 %
Virtual Processors: 4 Processor Units : 4.0

IOP Processor Util ---
IOP          Total  Comm  LWSC  DASD  DASD  -- KBytes Transmitted --  Available  Util 2
              Ops/Sec  IOP      System  Storage
-----
CMB05 (2843)   .4   .0   .0   .0         54         0  65,038,208   .0
CMB06 (2843)   .0   .0   .0   .0         72         0  63,717,218   .0
CMB07 (2843)   .5   .2   .0   .1         488        0  53,520,379   .0
CMB08 (2843)  3.2   .0   .0   1.9        1,314       0  61,607,496   .0
CMB09 (2843)   .3   .0   .0   .1         249         0  61,645,950   .0
CMB10 (2843)   .3   .2   .0   .0         6,885       256  55,139,610   .0
CMB11 (2843)  1.9  1.6   .0   .0        147,424     0  53,390,615   .0
IOP          -- Resource name and model number for each communications, DASD,
              multifunction, and local work station IOP
IOP Processor Util Total -- Total utilization for IOP
IOP Processor Util Comm  -- Utilization of IOP due to communications activity
IOP Processor Util LWSC  -- Utilization of IOP due to local work station activity
IOP Processor Util DASD  -- Utilization of IOP due to DASD activity
DASD Ops/Sec             -- Disk operations per second
KBytes Transmitted IOP   -- Total Kbytes transmitted from an IOP to the system across the bus
KBytes Transmitted System -- Total Kbytes transmitted to the IOP from the system across the bus
Available Storage         -- The average number of bytes of free local storage in the IOP
Util 2                    -- Utilization of co-processor

```



Component Report - Local Work Stations

The Local Work Stations - Response Time Buckets section of the Component Report gives the utilization of each controller, the range of response times for each device, and the average response time for each device. The values for the response times may vary depending on the values you use. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

```

Component Report
Local Work Stations - Response Time Buckets
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started . . . . : 10/02/
Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release : 5/ 3.0 Stopped . . . . : 10/02/
Partition ID : 003 Feature Code . : 7427-2498-7427 Int Threshold . . : .00 %
Virtual Processors: 4 Processor Units : 4.0
Ctl/Device      Util      IOP Name
-----
.0
0- .0           .0- .0         .0- .0         .0- .0         > .0         Rsp Time
-----
Total Responses 0           0           0           0           0           .00
Ctl              -- Controller identifier
Device           -- Device identifier
Util             -- Controller utilization
IOP Name         -- Input/Output processor resource name
0- .0           -- Number of response times in this range
.0- .0          -- Number of response times in this range

```

```

.0- .0      -- Number of response times in this range
.0- .0      -- Number of response times in this range
> .0       -- Number of response times in this range
Rsp time    -- Average external response time (in seconds)
             for this workstation(s)

```



Component Report - Remote Work Stations

The Remote Work Stations section of the Component Report gives the range of response times for each device on the displayed controllers and the average response time for each device. The values for the response times may vary depending on the values you use.

Note: This section appears only if 5494 remote work station data is included in the data collection. Collection Services does not generate data for remote work stations (file QAPMRWS). This section applies only to performance data generated by the STRPFRMON command prior to V5R1 and converted in V5R1 with the Convert Performance Data (CVTPFRDTA) command.

A sample report is shown below:

```

                                     Component Report
                                     Remote Work Stations - Response Time Buckets
                                     Sample Component Report
Member . . . : TEST20      Model/Serial . . : 500-2142/10-317CD  Main storage . . : 128.0 M  Started . . . . : 09/19/98
Library . . . : RWSDATA    System name . . : ABSYSTEM  Version/Release : 4/ 2.0    Stopped . . . . : 09/19/98
Ct1/Device
-----
ABSYSYSTEM      CC02
                0- 1.0      1.0- 2.0      2.0- 4.0      4.0- 8.0      > 8.0      Rsp Time
                -----
                845          0          0          0          0          .02
Total Responses 845          0          0          0          0          .02
Ct1             -- Controller identifier
Device         -- Device identifier
IOP Name       -- Input/Output processor resource name
0- 1.0        -- Number of response times in this range
1.0- 2.0      -- Number of response times in this range
2.0- 4.0      -- Number of response times in this range
4.0- 8.0      -- Number of response times in this range
> 8.0         -- Number of response times in this range
Rsp time      -- Average external response time (in seconds)
             for this workstation(s)

```

Component Report - Exception Occurrence Summary and Interval Counts

» The Exception Occurrence Summary and Interval Counts section of the Component Report gives the number of exceptions that occurred and the frequency of these exceptions. In some cases these exception counts can be high even under normal system operation. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

```

                                     Component Report
                                     Exception Occurrence Summary and Interval Counts
                                     Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F  Main storage . . : 56.4 GB  Started . . . . : 10/02/03
Library . . . : PTLIBV5R3 System name . . : ABSYSTEM  Version/Release : 5/ 3.0    Stopped . . . . : 10/02/03
Partition ID : 003      Feature Code . . : 7427-2498-7427  Int Threshold . . : .00 %

```


Virtual Processors: 4 Processor Units : 4.0
Exception Counts

Exception Type	Description	Total
Size	Size	3
Binary Overflow	Binary overflow	0
Decimal Overflow	Decimal overflow	3
Flp Overflow	Floating point overflow	0
Decimal Data	Decimal data	0
Aut Lookup	Authority lookup	37,687
PAG Fault	Process Access Group fault	0
Seize Conflict	Seize conflict	194,854
Lock Conflict	Lock conflict	1,504
Verify	Verify	20,097
Teraspace EAO	Teraspace Effective Address Overflow	9,781

Itv End	Exceptions Per Second										
	Size	Binary Overflow	Decimal Overflow	Flp Overflow	Decimal Data	Aut Lookup	PAG Fault	Seize Conflict	Lock Conflict	Verify	Teraspace EAO
14:00	.0	.0	.0	.0	.0	3.0	.0	4.0	.1	.2	1
14:01	.0	.0	.0	.0	.0	7.1	.0	3.8	.0	.1	
14:02	.0	.0	.0	.0	.0	4.7	.0	10.8	.2	.0	2
14:03	.0	.0	.0	.0	.0	5.2	.0	9.8	.1	1.3	
14:04	.0	.0	.0	.0	.0	2.8	.0	3.9	.2	4.8	3
14:05	.0	.0	.0	.0	.0	8.2	.0	4.6	.2	1.5	
14:06	.0	.0	.0	.0	.0	18.1	.0	3.1	.1	2.0	3
14:07	.0	.0	.0	.0	.0	27.3	.0	9.3	.0	1.6	
14:08	.0	.0	.0	.0	.0	19.6	.0	4.1	.0	.9	2
14:09	.0	.0	.0	.0	.0	32.9	.0	16.9	2.2	12.2	
14:10	.0	.0	.0	.0	.0	28.3	.0	35.5	.5	2.8	2
14:11	.0	.0	.0	.0	.0	28.6	.0	50.7	.0	1.7	1
14:12	.0	.0	.0	.0	.0	25.9	.0	28.2	.1	1.2	
14:13	.0	.0	.0	.0	.0	29.8	.0	42.1	.1	1.8	2
14:14	.0	.0	.0	.0	.0	7.9	.0	68.0	4.7	.5	
14:15	.0	.0	.0	.0	.0	4.5	.0	99.1	.9	.4	2
14:16	.0	.0	.0	.0	.0	2.7	.0	66.6	.0	109.1	
14:17	.0	.0	.0	.0	.0	2.7	.0	40.3	.0	149.2	2
14:18	.0	.0	.0	.0	.0	1.7	.0	38.6	.0	.7	1
14:19	.0	.0	.0	.0	.0	1.2	.0	4.7	.0	.2	
14:20	.0	.0	.0	.0	.0	.9	.0	4.8	.0	.2	
14:21	.0	.0	.0	.0	.0	2.4	.0	2.0	.2	1.5	2
14:22	.0	.0	.0	.0	.0	5.4	.0	18.3	.0	.2	
14:23	.0	.0	.0	.0	.0	2.4	.0	25.5	.0	.1	



Component Report - Database Journaling Summary

» The Database Journaling section of the Component Report provides information about the journal activity on the system. This information is helpful in understanding the tradeoffs between the following:

- The affects of extensive journaling.
- The time required to rebuild access paths during an IPL following an abnormal system end.

The Database Journaling section summarizes the journaling activity resulting from user-initiated activities and from system-managed access-path protection (SMAPP) support. This includes the following information:

- The number of start and stop journaling operations performed.
- The number of journal entry deposits made on behalf of objects for which a user started journaling.
- The number of journal entry deposits made on behalf of objects for which the system started journaling.

See the Performance Tools book  for more SMAPP considerations.

The Extended Database Journaling Summary subsection shows information about counters in the QAPMJOBMI file during the specified collection interval.

New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

An example of both the Database Journaling Summary section and the Extended Database Journaling Summary subsection is shown below:

Component Report												10/02/03			
Database Journaling Summary												P			
Perf data from 14:00 to 16:00 at 1 min															
Member	: Q275140000 Model/Serial . .			: 890/10-3907F			Main storage . . .		: 56.4 GB		Started		: 10/02/03		
Library	: PTLIBV5R3 System name . .			: ABSYSTEM			Version/Release . .		: 5/ 3.0		Stopped		: 10/02/03		
Partition ID . .	: 003 Feature Code . .			: :7427-2498-7427			Int Threshold . . .		: .00 %						
Virtual Processors:	4			Processor Units . .			: 4.0								
Itv	User	User	System	System	User	System	System	Bundle	Bundle	--Exposed AP --	--Est Exposr --				
End	Starts	Stops	Starts	Stops	Total	Total	ToUser	Writes	Writes	System	Not	Curr	AP Not		
								User	System	Jrnld	Jrnld	System	Jrnld		
14:00	0	0	0	0	1143	179	168	176	0	6	52	57	4,372		
14:01	11	1	0	0	1757	251	54	355	64	6	51	39	4,309		
14:02	8	0	0	0	2418	217	57	426	52	9	57	57	6,193		
14:03	1	1	0	0	2726	136	130	549	0	6	54	39	4,310		
14:04	0	0	0	0	2346	425	353	325	20	10	57	57	6,799		
14:05	6	0	0	0	534	197	6	67	56	10	57	57	6,799		
14:06	3	2	2	0	579	231	60	98	38	8	52	27	4,310		
14:07	7	0	0	0	1635	511	156	252	80	8	55	37	4,373		
14:08	0	0	0	0	1161	252	70	233	28	8	55	27	4,310		
14:09	8	1	0	0	3425	682	152	641	141	12	47	27	6,736		
14:10	4	0	0	0	3861	329	73	697	42	12	50	37	6,799		
14:11	1	0	0	0	5626	359	106	1017	42	8	50	37	4,373		
14:12	0	1	0	0	3718	282	50	680	42	12	50	37	6,799		
14:13	0	0	0	0	5590	296	59	980	44	8	47	27	4,310		
14:14	0	0	0	0	4581	168	122	914	10	8	47	27	4,310		
14:15	1	1	0	0	3320	162	161	549	0	12	50	37	6,799		
14:16	0	0	0	0	5741	33	28	1743	0	12	64	37	6,800		
14:17	1	1	0	0	6735	22	16	2565	0	8	50	27	4,310		
Itv End	-- Interval end time (hour and minute)														
User Starts	-- Start journal operations initiated by user														
User Stops	-- Stop journal operations initiated by user														
System Starts	-- Start journal operations initiated by system														
System Stops	-- Stop journal operations initiated by system														
User Total	-- Journal deposits resulting from user journaled objects														
System Total	-- Journal deposits resulting from system journaled objects (total)														
System ToUser	-- Journal deposits resulting from system journaled objects to user created journals														
Bundle Writes User	-- Bundle writes to user created journals														
Bundle Writes System	-- Bundle writes to internal system journals														
Exposed AP System Jrnld	-- Exposed access paths currently being journaled by the system														
Exposed AP Not Jrnld	-- Exposed access paths currently not being journaled														
Est Exposr Curr System	-- System estimated access path recovery time exposure in minutes														
Est Exposr AP Not Jrnld	-- System estimated access path recovery time exposure in minutes if no access paths were being journaled by the system														

SMAPP ReTune -- System Managed Access Path Protection tuning adjustments

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Component Report 10/02/03 17
 Extended Database Journaling Summary
 Perf data from 14:00 to 16:00 at 1 min

Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started : 10/02/03
 Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release : 5/ 3.0 Stopped : 10/02/03
 Partition ID : 003 Feature Code . . : 7427-2498-7427 Int Threshold . . : .00 %
 Virtual Processors: 4 Processor Units : 4.0

----- Journal Operations -----				----- Journal Deposits -----				Perm Size	Transient Size	Bundle Wait Pct
Itv End	Commit Ops	Decommit Ops	Physical Writes	Non SMAPP	SMAPP User	SMAPP System				
14:00	316	0	292	1142	168	11	5843	7971	.00	
14:01	382	0	452	1757	54	197	4054	3120	.00	
14:02	546	1	515	2418	57	160	5050	3436	.00	
14:03	655	0	637	2726	130	6	7143	6626	.00	
14:04	643	2	577	2346	353	72	8488	17153	.00	
14:05	68	0	127	542	6	191	2872	719	.00	
14:06	123	0	177	579	60	171	2656	2552	.00	

Itv End -- Interval end time (hour and minute)
 Commit Ops -- Commit operations performed. Includes application and system-provided referential integrity commits
 Decommit Ops -- Decommit operations performed. Includes application and system-provided referential integrity decommits
 Physical Writes -- Physical journal write operations to disk
 Non SMAPP -- Journal deposits not directly related to SMAPP (System Managed Access Path Protection)
 SMAPP User -- SMAPP-induced journal entries deposited in user-provided journals
 SMAPP System -- SMAPP-induced journal entries deposited in system-provided (default) journals
 Perm Size -- Kilobytes placed within the permanent area; these are traditional journal entries which can be retrieved and displayed
 Transient Size -- Kilobytes placed within the journal transient area; these are hidden journal entries produced by the system
 Bundle Wait Pct -- Percentage of time (relative to the interval elapsed time) spent waiting for journal bundles to be written to disk
 Bundle Wait Count -- Total number of times the tasks and jobs waited for journal bundles to be written to disk



Component Report - TCP/IP Activity

The TCP/IP Activity section of the Component Report includes detailed TCP/IP data at both the system-wide level and the interface (line type and line name) level. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

Component Report 10/02/03 17
 TCP/IP Activity
 Perf data from 14:00 to 16:00 at 1 min

Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started : 10/02/03
 Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release : 5/ 3.0 Stopped : 10/02/03

Partition ID : 003 Feature Code . : 7427-2498-7427 Int Threshold . : .00 %
 Virtual Processors: 4 Processor Units : 4.0
 System TCP/IP

Itv End	----- Datagrams -----		Datagrams Requested		--- TCP Segments ---			----- UDP Datagrams -----		----- ICMP Messages -----		
	Received	Pct Error	- for Transmission	-- Dscrd	-- per Second	-- Rcvd	-- Sent	Pct Rtrns	Received	Sent	Pct Error	Received
14:00	9,755	.00	8,908	.00	153	146	.39	382	49	.00		2
14:01	11,188	.00	10,750	.00	157	177	.47	386	37	.00		3
14:02	22,187	.00	21,196	.00	332	351	.19	417	37	.00		3
14:03	19,193	.00	19,454	.00	292	322	.20	375	42	.00		2
14:04	12,916	.00	12,394	.00	208	207	.40	390	41	.00		4
14:05	10,059	.00	9,451	.00	156	155	.21	394	54	.00		3
14:06	7,721	.00	7,213	.00	118	118	.36	388	46	.00		3
14:07	11,453	.00	10,726	.00	160	160	.29	342	38	.00		2
14:08	12,864	.00	12,269	.00	194	202	.23	363	40	.00		3
14:09	20,454	.00	19,601	.00	295	324	.21	421	40	.00		4
14:10	28,464	.00	28,480	.00	423	480	.09	366	38	.00		2
14:11	35,731	.00	42,567	.00	585	707	.05	376	37	.00		4
14:12	24,847	.00	29,474	.00	404	488	.06	392	63	.00		3
14:13	42,389	.00	49,140	.00	697	816	.08	389	42	.00		3
14:14	30,610	.00	35,663	.00	499	592	.07	416	39	.00		4
14:15	25,407	.00	28,439	.00	414	471	.11	381	54	.00		2
14:16	37,219	.00	43,619	.00	610	724	.06	407	46	.00		3
14:17	36,745	.00	43,607	.00	612	737	.04	379	37	.00		2
14:18	37,220	.00	42,089	.00	611	699	.07	362	38	.00		3
14:19	13,700	.00	13,665	.00	218	225	.42	373	38	.00		4
14:20	11,114	.00	10,598	.00	175	174	.42	388	36	.00		3
14:21	9,506	.00	8,554	.00	148	139	.72	380	40	.00		3
14:22	31,988	.00	35,480	.00	489	589	.08	517	46	.00		3
14:23	28,038	.00	31,956	.00	462	540	.04	484	41	.00		2
14:24	20,085	.00	21,541	.00	323	356	.21	383	58	.00		3

Itv End -- Interval end time (hour and minute)
 Datagrams Received -- Total number of datagrams received
 Pct Datagrams Error -- Percentage of inbound datagrams with errors
 Dtg Req for Transm Tot -- Total number of datagrams requested for transmission
 Dtg Req Transm Dscrd -- Percentage of datagrams discarded because of errors
 Segments Rcvd per Sec -- Number of TCP segments received per second
 Segments Sent per Sec -- Number of TCP segments sent per second
 Segments Pct Retrans -- Percentage of TCP segments retransmitted relative to segments sent
 UDP Datagrams Received -- Total number of datagrams delivered to UDP users
 UDP Datagrams Sent -- Total number of UDP datagrams sent
 Pct UDP Datagrams Error -- Percentage of UDP datagrams (inbound and outbound) with errors
 ICMP Messages Received -- Total number of ICMP messages received
 ICMP Messages Sent -- Total number of ICMP messages sent
 Pct ICMP Messages Error -- Percentage of ICMP messages (inbound and outbound) with errors



Component Report - HTTP Server Activity

The HTTP Server Activity section of the Component Report includes detailed information about various HTTP Server request types such as, CGI, WebSphere^(R), or Proxy requests. New this release, Interactive Threshold (GKEY IT), Virtual Processors (GKEY 13) and Processor Units (GKEY PU) metrics were added to the header. The values that display in the report header reflect the configuration metrics obtained from the QAPMCONF file when the collection started. You should be aware that these values may change for each interval within a collection period due to dynamic changes in logical partition configuration.

A sample report is shown below:

				Component Report	10/02/03
				HTTP Server Activity	P
				Perf data from 14:00 to 16:00 at 1 min	
Member :	Q275140000	Model/Serial . . :	890/10-3907F	Main storage . . . :	56.4 GB
Library :	PTLIBV5R3	System name . . . :	:ABSYSTEM	Version/Release . . :	5/ 3.0
Partition ID :	003	Feature Code . . :	:7427-2498-7427	Int Threshold . . . :	.00 %
Started :	10/02/03	Stopped :	10/02/03		

Virtual Processors: 4 Processor Units : 4.0
 Server : 955725/QTMHHTTP/ADMIN

Itv End	Req type	----- Responses -----				KB Transmitted /Second	KB Received /Second
		Requests Received	Sent	Error	Pct Error		
14:22	CG	1	1	0	.00	0	0
14:33	SR	7	7	0	.00	0	0
14:35	SR	9	9	0	.00	0	0
14:35	CG	1	1	0	.00	0	0
14:37	SR	28	28	0	.00	2	0
14:37	CG	2	2	0	.00	0	0
14:37	JV	11	11	0	.00	1	0
14:38	SR	27	27	0	.00	0	0
14:38	JV	2	2	0	.00	0	0
14:40	SR	4	4	0	.00	0	0
14:40	JV	7	7	0	.00	1	0
14:41	JV	8	8	0	.00	1	0
14:42	SR	4	4	0	.00	0	0
14:42	JV	18	18	0	.00	2	0
	Column			Total		Average	

		Requests Received			129		
		Responses Sent			129		
		Responses in error			0		
		Pct Responses in error				.000	
		KB Transmitted/Second				1	
		KB Received/Second				0	



Component Report - Selection Criteria

The Report Selection Criteria section of the Component Report gives the selection values you chose to produce the report.

If you did not use the SELECT parameters, the message No Select parameters were chosen appears. If you did not use OMIT parameters, the message No Omit parameters were chosen appears. In addition to these selection criteria, you also see the following:

- Which sections were printed
- Which sections were not printed or were partially printed due to errors
- Which sections were not printed or were partially printed due to missing data.

Sample reports are shown below:

Report selection criteria: Select Parameters

		Component Report	2/22/0
		Report Selection Criteria	
Member	PT51MBR15	Model/Serial . .	: 270/10-45WFM
Library	PTNOELIB	System name . .	: ABSYSTEM
Partition ID :	00	Feature Code . .	: :22A8-2252-1519
Select Parameters			
		- No Select parameters were chosen.	
Omit Parameters			
Pools		- 01 02 03 04	
Jobs		- / /Q*	
User IDs		- QSYS	
Subsystems		- QINTER QBATCH	
Communications Lines		- ETH1 ETH2 ETH3 ETH4	TRLAN1 TRLAN2
		TRLAN3 TRLAN4	
Control Units		- CTRL1 CTRL2 CTRL3 CTRL4	
Sections Printed:		- Component Interval Activity	

- Job Workload Activity
- IOP Utilizations
- Local Work Stations - Response Time Buckets
- Exception Occurrence Summary and Interval Counts
- Database Journaling Summary
- TCP/IP Activity

Sections not printed or partially printed due to Errors:
 Sections not printed or partially printed due to Missing data:

Report selection criteria: Omit Parameters

		Component Report	2/22/01
		Report Selection Criteria	P
Member . . . :	PT51MBR15	Model/Serial . . :	270/10-45WFM
Library . . . :	PTNOELIB	System name . . :	ABSYSTEM
Partition ID :	00	Feature Code . . :	22A8-2252-1519
Select Parameters		Main storage . . :	2048.0 MB
		Version/Release :	5/ 1.0
		Started :	12/07/00
		Stopped :	12/07/00

- No Select parameters were chosen.

Omit Parameters

Pools - 01 02 03 04
 Jobs - / /Q*
 User IDs - QSYS
 Subsystems - QINTER QBATCH
 Communications Lines - ETH1 ETH2 ETH3 ETH4 TRLAN1 TRLAN2
 TRLAN3 TRLAN4
 Control Units - CTRL1 CTRL2 CTRL3 CTRL4

Sections Printed:

- Component Interval Activity
- Job Workload Activity
- IOP Utilizations
- Local Work Stations - Response Time Buckets
- Exception Occurrence Summary and Interval Counts
- Database Journaling Summary
- TCP/IP Activity

Sections not printed or partially printed due to Errors:
 Sections not printed or partially printed due to Missing data:

Example: Transaction Reports

Refer to the following to view samples of the three different types of transaction reports available:

- “Transaction Report - Job Summary Report Option”
 Provides general job information. Always request this report first.
- “Transaction Report - Transaction Report Option” on page 40
 Provides detailed information about each transaction that occurred in the job:
 - Transaction response time
 - Name of the program that is active at the time the transaction starts
 - Processing unit time use
 - Number of I/O requests
- “Transaction Report - Transition Report Option” on page 41
 Provides information similar to that of the Transaction Report, but the data (for example, processing unit time, I/O requests) is shown for each job state transition, rather than just the transitions shown when the job is waiting for work station input. The detail shown in this report helps you to determine the program that ran during a transition, or to determine when an unsatisfied lock request occurred.

Transaction Report - Job Summary Report Option

Refer to the following to view samples of each section of a Job Summary Report:

- “Job Summary” on page 25
- “System Summary Data” on page 26
- “Distribution by CPU/Transaction” on page 28

- “Transaction Significance” on page 29
- “Interactive Transactions by 5-Minute Intervals” on page 30
- “Interactive Throughput by 5-Minute Intervals” on page 30
- “Interactive CPU Utilization by 5-Minute Intervals” on page 31
- “Interactive Response Time by 5-Minute Intervals” on page 31
- “Scatter Diagram” on page 31
- “Interactive Program Statistics” on page 32
- “Summary of Seize/Lock Conflicts by Object” on page 33
- “Special System Information” on page 34

Related information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Job Summary

The Job Summary section of the Job Summary Report shows the following information for each job in the system:

- The name and type of job (for example, interactive, batch)
- The number of transactions in the job
- The average transaction response time
- The average processing unit time per transaction
- The average number of disk I/O requests per transaction
- The number of lock waits
- The number of seize conflicts
- The key/think time per transaction

If the Job Summary section shows jobs that have high response times, high disk I/O activity, high processing unit utilization, or a number of lock requests, use the Transaction Report to investigate further.

If the number of seizes or number of conflicts (**Number Size Cft** or **Number Lck Cft** columns on this report) seems “high,” look at the Transaction or Transition reports for the job to see how long the conflict lasted, the job that held the object, the name and type of object being held, and what the job was waiting for.

The exact meaning of the term “high” is dependent on the application. One example is the number of **lock-waits**. An application that has many users accessing a database at the same time could, under normal conditions, have numerous lock-waits.

You must evaluate each situation individually. If the values are difficult to explain (an application should have very few locks and yet many are reported), then further analysis will be required. The Transaction and Transition Reports can help in this analysis.

Sample Report

```

Job Summary Report
Job Summary
Report type *SUMMARY
Member . . . : TRACESVT  Model/Serial . . : 270/10-45WFM  Main storage . . : 2048.0 MB  Started . . . . :12/13/0
Library . . . : TRACESVT  System name . . : ABSYSTEM  Version/Release . . : 5/ 1.0  Stopped . . . . :12/13/0
Partition ID : 00      Feature Code . . : 22A8-2252-1519
                *On/Off*  T P P Tot Response Sec  CPU Sec  ---- Average DIO/Transaction ---- N
Job   User Name/ Job    y t r Nbr  -----

```

Name	Thread	Number	P1	p	y	g	Tns	Avg	Max	Util	Avg	Max	DBR	NDBR	Wrt	Sum	Max	Sum	Max	Lck	S
SCPF	QSYS	000000	02	X	40																
QDBSRV01	QSYS	008309	02	S	09																
QDBSRV02	QSYS	008310	02	S	16																
QDBSRV03	QSYS	008311	02	S	16																
QDBSRV04	QSYS	008312	02	S	52																
QDBSRV05	QSYS	008313	02	S	52																
QDCPOBJ1	QSYS	008314	02	S	60																
QDCPOBJ2	QSYS	008315	02	S	60																
QPFRADJ	QSYS	008316	02	S	00																
QSPLMAINT	QSYS	008317	02	S	20																2
QJOBSCD	QSYS	008318	02	S	00																
QALERT	QSYS	008319	02	S	20																
QLUR	QSYS	008320	02	S	00																
QFILESYS1	QSYS	008321	02	S	00																
QDBSRVXR	QSYS	008322	02	S	00																
Q400FILSVR	QSYS	008323	02	S	20																
QQQTEMP1	QSYS	008324	02	S	20																
QQQTEMP2	QSYS	008325	02	S	20																
QDBSRVXR2	QSYS	008326	02	S	00																
QSYSCOMM1	QSYS	008327	02	S	00																
QCMNARB01	QSYS	008328	02	S	00																
QCMNARB02	QSYS	008329	02	S	00																
QCMNARB03	QSYS	008330	02	S	00																
QSYSARB	QSYS	008302	02	S	00																
QLUS	QSYS	008307	02	S	00																
QSYSARB2	QSYS	008303	02	S	00																
QSYSARB3	QSYS	008304	02	S	00																
QSYSARB4	QSYS	008305	02	S	00																
QSYSARB5	QSYS	008306	02	S	00																
QCTL	QSYS	008335	02	M	00																
QSYSWRK	QSYS	008336	02	M	00																
QIWVPPJT	QUSER	008338	02	BJ	20																
QSPL	QSYS	008347	02	M	00																
QUSRWRK	QSYS	008348	02	M	00																
QSERVER	QSYS	008350	02	M	00																
QSNADS	QSYS	008353	02	M	00																
QZDAINIT	QUSER	008356	02	BJ	20																
QZDSTART	QSNADS	008359	02	A	40																
QSYSSCD	QPGMR	008360	02	B	10																
QPWFSEVS2	QUSER	008366	02	BJ	20																
QINTER	QSYS	008368	02	M	00																
QROUTER	QSNADS	008364	02	B	40																
QPWFSEVS	QUSER	008369	02	BJ	20																
QBATC	QSYS	008371	02	M	00																

System Summary Data

There are three parts to the System Summary Data section of the Job Summary Report. The contents of each part is described below:

First part

- Trace Periods for Trace Date
- CPU by Priority for All Jobs for Total Trace Period
- “System Summary Data (First Part)” on page 27 a sample of the first part of the report.

Second part

- CPU and Disk I/O per Job Type for All Jobs for Total Trace Period
- Interactive Transaction Averages by Job Type
- “System Summary Data (Second Part)” on page 27 a sample of the second part of the report

Third part

- Analysis by Interactive Transaction Categories
- Analysis by Interactive Response Time
- Analysis by Interactive Key/Think Time
- "System Summary Data (Third Part)" on page 28 a sample of the third part of the report.

System Summary Data (First Part):

```

Job Summary Report
System Summary Data
Report type *SUMMARY
Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started . . . .:12/13/00
Library . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped . . . .:12/13/00
Partition ID : 00 Feature Code . : 22A8-2252-1519
TRACE PERIODS FOR TRACE DATE.

```

	Started	Stopped	Elapsed	
	-----	-----	Seconds	
	11.53.31	11.53.54	22	
CPU BY PRIORITY FOR ALL JOBS FOR TOTAL TRACE PERIOD.				
Pty	CPU	CPU Util	Cum CPU Util	CPU QM
-----	-----	-----	-----	-----
00	.068	.30	.30	1.003
01			.30	1.003
09			.30	1.003
10			.30	1.003
11			.30	1.003
13			.30	1.003
15			.30	1.003
16	.001		.30	1.003
19			.30	1.003
20	.008	.03	.33	1.003
25	.049	.22	.55	1.005
35			.55	1.005
36			.55	1.005
40			.55	1.005
49			.55	1.005
50	.002		.55	1.005
52			.55	1.005
60			.55	1.005
68	.001		.55	1.005
84	.007	.03	.58	1.005
98			.58	1.005

System Summary Data (Second Part):

```

Job Summary Report
System Summary Data
Report type *SUMMARY
Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started . . . .:12/13/00
Library . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped . . . .:12/13/00
Partition ID : 00 Feature Code . : 22A8-2252-1519
CPU AND DISK I/O PER JOB TYPE FOR ALL JOBS FOR TOTAL TRACE PERIOD.

```

Job Type	Nbr Jobs	CPU Seconds	CPU Util	--Disk I/O Requests--	CPU Sec/ Sync DIO	Sync I/O /Elp Sec
-----	-----	-----	-----	-----	-----	-----
				Sync Async		
INTERACTIVE	10	.0	.0	0 0	.0000	.0
BATCH A,B,C,D,X	328	.1	.5	0 0	.0000	.0
SPOOL WTR/RDR	2	.0	.0	0 0	.0000	.0
SYSTEM JOBS	39	.0	.0	2 0	.0000	.1
SYSTEM TASKS	337	.0	.0	58 102	.0000	2.6
** TOTALS **	716	.1	.5	60 102	.0017	2.7

DATA FOR SELECTED TIME INTERVAL (OR TOTAL TRACE PERIOD IF NO TIME SELECTION).
INTERACTIVE TRANSACTION AVERAGES BY JOB TYPE.

Type	Prg	Nbr Jobs	Nbr Tns	Pct Tns	Tns /Hour	Avg Rsp (Sec)	CPU/Tns (Sec)	DB Read	DB Write	Disk I/O Read	Disk I/O Write	Rqs/Tns Sum	Async DIO /Tns	W-I Wait /Tns	Excp Wait /Tns	Key/Think /Tns	Act K/T /Tns
I	YES	10	6	100.0	981	.006	.001	0	0	0	0	0	0	.000	.003	5.720	5.720

EXCEPTIONAL WAIT BREAKDOWN BY JOB TYPE.

Type	Purge	A-I Wait /Tns	Short Wait /Tns	Short WaitX /Tns	Seize Wait /Tns	Lock Wait /Tns	Event Wait /Tns	Excs ACTM /Tns	EM3270 Wait /Tns	DDM Svr Wait /Tns
I	YES	.000	.000	.000	.000	.000	.000	.003	.000	.000

System Summary Data (Third Part):

Job Summary Report 12/13/00
System Summary Data P
Report type *SUMMARY

Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started:12/13/00 1
Library . . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped:12/13/00 1
Partition ID : 00 Feature Code . . : 22A8-2252-1519

ANALYSIS BY INTERACTIVE TRANSACTION CATEGORIES.

Category	Avg CPU /Tns	CPU Util	Cum CPU Util	DB Read	DB Write	Disk I/O Read	Disk I/O Write	Rqs/Tns Sum	Async DIO /Tns	Nbr Tns	Pct Tns	Avg Rsp /Tns	Excp Wait /Tns	Avg K/T /Tns
VERY SIMPLE VS	.001									6	100.0	.006	.003	5.720
** SIMPLE S	.001									6	100.0	.006	.003	5.720
-Boundary-	.071													
** MEDIUM M	.097													
-Boundary-														
** COMPLEX X														
VERY COMPLEX VX														
Total/Avg of **	.001									6	100.0	.006	.003	5.720

ANALYSIS BY INTERACTIVE RESPONSE TIME.

Category	Avg Rsp /Tns	Nbr Tns	Pct Tns	Cum Pct Tns	Avg CPU /Tns	CPU Util	Cum CPU Util	DB Read	DB Write	Disk I/O Read	Disk I/O Write	Rqs/Tns Sum	Async DIO /Tns	Excp Wait /Tns
Sub-Second	.006	6	100.0	100.0	.001									.003
1 - 1.999 Sec				100.0										
2 - 2.999 Sec				100.0										
3 - 4.999 Sec				100.0										
5 - 9.999 Sec				100.0										
GE 10 Seconds				100.0										

ANALYSIS BY INTERACTIVE KEY/THINK TIME.

Category	Avg K/T /Tns	Nbr Tns	Pct Tns	Cum Pct Tns	Avg CPU /Tns	CPU Util	Cum CPU Util	DB Read	DB Write	Disk I/O Read	Disk I/O Write	Rqs/Tns Sum	Async DIO /Tns	Avg Rsp /Tns
LT 2 Seconds	.001	2	33.3	33.3	.002									.004
2 - 14.999 Sec	11.439	2	33.3	66.6	.002									.004
15 - 29.999 Sec				66.6										
30 - 59.999 Sec				66.6										
60 - 299.999 Sec				66.6										
GE 300 Seconds				66.6										

Distribution by CPU/Transaction

The Distribution of Transactions by CPU/Transaction section of the Job Summary Report provides a graphical view of the distribution of simple, medium, and complex transactions. This chart shows the number of transactions versus the processing unit time per transaction in seconds.

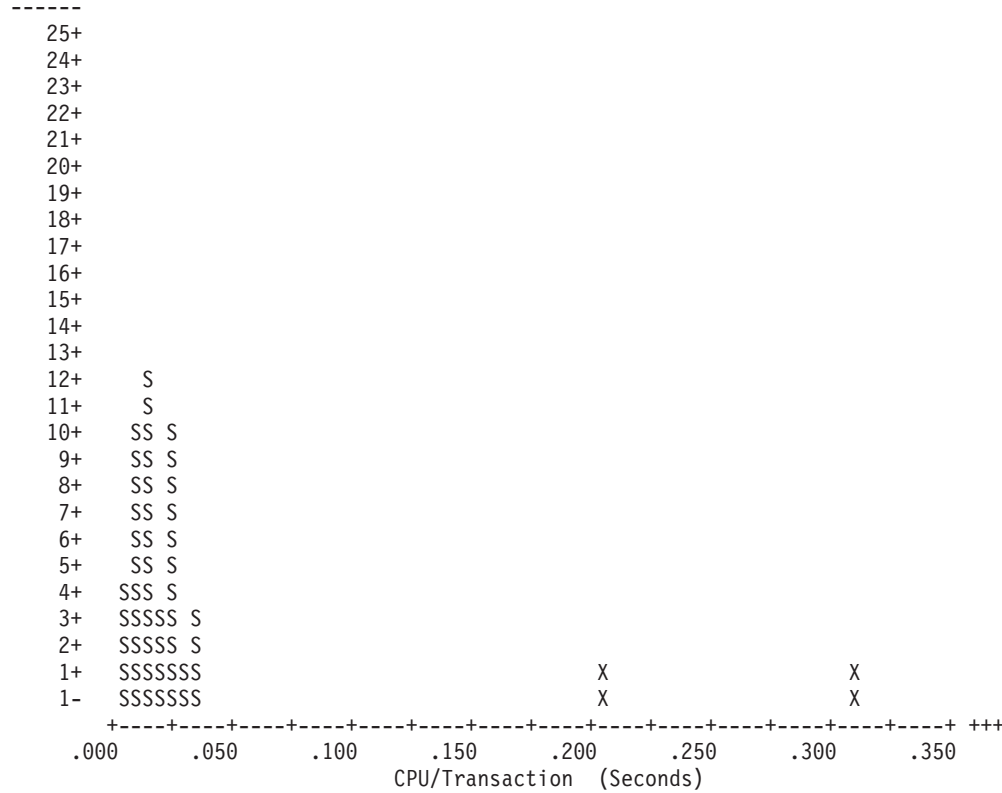
Sample Report

Job Summary Report
Distribution of Transactions by CPU/Transaction
Transaction Report Summary

9/05

Member . . . : Q981421246 Model/Serial . . : 500-2142/10-1803D Main storage . . : 128.0 M Started :05/22/9
Library . . : THREAD1 System name . . : ABSYSTEM Version/Release : 4/ 2.0 Stopped :05/22/9

Number
Of
Tns



Transaction Categories:
S = Simple Transactions
m = Medium Transactions
X = Complex Transactions

Transaction Significance

The Transaction Significance section of the Job Summary Report provides a graphical view of the processing unit use, categorized by simple, medium, and complex transactions. This chart shows the percent of available processing unit time used versus the processing unit time per transaction in seconds.

Sample Report

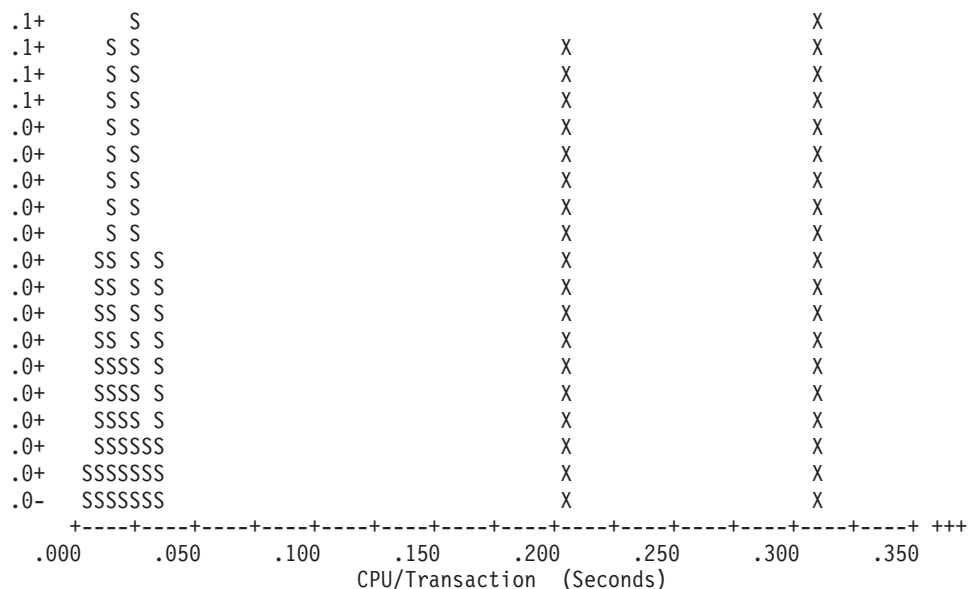
Job Summary Report
Transaction Significance
Report type *SUMMARY

12/13

Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started :12/13/0
Library . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped :12/13/0
Partition ID : 00 Feature Code . :22A8-2252-1519

Percent
CPU





Transaction Categories:
 S = Simple Transactions
 m = Medium Transactions
 X = Complex Transactions

Interactive Transactions by 5-Minute Intervals

The Interactive Transactions by 5-Minute Intervals section of the Job Summary Report provides a count of the number of active jobs during a 5-minute interval that performed at least one transaction. It also shows the number of jobs that were signed on and off during the 5-minute intervals. Transaction rates per 5-minute intervals are shown in several different formats.

Sample Report

Job Summary Report													12/13/00		
Interactive Transactions by 5 Minute Intervals													P		
Report type *SUMMARY															
Member	TRACESVT		Model/Serial . .	: 270/10-45WFM		Main storage . . .	: 2048.0 MB		Started	:12/13/00 1					
Library	TRACESVT		System name . . .	: ABSYSTEM		Version/Release . .	: 5/ 1.0		Stopped	:12/13/00 1					
Partition ID . .	: 00		Feature Code . . .	: 22A8-2252-1519											
			--- Pct Of Tns ---	Pct CPU By		Nbr	Nbr	Sync	Async	Avg	Excp	Pct	Seize	Act	
Itv	Active	Nbr	Tns	--- Categories ---		Categories	Sign	Sign	DIO	Async	Avg	Excp	Pct	Seize	
End	Jobs	Tns	/Hour	%VS*	%S	%M	%X	off	ons	/Tns	/Tns	/Tns	/Tns	/Tns	
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	

11.55*	1	6	72	100*100	0	0	* 0	0	0	0		.005	.003	60	5.
* Denotes Partial Interval Data															

Interactive Throughput by 5-Minute Intervals

The Interactive Throughput by 5-Minute Intervals section of the Job Summary Report gives simple, medium, and complex transactions relative to the number of transactions according to an interval end time.

Sample Report

Job Summary Report													12/13/00		
Interactive Throughput by 5 Minute Intervals													P		
Report type *SUMMARY															
Member	TRACESVT		Model/Serial . .	: 270/10-45WFM		Main storage . . .	: 2048.0 MB		Started	:12/13/00 1					
Library	TRACESVT		System name . . .	: ABSYSTEM		Version/Release . .	: 5/ 1.0		Stopped	:12/13/00 1					
Partition ID . .	: 00		Feature Code . . .	: 22A8-2252-1519											
			Number Of Transactions Per Hour												
Itv															
End	0	400	800	1200	1600	2000	2400	2800							

```

-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
***
15/05  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Throughput Components:
  S = Simple Transactions
  m = Medium Transactions
  X = Complex Transactions

```

Interactive CPU Utilization by 5-Minute Intervals

The Interactive CPU Utilization by 5-Minute Intervals section of the Job Summary Report gives simple, medium, and complex transactions relative to their processing unit utilization.

Sample Report

```

                                                                 Interactive CPU Utilization by 5 Minute Intervals
                                                                 Report type *SUMMARY
Member . . . : TRACESVT  Model/Serial . . : 270/10-45WFM  Main storage . . : 2048.0 MB  Started . . . . :12/13/0
  Library . . : TRACESVT  System name . . : ABSYSTEM  Version/Release  : 5/ 1.0  Stopped . . . . :12/13/0
Partition ID  : 00      Feature Code . . : 22A8-2252-1519
                                                                 Percent CPU Utilization
  Itv
  End  0  10  20  30  40  50  60  70  80  90  100
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
***
15/05  XXXX
CPU Components:
  S = Simple Transactions
  m = Medium Transactions
  X = Complex Transactions

```

Interactive Response Time by 5-Minute Intervals

The Interactive Response Time by 5-Minute Intervals section of the Job Summary Report gives the response components relative to the resulting response time.

Sample Report

```

                                                                 Interactive Response Time by 5 Minute Intervals
                                                                 Report type *SUMMARY
Member . . . : TRACESVT  Model/Serial . . : 270/10-45WFM  Main storage . . : 2048.0 MB  Started . . . . :12/13/0
  Library . . : TRACESVT  System name . . : ABSYSTEM  Version/Release  : 5/ 1.0  Stopped . . . . :12/13/0
Partition ID  : 00      Feature Code . . : 22A8-2252-1519
                                                                 Average Response Time (Seconds)
  Itv
  End
      0      1.00      2.00      3.00      4.00      5.00      6.00      7.00
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
***
15/05  RRRRRRRRRRRR
Response Components:
  R = CPU + Disk + Wait-to-Ineligible
  w = Exceptional Wait

```

Scatter Diagram

The Scatter Diagram section of the Job Summary Report gives the average of measured response times for 5-minute intervals compared to transaction rates.

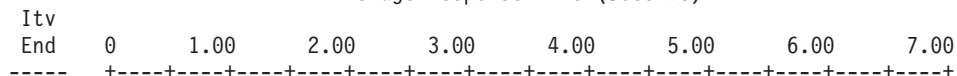
Sample Report

```

                                                                 Interactive Response Time by 5 Minute Intervals
                                                                 Report type *SUMMARY
Member . . . : TRACESVT  Model/Serial . . : 270/10-45WFM  Main storage . . : 2048.0 MB  Started . . . . :12/13/0
  Library . . : TRACESVT  System name . . : ABSYSTEM  Version/Release  : 5/ 1.0  Stopped . . . . :12/13/0
Partition ID  : 00      Feature Code . . : 22A8-2252-1519

```

Average Response Time (Seconds)



Response Components:

R = CPU + Disk + Wait-to-Ineligible
w = Exceptional Wait

Job Summary Report

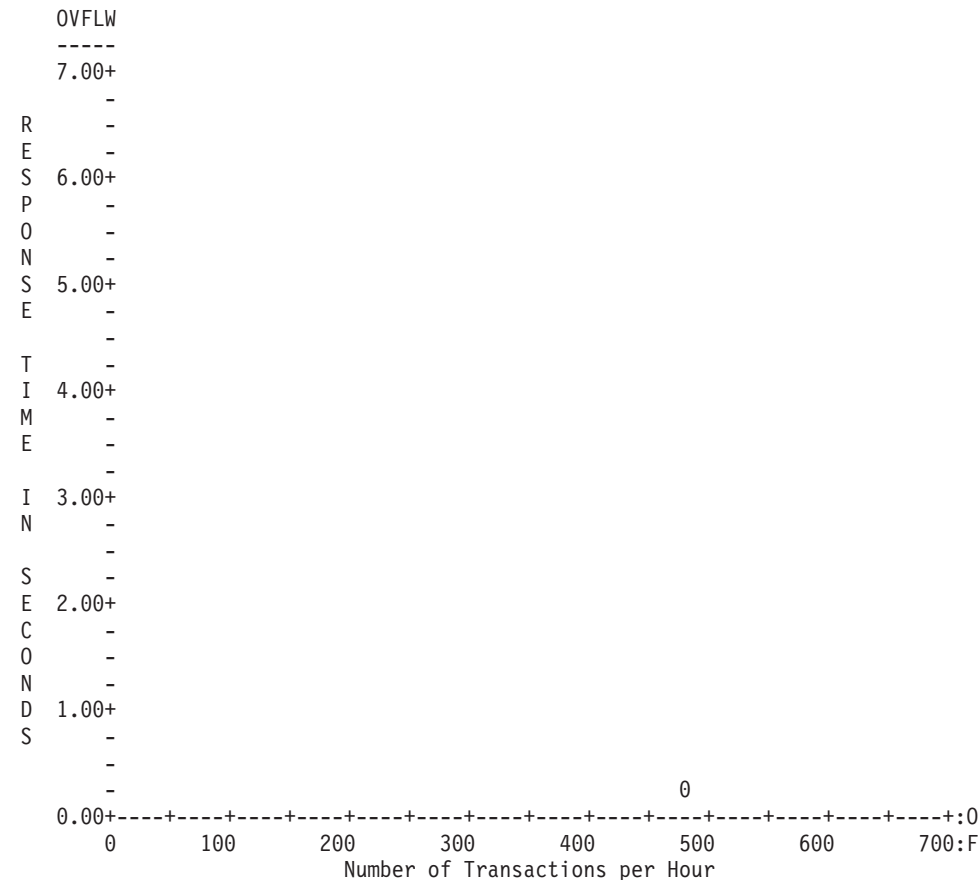
12/13/00

Scatter Diagram of Interactive Transactions by 5 Minute Intervals

Report type *SUMMARY

Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started :12/13/00 1
Library . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped :12/13/00 1
Partition ID : 00 Feature Code . . : 22A8-2252-1519

Response Time vs Number of Transactions per Hour



Legend: 1-9 Indicates the Number of Occurrences.
* Indicates more than 9 Occurrences.
0 Identifies Average of All Occurrences.

Interactive Program Statistics

The Interactive Program Statistics section of the Job Summary Report gives additional program information showing the top 10 programs with the largest average:

- Processing unit time per transaction
- Synchronous disk I/O per transaction
- Asynchronous disk I/O per transaction
- Response time per transaction
- Synchronous database reads per transaction
- Synchronous database writes per transaction
- Synchronous nondatabase reads per transaction

- Synchronous nondatabase writes per transaction

Sample Report

Job Summary Report														5/07/9
Interactive Program Statistics														
Member :	CAJ0503	Model/Serial . . :	510-2144/10-08BCD	Main storage . . . :	384.0 M	Started :	05 03 9							
Library :	QPFRRDATA	System name . . . :	ABSYSTEM	Version/Release . . :	4/ 2.0	Stopped :	05 03 9							
Rank	Number Tns	Program Name	CPU /Tns	CPU Util	Cum CPU Util	DB Read	DB Write	Disk I/O Read	Disk I/O Write	Rqs/Tns Sum	Async DIO /Tns	Rsp /Tns	Short Wait /Tns	Seize Wait /Tns
1	147	QUIINMGR	.085	4.3	4.3			1	4	11	15	10	.792	.031
2	32	QSPDSPF	.007	.1	4.3				1		1	1	.047	
3	19	QPTPRCSS	.023	.2	4.5				1		1		.051	
4	17	QUYLIST	.063	.4	4.9				11	2	13	2	.411	
5	3	QSUBLDS	.101	.1	5.0				32		32		1.021	
6	2	QUOCCP	.034		5.0				6	5	11	2	.433	.035
7	2	QUIALIST	.013		5.0					1	1		.034	
8	1	*TRACEOFF*	9.508	3.3	8.2	27	209	1852	2570	4658	2118	157.268		.039
9	1	QMHDMSMS	.062		8.3				3		3		.135	
10	1	QUOCCMD	.044		8.3				1		1		.068	

Summary of Seize/Lock Conflicts by Object

The Summary of Seize/Lock Conflicts by Object section of the Job Summary Report gives information about the locks and seizes associated with objects. The unnamed object, shown as ADDR 00000E00, is the Licensed Internal Code database in-use table. It often appears in this report when there are a high number of database file opens and closes.

Sample Report

Job Summary Report														5/07/9
Summary of Seize/Lock Conflicts by Object														
Member :	MON3D7CRT	Model/Serial . . :	510-2144/10-08BCD	Main storage . . . :	384.0 M	Started :	05 13 9							
Library :	QPFRRDATA	System name . . . :	ABSYSTEM	Version/Release . . :	4/ 2.0	Stopped :	05 13 9							
Type	Library	File	Member	Interactive Waiters				Non-Interactive Waiters						
				Locks		Seizes		Locks		Seizes				
				Number	Avg Sec	Number	Avg Sec	Number	Avg Sec	Number	Avg Sec			
DS	CVTV3R2CAJ	QAPMJOBS											3	
DS	CVTV3R2CAJ	QAPMLIOP											2	
DS	CVTV3R2CAJ	QAPMPOOL											2	
DS	CVTV3R2CAJ	QAPMRESP											2	
DS	QUSRSYS	QASNADSQ						1	.406					
DSI	CVTV3R2CAJ	QAPMCONF											2	
DSI	CVTV3R2CAJ	QAPMLIOP											2	
DSI	CVTV3R2CAJ	QAPMPOOL											1	
FILE	QSPL	Q04079N003						14	.428					
JOBQ	QSYS	QNMSVQ						3	.017				1	
JOBQ	QSYS	QSYSNOMAX											8	
LIB		QRECOVERY											2	
LIB		QSPL											8	
LIB		QSVMS											14	
LIB		QUSRSYS											8	
LIB		SOFIACN											1	
MI Q	QUSRSYS	QS2RRAPPN						2	1.263					
MSGQ	QSYS	QHST						7	.038				8	
OUTQ	QUSRSYS	QEZJOBLOG											6	
SMIDX	QSVMS	QCQJMSMI											2	
SPLCB		QSPSCB						6	2.556					
USRPRF		MORIHE											4	
USRPRF		QDBSHR											22	
USRPRF		QSVCCS											21	
USRPRF		QSYS											1	
1E0101													1	

* Total Conflicts and Avg Sec/Conflict	36	.847	191
* Total Transactions With Conflicts			
* Averages Per Conflict Transaction			

Special System Information

In general, this information identifies exceptional conditions and events that occur over the measurement period. If you analyze these exceptions, you might find jobs and programs you need to examine. Refer to the following for samples of the Special System Information sections of the Job Summary Report:

- "Priority-Jobtype-Pool Statistics"
- "Job Statistics" on page 35
- "Interactive Program Statistics" on page 35
- "Individual Transaction Statistics" on page 36
- "Longest Seize/Lock Conflicts Section" on page 37
- "Longest Holders of Seize/Lock Conflicts" on page 38
- "Batch Job Analysis" on page 38
- "Concurrent Batch Job Statistics" on page 38
- "Selection Criteria" on page 39

Priority-Jobtype-Pool Statistics: The Priority-Jobtype-Pool Statistics section of the Job Summary Report shows the total processing unit seconds and physical I/O requests for each category of priority-jobtype and pool combination recorded during the overall test period. The number of total transactions is shown for job type I only.

Sample Report

Job Summary Report							12/13/00
Priority-Jobtype-Pool Statistics							P
Report type *SUMMARY							
Member . . . :	TRACESVT	Model/Serial . . :	270/10-45WFM	Main storage . . :	2048.0 MB	Started :	12/13/00 1
Library . . . :	TRACESVT	System name . . :	:ABSYSTEM	Version/Release :	5/ 1.0	Stopped :	12/13/00 1
Partition ID :	00	Feature Code . . :	:22A8-2252-1519				
Pty	Job Type	Pool	CPU Seconds	--- Disk I/O Sync	Requests Async	Number Tns	
00	L	01	.056	58	102		
00	L	02	.004				
00	L	04	.007				
00	M	02					
00	S	02	.001	2			
01	B	02					
09	S	02					
10	B	02					
10	BJ	02					
11	B	02					
13	B	02					
15	A	02					
16	B	02	.001				
16	S	02					
19	B	02					
20	A	02					
20	B	02					
20	BD	02					
20	BJ	02					
20	I	04	.008			5	
20	L	01					
20	S	02					
25	B	02	.049				
25	BD	02					


```

25      BJ      02
35      B       02
36      L       01
36      L       04
40      A       02
40      B       02
40      X       02
49      L       01
50      A       02
50      B       02      .002
50      W       03
52      L       01
52      S       02
60      S       02
68      L       01      .001
84      L       01      .007
98      L       01

```

Job Statistics: The Job Statistics section of the Job Summary Report shows the 10 jobs with the:

- Most transactions (shown in sample report below)
- Largest average response time
- Largest average processing unit time per transaction
- Largest synchronous disk I/O per transaction
A synchronous disk I/O is a disk access operation that must complete before program operation can continue.
- Largest asynchronous disk I/O per transaction.
An asynchronous disk I/O is a disk access operation that is not expected to complete before program operation can continue.
- Most seize conflicts
- Most record lock conflicts
- Most active-to-ineligible occurrences
- Most wait-to-ineligible occurrences
- Most event wait occurrences

Sample Report

										Job Statistics								Job Summary
										Report type *SUMMARY								
Member :	TRACESVT	Model/Serial . . :	270/10-45WFM	Main storage . . . :	2048.0 MB	Started :	12/13/00											
Library :	TRACESVT	System name . . . :	:ABSYSTEM	Version/Release . . :	5/ 1.0	Stopped :	12/13/00											
Partition ID . . :	00	Feature Code . . . :	:22A8-2252-1519															
JOBS WITH MOST TRANSACTIONS																		
Rank	Job Name	User Name/ Thread	Job Number	P1	T y p	P t y	Nbr Tns	Rsp /Tns	CPU /Tns	CPU Util	Cum CPU Util	Sync DIO /Tns	Async DIO /Tns	Nbr W-I	Nbr A-I	Nbr Evt	Number Conflict Lck	Size Sze
1	QPADEV0009	SUSTAITA	013832	04	I	20	43	.035	.018	.2	.2							
2	QPADEV0026	SOLBERG	013841	04	I	20	3	4.918	.179	.2	.4	154						
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
JOBS WITH LARGEST AVERAGE RESPONSE TIME																		

Interactive Program Statistics: The Interactive Program Statistics section of the Job summary Report gives additional information showing the top 10 programs with the largest average:

- Processing unit time per transaction
- Synchronous disk I/O per transaction
- Asynchronous disk I/O per transaction
- Response time per transaction
- Synchronous database reads per transaction
- Synchronous database writes per transaction
- Synchronous nondatabase reads per transaction
- Synchronous nondatabase writes per transaction

Sample Report

										Job Summary Report		12/13/00				
										Interactive Program Statistics		P				
										Report type *SUMMARY						
Member	:	TRACESVT	Model/Serial . .	:	270/10-45WFM	Main storage . .	:	2048.0 MB	Started	:	12/13/00	1				
Library	:	TRACESVT	System name . .	:	:ABSYSTEM	Version/Release .	:	5/ 1.0	Stopped	:	12/13/00	1				
Partition ID . .	:	00	Feature Code . .	:	:22A8-2252-1519											
PROGRAMS WITH HIGHEST CPU/TNS																
Rank	Number	Program	CPU	CPU	Cum	-----	Sync	Disk	I/O	Rqs/Tns	-----	Async		Short	Seize	Pc
	Tns	Name	/Tns	Util	Util	DB	DB	NDB	NDB			DIO	Rsp	Wait	Wait	Tn
						Read	Write	Read	Write	Sum		/Tns	/Tns	/Tns	/Tns	
1	2	QUIINMGR	.002										.005			33.
2	1	*TRACEOFF*	.002										.003			16.
3	3	QSCTI1	.001										.007			50.
4																
5																
6																
7																
8																
9																
10																

Individual Transaction Statistics: The Individual Transaction Statistics section of the Job Summary Report lists the 10 transactions with the least or most:

- Response time (shown in sample report)
- Processing unit service time
- Total synchronous disk I/O
- Total asynchronous disk I/O
- Synchronous database reads
- Synchronous database writes
- Synchronous nondatabase reads
- Synchronous nondatabase writes
- Asynchronous database reads
- Asynchronous database writes
- Asynchronous nondatabase reads
- Asynchronous nondatabase writes
- Short-wait-extended time
- Short-wait time
- Lock-wait time
- Excessive activity-level wait time
- Active time
- Binary overflow exceptions
- Decimal overflow exceptions

- Floating point overflow exceptions
- Process access group fault exceptions
- Permanent writes

Sample Report

Job Summary Report											12/13/00
Individual Transaction Statistics											
Report type *SUMMARY											
Member :	TRACESVT	Model/Serial . . :	270/10-45WFM	Main storage . . . :	2048.0 MB	Started :	12/13/00				
Library :	TRACESVT	System name . . . :	ABSYSTEM	Version/Release . . :	5/ 1.0	Stopped :	12/13/00				
Partition ID . . :	00	Feature Code . . . :	22A8-2252-1519								
TRANSACTIONS WITH LONGEST RESPONSE TIMES											
Rank	Value	Time	Program	Job Name	User Name	Number	Thread	Pool	Type		
1	.015	11.53.31.746	QSCTI1	QPADEV000P	SUSTAITA	011615		04	ID		
2	.005	11.53.31.753	QUIINMGR	QPADEV000P	SUSTAITA	011615		04	ID		
3	.004	11.53.54.633	QSCTI1	QPADEV000P	SUSTAITA	011615		04	ID		
4	.004	11.53.45.609	QUIINMGR	QPADEV000P	SUSTAITA	011615		04	ID		
5	.003	11.53.54.636	*TRACEOFF*	QPADEV000P	SUSTAITA	011615		04	ID		
6	.003	11.53.31.746	QSCTI1	QPADEV000P	SUSTAITA	011615		04	ID		
7									D		
8									D		
9									D		
10									D		
TRANSACTIONS WITH LONGEST CPU SERVICE TIME											
Rank	Value	Time	Program	Job Name	User Name	Number	Thread	Pool	Type		
1	.002	11.53.54.636	*TRACEOFF*	QPADEV000P	SUSTAITA	011615		04	ID		
2	.002	11.53.45.609	QUIINMGR	QPADEV000P	SUSTAITA	011615		04	ID		
3	.001	11.53.54.633	QSCTI1	QPADEV000P	SUSTAITA	011615		04	ID		
4	.001	11.53.31.753	QUIINMGR	QPADEV000P	SUSTAITA	011615		04	ID		
5	.001	11.53.31.746	QSCTI1	QPADEV000P	SUSTAITA	011615		04	ID		
6	.001	11.53.31.746	QSCTI1	QPADEV000P	SUSTAITA	011615		04	ID		
7									D		
8									D		
9									D		
10									D		

Longest Seize/Lock Conflicts Section: The Longest Seize/Lock Conflicts section of the Job Summary Report shows the 30 longest lock or seize conflicts during the trace period.

Sample Report

Longest Seize/Lock Conflicts											Job Summary				
Report type *SUMMARY															
Member :	TRACESVT	Model/Serial . . :	270/10-45WFM	Main storage . . . :	2048.0 MB	Started :	12/13/00								
Library :	TRACESVT	System name . . . :	ABSYSTEM	Version/Release . . :	5/ 1.0	Stopped :	12/13/00								
Partition ID . . :	00	Feature Code . . . :	22A8-2252-1519												
Rank	Value	Time	Job Name	User Name/ Thread	Job Number	P1	Typ	Pty	S/L	Holder- Object-	Job Name.. Type.. Library...	User Name. File.....	Number	Pool	Member..
1	20.679	08.00.43.582	QPADEV0017	0000000D	023398	04	I	01	L	HOLDER- OBJECT-	QPADEV0016 COOK DS PFREXP	CSTFIL	023399	04	
2	15.999	08.00.09.324	QPADEV0017	0000000D	023398	04	I	01	L	HOLDER- OBJECT-	QPADEV0016 COOK DS PFREXP	CSTFIL	023399	04	
3	14.183	08.01.16.807	QPADEV0017	0000000D	023398	04	I	01	L	HOLDER- OBJECT-	QPADEV0016 COOK DS PFREXP	CSTFIL	023399	04	
4	.034	08.00.25.331	QPADEV0017	0000000D	023398	04	I	01	L	HOLDER- OBJECT-	QPADEV0016 COOK DS PFREXP	ITMFIL	023399	04	
5	.023	08.01.04.268	QPADEV0017	0000000D	023398	04	I	01	L	HOLDER- OBJECT-	QPADEV0016 COOK DS PFREXP	ITMFIL	023399	04	
6	.022	08.01.30.999	QPADEV0017	0000000D	023398	04	I	01	L	HOLDER- OBJECT-	QPADEV0016 COOK DS PFREXP	ITMFIL	023399	04	

Longest Holders of Seize/Lock Conflicts: The Longest Holders of Seize/Lock Conflicts section of the Job Summary Report shows the holders of the longest lock or seize conflicts for all job types during the trace period.

Sample Report

Job Summary Report
Longest Holders of Seize/Lock Conflicts

12/13/00 1
Pa

Report type *SUMMARY

Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . . : 2048.0 MB Started :12/13/00 1
Library . . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped :12/13/00 1
Partition ID : 00 Feature Code . : 22A8-2252-1519

Rank	Value	Time	Job Name	User Name/ Thread	Job Number	P1	Typ	Pty	S/L	Type	Library	File	Member	R
1	20.679	08.00.43.581	QPADEV0016	00000000	023399	04	I	20	L	DS	PFREXP	CSTFIL		0
2	15.999	08.00.09.324	QPADEV0016	00000000	023399	04	I	20	L	DS	PFREXP	CSTFIL		0
3	14.183	08.01.16.808	QPADEV0016	00000000	023399	04	I	20	L	DS	PFREXP	CSTFIL		0
4	.034	08.00.25.332	QPADEV0016	00000000	023399	04	I	20	L	DS	PFREXP	ITMFIL		0
5	.023	08.01.04.269	QPADEV0016	00000000	023399	04	I	20	L	DS	PFREXP	ITMFIL		0
6	.022	08.01.30.999	QPADEV0016	00000000	023399	04	I	20	L	DS	PFREXP	ITMFIL		0

Batch Job Analysis:

Note: The Batch Job Analysis section does not print if you also specify a value on the select job (SLTJOB) parameter or the omit job (OMTJOB) parameter.

The Batch Job Analysis section of the Job Summary Report shows information on the batch job workload during the trace period.

Sample Report

Job Summary Report
Batch Job Analysis
Report type *SUMMARY

12/13/00
P

Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . . : 2048.0 MB Started :12/13/00 1
Library . . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped :12/13/00 1
Partition ID : 00 Feature Code . : 22A8-2252-1519

Job Name	User Name/ Thread	Job Number	T P P1 p y	Start	Stop	Elapsed Seconds	CPU Seconds	CPU Util	Sync Disk I/O	Async Disk I/O	--- Synchronous --- BCPU --DIO/Sec-- /DIO Elp Act Ded
QIWVPPJT	QUSER	008338	02 BJ 20	11.53.31	11.53.54	22.907					
QZDAINIT	QUSER	008356	02 BJ 20	11.53.31	11.53.54	22.907					
QSYSSCD	QPGMR	008360	02 B 10	11.53.31	11.53.54	22.906					
QPWFSEVS2	QUSER	008366	02 BJ 20	11.53.31	11.53.54	22.906					
QRROUTER	QSNADS	008364	02 B 40	11.53.31	11.53.54	22.906					
QPWFSEVS	QUSER	008369	02 BJ 20	11.53.31	11.53.54	22.906					
QPWFSEVS	QUSER	008375	02 BJ 20	11.53.31	11.53.54	22.906					
QZDASSINIT	QUSER	008378	02 BJ 20	11.53.31	11.53.54	22.906					
QNMAPPINGD	QUSER	008379	02 BJ 25	11.53.31	11.53.54	22.906					
.											
.											
.											

Concurrent Batch Job Statistics: The Concurrent Batch Job Statistics section of the Job Summary Report shows information on the batch job workload during the trace period according to job sets.

By looking at the first lines for a particular priority, you can quickly determine if the system was fully utilizing all available batch activity levels during the trace period.

Collection Services begins identifying concurrent jobs when it starts collecting data. All jobs that are currently active are assigned to a job set. There will often be several jobs that are continuously active during the trace period, such as an autostart job for SNADS.

If another job starts during the trace period and none of the original jobs have ended, it is assigned to a new job set. If a job ends and another job of the same priority starts, the new job is considered to be a second job in the same job set.

For example, if the job queue entry for QBATCH has a MAXACT parameter of 3 and you submit 8 jobs to QBATCH during the trace period, there will probably be 3 job sets on the report with a total of 8 jobs shared between them.

The job sets are sorted by job priority. Thus, for the above example where the first job set was running for a total of 8 minutes and 50 seconds and the second job set was running for a total of 6 minutes and 55 seconds, the order of reporting shows the statistics for the second job set, then the third, and then the first and assigns them sequential numbers.

Sample Report

				Job Summary Report				12/13/00			
				Concurrent Batch Job Statistics							
				Report type *SUMMARY							
Member . . .	:	TRACESVT	Model/Serial . .	:	270/10-45WFM	Main storage . .	:	2048.0 MB	Started	:	12/13/00
Library . . .	:	TRACESVT	System name . .	:	:ABSYSTEM	Version/Release :		5/ 1.0	Stopped	:	12/13/00
Partition ID :		00	Feature Code . .	:	:22A8-2252-1519						
Job Set	Pty	Number Jobs	Elapsed Seconds	CPU Seconds	Excp Wait	Sync Disk I/O	Async Disk I/O				
-----	---	-----	-----	-----	-----	-----	-----				
1	10	1	22.906		22.900						
2	10	1	22.906		22.900						
3	10	1	22.907		22.900						
4	10	1	22.907		22.900						
5	10	1	22.907		22.900						
6	10	1	22.907		22.900						
7	20	1	22.906		22.900						
8	20	1	22.906		22.900						
9	20	1	22.906		22.900						
10	20	1	22.906		22.900						
11	20	1	22.906		22.900						
12	20	1	22.906		22.900						
13	20	1	22.906		22.900						
14	20	1	22.906		22.900						
15	20	1	22.906		22.900						
16	20	1	22.906		22.900						
17	20	1	22.906		22.900						
18	20	1	22.906		22.900						
19	20	1	22.907		22.900						
20	20	1	22.907		22.900						
.											
.											
.											

Selection Criteria: The Report Selection Criteria section of the Job Summary Report gives the selection values you chose to produce the report.

Use the SELECT parameters on the Report Selection Criteria Report to select pools, jobs, user IDs or functional areas. Or use the OMIT parameters to omit them.

If you did not use SELECT parameters, the No Select parameters were chosen message appears.

If you did not use OMIT parameters, the No Omit parameters were chosen message appears.

The options that were selected are also given.

Sample Report

```

Job Summary Report
Report Selection Criteria
Report type *SUMMARY
Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started . . . . :12/13/00 1
Library . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped . . . . :12/13/00 1
Partition ID : 00 Feature Code . : 22A8-2252-1519
Select Parameters
- No Select parameters were chosen.
Omit Parameters
- No Omit parameters were chosen.
Options Selected
- SS INCLUDE SPECIAL SUMMARY REPORTS

```

Transaction Report - Transaction Report Option

The Transaction Report (RPTTYPE(*TNSACT)) option provides detailed information about each transaction that occurred in the job:

- Transaction response time
- Name of the program that is active at the time the transaction starts
- Processing unit time use
- Number of I/O requests

The Transaction Report output has two parts:

- The details, which show data about each transaction in the job
- The summary, which shows data about overall job operation

Sample Report

Note: This Transaction Report ran a collection with thread activity. The report header shows the thread identifier because the job is a secondary thread.

```

Transaction Report
Report type *TNSACT
Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started . . . . :12/13/00 1
Library . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped . . . . :12/13/00 1
Job name . . : QPFRADJ User name . . . : QSYS Job number . . . : 008316 TDE/P1/Pty/Prg . : 01EC/0
Partition ID : 00 Feature Code . : 22A8-2252-1519
E CPU ---- Physical I/O Counts ----- ***** Transaction Response Time (Sec/Tns) ***** -BMPL-
x Sec ----- Synchronous ----- Async ***** - Activity Level Time - Inel Long C I Seiz
c Program p Per DB DB NDB NDB Disk ***** Short Seize Time Wait u n Hol
Time p Name e Tns Read Wrt Read Wrt Sum I/O ** Active Wait Cft A-I/W-I Lck/Oth r l Tim
-----
11.53.31 QWCPMRRR .001 1 1 2 0 .038 .038 1
-----
J O B S U M M A R Y D A T A ( T O T A L S )
-----
Average .001 0 0 1 1 2 0 .038 .038 .000 .000 .000 .000
Count 1 1
Minimum .001 2 .038 .038
Maximum .001 2 .038 .038
Total/Job .001 2 0 22.907 Elapsed .0 Percent CPU Utilization

```

Related information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Transaction Report - Transition Report Option

The Transition Report (RPTTYPE(*TRSIT)) option provides information similar to that of the Transaction Report, but the data (for example, processing unit time, I/O requests) is shown for each job state transition, rather than just the transitions shown when the job is waiting for work station input. The detail shown in this report helps you to determine the program that ran during a transition, or to determine when an unsatisfied lock request occurred.

The Transition Report is composed of two sections:

- Transition Detail, which shows each state transition made by the job (going from one state to another, such as active-to-ineligible)
- Summary, which shows the same data as the summary output from the Transaction Report

Sample Report

Note: This Transition Report ran a collection with thread activity. The report header shows the thread identifier because the job is a secondary thread.

```

Transition Report
Report type *TRSIT
Member . . . : TRACESVT Model/Serial . . : 270/10-45WFM Main storage . . : 2048.0 MB Started . . . :12/13/00
Library . . . : TRACESVT System name . . : ABSYSTEM Version/Release : 5/ 1.0 Stopped . . . :12/13/00
Job name . . . : SCPF User name . . . : QSYS Job number . . . : 000000 TDE/P1/Pty/Prg . . : 018
Partition ID : 00 Feature Code . . :22A8-2252-1519
Job type . . . : X Elapsed Time -- Seconds Sync/Async Phy I/O -MPL-
-----
Time State Wait Long Active Inel CPU DB DB NDB NDB C I Last 4 Programs in Invocation
W A I Code Wait /Rsp* Wait Sec Read Wrt Read Wrt Tot r l Last Second Third
-----
11.53.31.739 *TRACE ON
11.53.54.645 /OFF
11.53.54.645 *TRACE OFF
----- *TRACEOFF* .000* 0 0 0 0 0*
-----
J O B S U M M A R Y D A T A ( T O T A L S )
-----
CPU ---- Physical I/O Counts ----- ***** Transaction Response Time (Sec/Tns) ***** -BMPL-
Sec ---- Synchronous ----- Async ***** - Activity Level Time - Inel Long C I S
Per DB DB NDB NDB Disk ***** Short Seize Time Wait u n l
Tns Read Wrt Read Wrt Sum I/O ** Active Wait Cft A-I/W-I Lck/Oth r l
-----
Average .000 0 0 0 0 0 0 .000 .000 .000 .000 .000 .000
Count
Minimum
Maximum
Total/Job .000 0 0 22.907 Elapsed .0 Percent CPU Utilization

```

Related information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Example: Lock Report

Refer to the following to view samples of each section of a Lock Report:

- “Lock Report - Detail” on page 42
This report shows a sample of the detail listing, sorted by time of day. The report options were selected to include only locks lasting at least two seconds that occurred between 13:33:00 and 13:34:00.

- "Lock Report-Summary"
This report shows a sample of the Requesting Job Summary section of the same report. The other summary sections have a similar format.

Related information

- The "Performance Report header" on page 63 page provides definitions of the report header information.
- The "Performance Report columns" on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Lock Report - Detail

12/14/00 12:46:01 Seize/Lock Wait Statistics by Time of Day Page
Report type *ALL

TOD of Wait	Length of Wait	L	Requestor's Job Name	Holder's Job Name	Object Type	Object Name
12.05.39	4264	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.41	6866	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
12.05.55	7858	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.57	8988	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
Member LCKTRC1			Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait

Seize/Lock Wait Statistics by Requesting Job Page
Report type *ALL

TOD of Wait	Length of Wait	L	Requestor's Job Name	Holder's Job Name	Object Type	Object Name
12.05.41	6866	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
12.05.57	8988	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
12.05.39	4264	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.55	7858	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
Member LCKTRC1			Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait

12/14/00 12:46:01 Seize/Lock Wait Statistics by Holding Job Page
Report type *ALL

TOD of Wait	Length of Wait	L	Requestor's Job Name	Holder's Job Name	Object Type	Object Name
12.05.39	4264	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.55	7858	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.41	6866	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
12.05.57	8988	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
Member LCKTRC1			Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait

12/14/00 12:46:01 Seize/Lock Wait Statistics by Object Page
Report type *ALL

TOD of Wait	Length of Wait	L	Requestor's Job Name	Holder's Job Name	Object Type	Object Name
12.05.39	4264	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.41	6866	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
12.05.55	7858	L	QPADEV0006 SUSTAITA	012538 QPADEV000R SUSTAITA	012535 PGM	QAVCPP QPFR
12.05.57	8988	L	QPADEV000S SUSTAITA	012537 QPADEV0006 SUSTAITA	012538 PGM	QAVCPP QPFR
Member LCKTRC1			Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait

Lock Report-Summary

12/14/00 12:46:01 Seize/Lock Wait Statistics Summary Page 5
Report type *ALL

Requestor's Job Name	Locks		Seizes	
	Count	Avg Length	Count	Avg Length
QPADEV000S SUSTAITA 012537	2	7,927		
QPADEV0006 SUSTAITA 012538	2	6,061		
Member LCKTRC1 Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait	

12/14/00 12:46:01

Seize/Lock Wait Statistics Summary
Report type *ALL

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Holder's Job Name	Locks		Seizes	
	Count	Avg Length	Count	Avg Length
QPADEV000R SUSTAITA 012535	2	6,061		
QPADEV0006 SUSTAITA 012538	2	7,927		
Member LCKTRC1 Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait	

12/14/00 12:46:01

Seize/Lock Wait Statistics Summary
Report type *ALL

Page 7

Object Type Object Name	Locks		Seizes	
	Count	Avg Length	Count	Avg Length
PGM QAVCPP QPFR	4	6,994		
Member LCKTRC1 Library TRACESVT	Period from 00.00.00 through 23.59.59		500 ms minimum wait	

Example: Batch Job Trace Report

The following sample report shows the Job Summary section of the Batch Job Trace Report. This section of the report provides the number of traces, the number of I/O operations, the number of seize and lock conflicts, and the number of state transitions for each batch job.

Sample Report

Batch Job Trace Report												9/05/00
Job Summary												
Sample Job Trace Report												
Member	Q981421246	Model/Serial . . .	500-2142/10-1803D	Main storage . . .	128.0 M	Started	05/22/00	Stopped	05/22/00	Version/Release . . .	4/ 2.0	
Library	THREAD1	System name	ABSYSTEM	Physical		Seize		and Lock		State		
Job Name	User Name	Job Number	Pool	-- Job -- Type Pty	Number Traces	CPU Util	---- I/O Count ---- Sync Async	Seize Conflicts	and Lock	--- Transitions	State A-A A-I	
QPFRRON	QPGMR	013842	02	B 0	5	11.7	604 235	0		1		
Job Name	-- Name of the job											
User Name	-- User name											
Job Number	-- Job number											
Pool	-- Pool in which the job ran											
Job Type	-- Job type and subtype											
Job Pty	-- Priority of the job											
Number Traces	-- Number of traces											
CPU Util	-- Percentage of available CPU time used. This is the average of all processors											
Physical I/O Count												
Sync	-- Number of synchronous I/O operations											
Async	-- Number of asynchronous I/O operations											
Seize and Lock Conflicts	-- Number of seize conflicts and lock waits											
State Transitions A-A	-- Number of active-to-active transitions											
State Transitions A-I	-- Number of active-to-ineligible transitions											

Related information

- The "Performance Report header" on page 63 page provides definitions of the report header information.
- The "Performance Report columns" on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Example: Job Interval Report

Refer to the following to view samples of each section of a Job Interval Report:

- “Job Interval Report - Interactive Job Summary”
- “Job Interval Report - Non-interactive Job Summary” on page 45
- “Job Interval Report - Interactive Job Detail” on page 46
- “Job Interval Report - Non-interactive Job Detail” on page 47
- “Job Interval Report - Selection Criteria” on page 48

Related information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Job Interval Report - Interactive Job Summary

▶ The Interactive Job Summary section of the Job Interval Report lists one line for all selected interactive jobs that existed during each selected interval (a total of one line per interval).

The information included in this section includes only valid interactive jobs with CPU activity other than zero, or with any I/O activity. Changes to this section of the report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9

Sample Report

Job Interval Report													10/02/03
Interactive Job Summary													
Perf data from 14:00 to 16:00 at 1 min													
Member	: Q275140000		Model/Serial . .	: 890/10-3907F		Main storage . . .	: 56.4 GB		Started	: 10/02/03 14			
Library	: PTLIBV5R3		System name . . .	: ABSYSTEM		Version/Release . .	: 5/3.0		Stopped	: 10/02/03 16			
Partition ID . .	: 003		Feature Code . . .	: 7427-2498-7427									
Itv	Act	Tns	Rsp/	Number of I/O					Tns/	CPU	PAG	Perm	
End	Jobs	Count	Tns	DDM	Sync	Async	Logical	Cmn	Hour	Util	Fault	Write	
14:00	2	5	.01	0	61	20	1	0	300	.0	0	11	
14:01	1	0	.00	0	0	0	0	0	0	.0	0	0	
14:02	1	0	.00	0	29	23	0	0	0	.0	0	7	
14:03	3	29	77.29	0	779	340	158	0	1,740	.4	0	472	
14:04	2	9	.44	0	2815	218	3	0	549	2.6	0	379	
14:05	3	1	.23	0	2227	138	32	0	60	2.2	0	295	
14:06	1	0	.00	0	1718	551	175	0	0	1.6	0	1052	
14:07	1	0	.00	0	1989	754	219	0	0	2.3	0	1522	
14:08	1	0	.00	0	1477	530	177	0	0	1.9	0	1133	
14:09	1	0	.00	0	1985	756	228	0	0	2.5	0	1512	
14:10	1	0	.00	0	2225	869	264	0	0	2.1	0	1722	
14:11	1	0	.00	0	2309	882	269	0	0	2.3	0	1775	
14:12	1	0	.00	0	2102	747	266	0	0	2.1	0	1586	
14:13	1	0	.00	0	2276	860	271	0	0	2.4	0	1752	
14:14	2	10	.06	0	1472	589	68	0	600	1.0	0	955	
14:15	1	0	.00	0	0	0	0	0	0	.0	0	0	
14:16	1	0	.00	0	2831	1657	7498	0	0	6.4	0	1669	
14:17	1	0	.00	0	2567	1982	18192	0	0	11.5	0	2068	
14:18	1	1	834.44	0	106	24	1	0	60	.0	0	67	
14:21	1	2	.77	0	65	0	0	0	120	.0	0	0	
14:25	1	1	.07	0	5	0	0	0	60	.0	0	0	
14:26	2	78	.03	0	397	262	0	0	4,680	.1	0	0	
14:27	1	20	.14	0	399	264	0	0	1,200	.0	0	1	

14:28	2	63	.01	0	24	0	0	0	0	3,780	.0	0
14:29	2	3	2.16	0	541	227	0	0	0	183	.1	0
Itv End	-- Interval end time (hour and minute)											
Act Jobs	-- Number of active jobs in the interval											
Tns Count	-- Number of transactions											
Rsp/Tns	-- Average response time (seconds)											
DDM	-- Number of logical DB I/O operations for DDM server jobs											
Sync	-- Number of synchronous disk I/O operations											
Async	-- Number of asynchronous disk I/O operations											
Logical	-- Number of logical disk I/O operations											
Cmn	-- Number of communications I/O operations											
Tns/Hour	-- Average number of transactions per hour											
CPU Util	-- Percentage of available CPU time used. This is the average of all processors											
PAG Fault	-- Number of faults involving the Process Access Group											
Perm Write	-- Number of permanent writes											
Arith Ovrfl	-- Number of arithmetic overflow exceptions											



Job Interval Report - Non-interactive Job Summary

▶ The Non-interactive Job Summary section of the Job Interval Report lists one line for all selected non-interactive jobs that existed during each selected interval (a total of one line per interval).

The information included in this section includes only valid non-interactive jobs with CPU activity other than zero, or with any I/O activity. Changes to this section of the report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9

Sample Report

Job Interval Report													10/02/03
Non-Interactive Job Summary													
Perf data from 14:00 to 16:00 at 1 min													
Member	: Q275140000 Model/Serial . . : 890/10-3907F					Main storage . . . : 56.4 GB			Started : 10/02/03				
Library	: PTLIBV5R3 System name . . : ABSYSTEM					Version/Release . . : 5/3.0			Stopped : 10/02/03				
Partition ID . .	: 003 Feature Code . . : 7427-2498-7427												
Itv End	Act Jobs	CPU Util	----- Number of I/O		Per Second	-----	-- CPU/	I/O ---	Line	Page	PAG	Perm	Arith
			Sync	Async	Logical	Cmn	Sync	Async	Count	Count	Fault	Write	Ovrflw
14:00	1,634	96.2	97.5	74.0	888.5	.0	39	51	522	10	0	5,232	0
14:01	1,618	98.6	192.8	173.9	724.3	.0	20	22	576	11	0	10,615	2
14:02	1,620	98.5	228.7	217.5	867.9	.0	17	18	444	11	0	12,672	0
14:03	1,628	94.0	174.3	177.9	912.4	.0	21	21	726	14	0	9,609	0
14:04	1,616	93.6	123.5	92.1	1250.9	.0	30	40	479	7	0	6,664	0
14:05	1,631	97.0	74.0	51.3	624.4	.0	52	75	522	10	0	3,680	0
14:06	1,604	97.0	87.6	68.4	621.5	.0	44	56	591	13	0	4,740	0
14:07	1,622	93.7	144.7	108.7	997.6	.0	25	34	632	14	0	7,507	0
14:08	1,616	96.3	92.6	87.9	720.2	.0	41	43	523	10	0	5,247	0
14:09	1,631	95.0	388.9	287.8	1014.2	.0	9	13	3,005	76	0	17,536	0
14:10	1,612	95.6	360.4	363.8	849.8	.0	10	10	838	18	0	19,222	0
14:11	1,615	94.9	467.8	498.8	913.2	.0	8	7	522	10	0	25,912	0
14:12	1,619	96.0	303.1	323.3	669.0	.0	12	11	577	9	0	16,788	0
14:13	1,620	94.6	497.3	524.7	903.5	.0	7	7	631	14	0	27,895	0
14:14	1,614	96.0	333.0	368.9	987.9	.0	11	10	524	11	0	18,309	0
14:15	1,627	96.0	258.3	263.8	1042.6	.0	14	14	722	15	0	13,502	0
14:16	1,614	91.5	424.4	456.4	789.8	.0	8	8	485	10	0	23,855	0
14:17	1,578	86.0	460.3	502.1	800.9	.0	7	6	520	10	0	25,618	0
14:18	1,623	94.5	404.5	422.0	1237.5	.0	9	8	586	11	0	22,166	0
14:19	1,617	96.0	63.0	60.9	638.4	.0	60	63	480	9	0	3,461	0
14:20	1,612	98.4	19.5	16.6	315.2	.0	201	236	522	8	0	985	0
14:21	1,619	87.2	48.6	29.8	318.8	.0	71	117	493	10	0	2,020	0
14:22	1,621	96.1	435.5	429.6	1026.5	.0	8	8	586	12	0	22,950	0
14:23	1,620	97.9	337.1	347.5	759.4	.0	11	11	477	9	0	18,888	0

```

14:24 1,624 91.5 161.4 161.3 769.4 .0 22 22 610 14 0 8,667 0
Itv End -- Interval end time (hour and minute)
Act Jobs -- Number of jobs that were active during the interval
CPU Util -- Percentage of available CPU time used. This is the average of all processors
Sync I/O Per Second -- Average number of synchronous disk I/O operations per second
Async I/O Per Second -- Average number of asynchronous disk I/O operations per second
Logical I/O Per Second -- Average number of logical disk I/O operations per second
Cmn I/O Per Second -- Average number of communications I/O operations per second
CPU/ Sync I/O -- Avg number of CPU milliseconds per synchronous disk I/O operation
CPU/ Async I/O -- Avg number of CPU milliseconds per asynchronous disk I/O operation
Line Count -- Number of lines printed
Page Count -- Number of pages printed
PAG Fault -- Number of faults involving the Process Access Group
Perm Write -- Number of permanent writes
Arith Ovrflw -- Number of arithmetic overflow exceptions

```



Job Interval Report - Interactive Job Detail

» The Interactive Job Detail section of the Job Interval Report gives detailed information by interval and job. One line is printed for each selected interactive job that existed during each selected interval (generally more than one line per interval). Changes to this section of the report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9
- A new column, *Current User*, was added to display the name of the user under which the job was running at the end of each interval.

Sample Report

```

Job Interval Report
Interactive Job Detail
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started . . . : 10/02/03 14
Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release . . : 5/3.0 Stopped . . . : 10/02/03 16
Partition ID : 003 Feature Code . . : 7427-2498-7427

----- Physical I/O Per Transaction -----
Itv Job User Name/ Job Current t TNS Rsp CPU ---- Synchronous ---- Asynchronous ---- CPU
End Name Thread Number User PL y /HR /Tns /Tns DBR DBW NDBR NDBW DBR DBW NDBR NDBW Uti
-----
14:00 QPADEV002W FRY 955881 FRY 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0
14:00 QPADEV006S CHEVURU 955956 CHEVURU 3 20 300 .01 .0040 .0 .0 .0 .0 .0 .0 .0 .0
14:01 QPADEV002W FRY 955881 FRY 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0
14:02 QPADEV002W FRY 955881 FRY 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0
14:03 QPADEV001P PST 955783 PST 3 01 180 .06 .0600 .0 .0 .0 .0 .0 .0 .0 .0
14:03 QPADEV002W FRY 955881 FRY 3 20 1260 106.43 .0370 1.0 4.0 7.6 7.3 .2 8.4 .3 6.1
14:03 QPADEV0031 FRY 956238 FRY 3 20 300 1.21 .0030 .0 .0 .2 7.0 .0 .0 .0 3.8
14:04 QPADEV002W FRY 955881 FRY 3 20 122 .00 3.1060 155.5 5.0 999.9 108.0 13.0 14.0 .0 29.0 2
14:04 QPADEV0031 FRY 956238 FRY 3 20 427 .56 .0080 .0 .0 4.4 6.0 .0 .0 .0 15.1
14:05 QPADEV002W FRY 955881 QNOTES 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0 2
14:04 QPADEV0031 FRY 956238 FRY 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0
14:05 QPADEV004B V2KEA524 956014 V2KEA524 3 20 60 .23 .0910 .0 .0 .0 .0 .0 .0 .0 .0
14:06 QPADEV002W FRY 955881 QNOTES 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0 1
14:07 QPADEV002W FRY 955881 QNOTES 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0 2
14:08 QPADEV002W FRY 955881 QNOTES 3 20 0 .00 .0000 .0 .0 .0 .0 .0 .0 .0 .0 1
Itv End -- Interval end time (hour and minute)
Job Name -- Job name
User Name/Thread -- User name or secondary thread identifier
Job Number -- Job number
Current User -- User name under which the job was running at the end of the interval
PL -- Pool in which the job ran
Pty -- Priority of the job
TNS/HR -- Average number of transactions per hour

```

```

Rsp/Tns          -- Average response time (seconds)
CPU/Tns          -- Average number of CPU seconds per transaction
Physical I/O per Trans -- Average physical disk I/O per transaction
  Synchronous DBR  -- Average synchronous data base reads per transaction
  Synchronous DBW  -- Average synchronous data base writes per transaction
  Synchronous NDBR -- Average synchronous non-data base reads per transaction
  Synchronous NDBW -- Average synchronous non-data base writes per transaction
  Asynchronous DBR -- Average asynchronous data base reads per transaction
  Asynchronous DBW -- Average asynchronous data base writes per transaction
  Asynchronous NDBR -- Average asynchronous non-data base reads per transaction
  Asynchronous NDBW -- Average asynchronous non-data base writes per transaction
CPU Util         -- Percentage of available CPU time used. This is the average of all processors
Sync I/O /Sec    -- Average number of synchronous disk I/O operations per second

```



Job Interval Report - Non-interactive Job Detail

▶ The Non-interactive Job Detail section of the Job Interval Report gives detailed information by interval and job. One line is printed for each selected non-interactive job that existed during each selected interval (generally more than one line per interval). Changes to this section of the report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9
- A new column, *Current User*, was added to display the name of the user under which the job was running at the end of each interval.

Sample Report

Job Interval Report															10/02/03						
Non-Interactive Job Detail																					
Perf data from 14:00 to 16:00 at 1 min																					
Member	: Q275140000 Model/Serial . . : 890/10-3907F			Main storage . . . : 56.4 GB		Started			: 10/02/03												
Library	: PTLIBV5R3 System name . . : ABSYSTEM			Version/Release . . : 5/3.0		Stopped			: 10/02/03												
Partition ID . .	: 003 Feature Code . . : 7427-2498-7427																				
Itv	Job	User Name/	Job	Current	Pool	Type	Pty	Elapsed	CPU	---	Nbr	I/O	/Sec	---	--	CPU	/	I/O	--	---	Pr
End	Name	Thread	Number	User				Time	Util	Sync	Async	Lgl	Sync	Async	Lines						
14:00	ADMIN	QTMHHTTP	955725	QTMHHTTP	2	B	25	1:00	.00	0	0	0	0	0	0						
14:00	ADMIN	QTMHHTTP	955727	QTMHHTTP	2	BD	25	1:00	.00	0	0	0	0	0	0						
14:00	AMQPCSEA	QMQM	955757	QMQM	2	B	35	1:00	.00	0	0	0	0	0	0						
14:00	AMQRMPPA	QMQM	955773	QMQM	2	B	35	1:00	.00	0	0	0	0	0	0						
14:00	AMQRRMFA	QMQM	955752	QMQM	2	B	35	1:00	.00	0	0	0	0	0	0						
14:00	AMQZDMAA	QMQM	955753	QMQM	2	B	35	1:00	.00	0	0	0	0	0	0						
14:00	AMQZLAA0	QMQM	955755	QMQM	2	B	20	1:00	.00	0	0	0	0	0	0						
14:00	AMQZLAA0	QMQM	955774	QMQM	2	B	20	1:00	.00	0	0	0	0	0	0						
14:00	AMQZXMA0	QMQM	955749	QMQM	2	B	20	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953645	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953647	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953648	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953649	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953650	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953651	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953652	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953653	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953654	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953655	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953656	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953657	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953658	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953659	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953660	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
14:00	CPUTEST	WLCPU	953662	WLCPU	2	B	51	1:00	.00	0	0	0	0	0	0						
Itv End	-- Interval end time (hour and minute)																				
Job Name	-- Job name																				

```

User Name/Thread      -- User name or secondary thread identifier
Job Number           -- Job number
Current User         -- User name under which the job was running at the end of the interval
Pool                 -- Pool in which the job ran
Type                 -- Type and subtype of the job
Pty                  -- Priority of the job
Elapsed Time         -- Elapsed time for job during interval (minutes and seconds)
CPU Util             -- Percentage of available CPU time used. This is the average of all processors
Sync I/O /Sec       -- Average number of synchronous disk I/O operations per second
Async I/O /Sec      -- Average number of asynchronous disk I/O operations per second
Lgl I/O /Sec        -- Average number of logical disk I/O operations per second
CPU/ Sync I/O       -- Avg number of CPU milliseconds per synchronous disk I/O operation
CPU/ Async I/O      -- Avg number of CPU milliseconds per asynchronous disk I/O operation
Printer Lines       -- Number of lines printed
Printer Pages       -- Number of pages printed

```



Job Interval Report - Selection Criteria

The Report Selection Criteria section of the Job Interval Report gives the selection values you chose to produce the report.

Sample Reports

Select Parameters

```

Pools                - 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16

Jobs                 - 012345/Useridwxyz/Jobname123 00000005
                    - 987654/Useridabcd/Jobname456 *ALL

User IDs             - User1      User2      User3      User4      User5      User6
                    - User7      User8      User9      User10     User11     User12

Subsystems           - Subsystem1 Subsystem2 Subsystem3 Subsystem4 Subsystem5 Subsystem6
                    - Subsystem7 Subsystem8 Subsystem9 Subsystema Subsystemb Subsystemc

Communications Lines - Line1      Line2      Line3      Line4      Line5      Line6
                    - Line7      Line8      Line9      Line10     Line11     Line12

Control Units        - Ctlr1      Ctlr2      Ctlr3      Ctlr4      Ctlr5      Ctlr6
                    - Ctlr7      Ctlr8      Ctlr9      Ctlr10     Ctlr11     Ctlr12

Functional Areas     - Accounting      Payroll      Research
                    - Development      ProjectX      MrNolansStaff

                    - No Select parameters were chosen.

```

Omit Parameters

```

Pools                - 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16

Jobs                 - 012345/Useridwxyz/Jobname123 00000005
                    - 987654/Useridabcd/Jobname456 *ALL

User IDs             - User1      User2      User3      User4      User5      User6
                    - nnnnnn     User8      User9      User10     User11     User12

Subsystems           - Subsystem1 Subsystem2 Subsystem3 Subsystem4 Subsystem5 Subsystem6
                    - Subsystem7 Subsystem8 Subsystem9 Subsystema Subsystemb Subsystemc

Communications Lines - Line1      Line2      Line3      Line4      Line5      Line6
                    - Line7      Line8      Line9      Line10     Line11     Line12

Control Units        - Ctlr1      Ctlr2      Ctlr3      Ctlr4      Ctlr5      Ctlr6
                    - Ctlr7      Ctlr8      Ctlr9      Ctlr10     Ctlr11     Ctlr12

```

Functional Areas

- Accounting
Development

Payroll
ProjectX

Research
MrNolansStaff

- No Omit parameters were chosen.

Example: Pool Interval Report

Refer to the following to view samples of each section of a Pool Interval Report:

- "Pool Interval Report - Subsystem Activity"
- "Pool Interval Report - Pool Activity" on page 50

Related information

- The "Performance Report header" on page 63 page provides definitions of the report header information.
- The "Performance Report columns" on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Pool Interval Report - Subsystem Activity

➤ The Subsystem Activity section of the Pool Interval Report gives the performance information on the subsystems during each selected interval. One line is printed for each subsystem and active pool combination that existed during each selected interval. Changes to this section of the report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9

Sample Report

Pool Interval Report																	10/02/00
Subsystem Activity																	
Perf data from 14:00 to 16:00 at 1 min																	
Member	: Q275140000		Model/Serial . . .	: 890/10-3907F				Main storage	: 56.4 GB				Started	: 10/02/00			
Library	: PTLIBV5R3		System name	: ABSYSTEM				Version/Release	: 5/3.0				Stopped	: 10/02/00			
Partition ID . . .	: 003		Feature Code	: 7427-2498-7427													
----- Physical I/O per Transaction -----																	
Itv	Subsystem	CPU	----- Synchronous -----				----- Asynchronous -----				CPU	Phy	Job Maximums				
End	Name	PL Util	Tns	DBR	DBW	NDBR	NDBW	DBR	DBW	NDBR	NDBW	Util	I/O	Tns	Rsp	A-W	
14:00	QEJBAS5	2 .1	0									.1	18	0	.00	1,220	
14:00	QHTTPSVR	2 .0	0									.0	1	0	.00	670	
14:00	QINTER	3 .2	5	.4	1.0	6.6	.4	2.4	.2	3.2	.1	81	5	.01	18,050		
14:00	QMQM	2 .0	0									.0	0	0	.00	270	
14:00	QSYSWRK	2 91.3	0									11.2	295	0	.00	6,500	
14:00	QUSRWRK	2 .1	0									.1	0	0	.00	0	
14:00	SWAMP	2 1.0	0									.0	122	0	.00	80	
14:00	ZCPUSBS	2 3.2	0									.0	0	0	.00	300	
14:01	QBATC	2 .0	0									.2	32	0	.00	300	
14:01	QEJBAS5	2 4.2	0									4.2	2,118	0	.00	14,170	
14:01	QHTTPSVR	2 .2	0									.1	1	0	.00	750	
14:01	QINTER	3 .2	0									.1	14	0	.00	18,580	
14:01	QMQM	2 .0	0									.0	0	0	.00	270	
14:01	QSYSWRK	2 90.1	0									12.2	1,840	0	.00	2,390	
14:01	QUSRWRK	2 .1	0									.1	0	0	.00	0	
14:01	SWAMP	2 1.0	0									.0	129	0	.00	80	
14:01	ZCPUSBS	2 2.5	0									.0	1	0	.00	290	
14:02	QBATC	2 .1	0									.4	62	0	.00	800	

Itv End -- Interval end time (hour and minute)
Subsystem Name -- Subsystem name
PL -- Pool in which the jobs in the subsystem ran
CPU Util -- Average CPU utilization by the transactions in the subsystem. This is the average of all p

```

Tns                -- Number of transactions in the subsystem
Physical I/O per Trans -- Average physical disk I/O operations per transaction
  Synchronous DBR    -- Average synchronous data base reads per transaction
  Synchronous DBW    -- Average synchronous data base writes per transaction
  Synchronous NDBR   -- Average synchronous non-data base reads per transaction
  Synchronous NDBW   -- Average synchronous non-data base writes per transaction
  Asynchronous DBR   -- Average asynchronous data base reads per transaction
  Asynchronous DBW   -- Average asynchronous data base writes per transaction
  Asynchronous NDBR  -- Average asynchronous non-data base reads per transaction
  Asynchronous NDBW  -- Average asynchronous non-data base writes per transaction
Job Maximums       -- Maximum values by a job in the subsystem
  CPU Util          -- Highest percentage CPU utilization
  Phy I/O           -- Most physical disk I/O requests
  Tns               -- Most transactions
  Rsp               -- Highest average response time (seconds)
  A-W              -- Most active-to-wait transitions
  W-I              -- Most wait-to-ineligible transitions
  A-I              -- Most active-to-ineligible transitions

```



Pool Interval Report - Pool Activity

» The Pool Activity section of the Pool Interval Report gives the performance information on the storage pools at various time intervals. One line is printed for each active pool that existed during each selected interval. Changes to this section of the report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- The *CPU Util* column width was increased to accommodate showing CPU Utilization values greater than 99.9

Sample Report

```

                                     Pool Interval Report                                     10/02/03
                                     Pool Activity
                                     Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F      Main storage . . . : 56.4 GB   Started . . . : 10/02/03 1
Library . . . : PTLIBV5R3 System name . . : ABSYSTEM          Version/Release . . : 5/3.0   Stopped . . . : 10/02/03 1
Partition ID : 003      Feature Code . . : 7427-2498-7427

----- Physical I/O per Transaction ----- Job Maximums -----
Itv   Act   Size  CPU   ----- Synchronous ----- Asynchronous ----- CPU   Phy   Job Maximums -----
End  PL   Lvl  (K)  Util   Tns  DBR  DBW  NDBR  NDBW  DBR  DBW  NDBR  NDBW  Util  I/O   Tns  Rsp  A-W
-----
14:00 2  1628 11831140 96.0    0
14:00 3  2639 43332072  .2      5  .4  1.0  6.6  .4      2.4  .2  3.2  .1    81    5  .01 18,058
14:01 2  1628 12422700 98.4    0
14:01 3  2639 42806568  .2      0
14:02 2  1628 13043840 98.3    0
14:02 3  2639 42250164  .2      0
14:03 2  1628 13043844 93.7    0
14:03 3  2639 42091564  .6     29  .7  2.9  5.5  6.5  .2  6.3  .2  5.1  .3   1045 21 106.43 19,496
14:04 2  1628 13696040 93.4    0
14:04 3  2639 41505980  2.8     9 34.5  1.1 227.2 28.6  2.8  4.1      18.2  2.6  2748 7  .56 19,809
14:05 2  1628 12326440 96.8    0
14:05 3  2639 42940860  2.4     1 33.0 20.0 999.9 189.0  6.0 50.0      91.0  2.2  2353 1  .23 17,395
14:06 2  1628 12326440 96.8    0
14:06 3  2639 42940860  1.8     0
14:06 3  2639 42940860  1.8     0
Itv End      -- Interval end time (hour and minute)
PL           -- Pool identifier
Act Lvl     -- Activity level of the pool
Size (K)    -- Size of the pool (kilobytes)
CPU Util    -- Average CPU utilization by the transactions in the pool. This is the average of all processors
Tns         -- Number of transactions in the pool
Physical I/O per Trans -- Average physical disk I/O operations per transaction in the pool
  Synchronous DBR -- Average synchronous data base reads per transaction
  Synchronous DBW -- Average synchronous data base writes per transaction

```



```

Synchronous NDBR -- Average synchronous non-data base reads per transaction
Synchronous NDBW -- Average synchronous non-data base writes per transaction
Asynchronous DBR -- Average asynchronous data base reads per transaction
Asynchronous DBW -- Average asynchronous data base writes per transaction
Asynchronous NDBR -- Average asynchronous non-data base reads per transaction
Asynchronous NDBW -- Average asynchronous non-data base writes per transaction
Job Maximums -- Maximum values by a job in the pool
CPU Util -- Highest percentage CPU utilization
Phy I/O -- Most physical disk I/O requests
Tns -- Most transactions
Rsp -- Highest average response time (seconds)
A-W -- Most active-to-wait transitions
W-I -- Most wait-to-ineligible transitions
A-I -- Most active-to-ineligible transitions

```



Example: Resource Interval Report

Refer to the following to view samples of each section of a Job Interval Report:

- “Resource Interval Report - Disk Utilization Summary”
- “Resource Interval Report - Disk Utilization Detail” on page 52
- “Resource Interval Report - Communications Line Detail” on page 53
- “Resource Interval Report - IOP Utilizations” on page 61
- “Resource Interval Report - Local Work Station Response Times” on page 62
- “Resource Interval Report - Remote Work Station Response Times” on page 62

Related Information

- The “Performance Report header” on page 63 page provides definitions of the report header information.
- The “Performance Report columns” on page 65 page provides an alphabetized list of definitions for each column heading in the reports.

Resource Interval Report - Disk Utilization Summary

➤ The Disk Utilization Summary section of the Resource Interval Report gives detailed disk information by time intervals.

Information is shown for all disk arms that are configured on the system. Also, the disk arm with the highest utilization and the disk arm with the highest average seek time for each time interval are shown. Consistent disk arm utilization at or above the threshold value will affect system performance and cause longer response times and/or less throughput. New this release, the *Partition ID* field in the header can display numbers up to 255.

Sample Report

```

Resource Interval Report
Disk Utilization Summary
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . . : 56.4 GB Started . . . : 10/02/0
Library . . . : PTLIBV5R3 System name . . . : ABSYSTEM Version/Release . . : 5/3.0 Stopped . . . : 10/02/0
Partition ID : 003 Feature Code . . : 7427-2498-7427

```

Itv	Average I/O /Sec	Average Reads /Sec	Average Writes /Sec	Average K Per I/O	Avg Util	High Util	High Util Unit	High Srv Time	High Srv Unit	D	S	U
End	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
14:00	191.2	7.4	183.7	6.9	.6	1.8	0011	.0046	0010			
14:05	202.4	24.9	177.4	8.3	1.0	2.6	0030	.0059	0010			
14:10	286.9	41.4	245.4	9.0	1.9	3.5	0006	.0060	0019			
14:15	526.0	44.2	481.7	25.8	14.0	21.6	0033	.0324	0032			

14:20	344.7	15.0	329.6	5.8	1.0	2.1	0033	.0051	0032	372
14:25	285.1	18.4	266.6	5.8	.9	2.8	0019	.0035	0021	372
14:30	131.8	29.4	102.4	13.0	.8	1.6	0011	.0065	0014	373
14:35	561.9	11.6	550.2	5.3	1.0	2.5	0009	.0023	0013	373
14:40	583.1	34.7	548.4	5.6	1.4	3.1	0027	.0031	0013	373
14:45	257.0	9.0	248.0	6.6	.6	1.5	0005	.0035	0031	373
14:50	216.9	9.1	207.7	7.2	.7	1.8	0027	.0052	0031	373
14:55	155.8	7.9	147.8	7.9	.4	1.1	0027	.0040	0007	373
15:00	238.0	13.0	224.9	7.0	.7	1.5	0012	.0049	0032	373
15:05	187.2	3.7	183.4	6.4	.5	1.5	0024	.0068	0036	373
15:10	127.1	23.0	104.0	7.9	.4	2.0	0024	.0050	0036	373
15:15	107.6	6.2	101.4	8.4	.3	1.5	0006	.0072	0036	373
15:20	329.5	6.7	322.7	5.5	.6	2.5	0023	.0034	0032	373
15:25	259.3	6.3	252.9	6.3	.7	1.8	0030	.0050	0031	373
15:30	457.7	6.7	450.9	5.3	.9	2.6	0025	.0054	0001	373
15:35	286.2	6.6	279.5	6.3	.6	1.5	0010	.0019	0017	373
15:40	536.7	7.7	529.0	5.2	1.2	3.2	0014	.0043	0032	373
15:45	273.8	5.0	268.7	5.8	.6	1.5	0030	.0062	0032	373
15:50	145.9	4.0	141.9	7.6	.4	1.3	0021	.0057	0026	373
15:55	611.2	10.2	600.9	5.1	1.1	4.3	0014	.0032	0037	373
16:00	273.0	4.0	269.0	5.9	.6	1.6	0014	.0050	0037	373

```

-----
Average:          303.1          14.3          288.8          7.6          1.3
Itv End          -- Interval end time (hour and minute)
Average Phys I/O /Sec -- Average number of physical I/O operations per second
Average Reads / Sec -- Average number of physical reads per second
Average Writes /Sec -- Average number of physical writes per second
Average K Per I/O  -- Average number of kilobytes (1024) per I/O operation
Avg Util          -- Average percent utilization of all disk arms
High Util         -- Highest percent utilization for a disk arm
High Util Unit    -- Disk arm with the highest utilization percent
High Srv Time     -- Highest average service time in seconds
High Srv Unit     -- Disk arm with the highest service time
Disk Space Used   -- Total disk space used in millions of bytes

```



Resource Interval Report - Disk Utilization Detail

» The Disk Utilization Detail section of the Resource Interval Report gives detailed disk information for the selected time intervals.

Information is shown for each disk arm that is configured on the system. Consistent disk arm utilization at or above the threshold value will affect system performance and cause longer response times and/or less throughput. Changes to this report include:

- The *Partition ID* field in the header was increased to display numbers up to 255.
- A plus sign (+) displays next to the Unit column to identify multipath disk units.
- A new column, *ASP Rsc Name*, was added to identify the ASP resource name to which the disk unit was allocated at collection time.

Sample Report

Resource Interval Report											10/03/03	
Disk Utilization Detail												
Multipath disk data												
Member	Q119115948 Model/Serial . . : 840/10-3A6HM			Main storage . . . : 1024.0 GB			Started			04/29/03 1		
Library	MPLIB System name . . : ABSYSTEM			Version/Release . . :			5/3.0			Stopped		04/30/03 0
Partition ID . .	: 001 Feature Code . . : 23FE-2420-1546											
Unit	IOP Name/ (Model)	ASP Rsc Name	ASP Id	Itv End	Total	I/O Per Second Reads	Writes	K Per I/O	Dsk CPU Util	Queue Length	Avg Time Service	
+ 0004	CMB08 (2105)		5	12:15	.000	.000	.000	.0	11.4	.0	.0000	
				12:15	.000	.000	.000	.0	9.0	.0	.0000	
				12:15	.000	.000	.000	.0	21.0	.0	.0000	

12:30	.000	.000	.000	.0	6.7	.0	.00	.0000	
12:30	.000	.000	.000	.0	6.7	.0	.00	.0000	
12:30	.000	.000	.000	.0	6.7	.0	.00	.0000	
12:45	.000	.000	.000	.0	9.0	.0	.00	.0000	
12:45	.000	.000	.000	.0	9.0	.0	.00	.0000	
12:45	.000	.000	.000	.0	6.6	.1	.00	.0000	
13:00	.000	.000	.000	.0	16.2	.0	.00	.0000	
13:00	.000	.000	.000	.0	13.8	.0	.00	.0000	
13:00	.000	.000	.000	.0	9.0	.1	.00	.0000	
13:15	.000	.000	.000	.0	11.4	.0	.00	.0000	
13:15	.000	.000	.000	.0	9.0	.0	.00	.0000	
13:15	.000	.000	.000	.0	6.6	.0	.00	.0000	
13:30	.000	.000	.000	.0	9.2	.0	.00	.0000	
13:30	.000	.000	.000	.0	6.8	.0	.00	.0000	
Unit	-- Disk arm identifier								
IOP Name/ (Model)	-- Input/Output processor resource name and model number of the attached device								
ASP Rsc Name	-- ASP resource name to which the disk unit was allocated at collection time								
ASP ID	-- Auxiliary storage pool number								
Itv End	-- Interval end time (hour and minute)								
I/O /Sec	-- Average number of I/O operations per second								
Reads Per Second	-- Average number of reads per second								
Writes Per Sec	-- Average number of writes per second								
K Per I/O	-- Average number of kilobytes (1024) per I/O operation								
Dsk CPU Util	-- Percentage of Disk CPU Utilization								
Util	-- Average percent of time disk was used (busy)								
Queue Length	-- Average length of waiting queue								
Average Service Time	-- Average disk service time per I/O operation								
Average Wait Time	-- Average disk wait time per I/O operation								

+ Multipath disk unit.



Resource Interval Report - Communications Line Detail

A Communications Line Detail section of a Resource Interval Report contains information about the line activity when performance data was collected for the specified member. One detail section is produced for each protocol in use on the lines for which data was collected. Refer to the following for samples of the detail sections for these communications protocols:

Note: Each section appears only if you have communications lines using that particular protocol.

- "SDLC Protocol"
- "X.25 Protocol" on page 54
- "TRLAN Protocol" on page 55
- "ELAN Protocol" on page 56
- "DDI Protocol" on page 56
- "FRLY Protocol" on page 57
- "ASYNC Protocol" on page 57
- "BSC Protocol" on page 58
- "ISDN Network Interface" on page 59
- "Network Interface Maintenance Channel for ISDN" on page 60
- "IDLC Protocol" on page 60

SDLC Protocol

A sample of the report section for communications lines using the synchronous data link control (SDLC) protocol is shown below. The data in this example is sorted by the data collection interval end times.

Sample Report

Resource Interval Report
 Communications Line Detail

09/18/98

Sample Resource Interval Report

Member . . . : PMISTGA1 Model/Serial . . : 500-2142/10-1803D Main storage . . : 128.0 M Started . . . : 08/11/98 1
 Library . . : PM42CRT System name . . : ABSYSTEM Version/Release . . : 4/2.0 Stopped . . . : 08/11/98 1
 PROTOCOL = SDLC (SORT BY INTERVAL)

Itv End	IOP Name/Line	Line Speed	Line Util	Bytes Trnsmitd Per Sec	Total I Frames Trnsmitd	Percent I Frames Trnsmitd in Error	Bytes Recd Per Sec	Total Frames Recd	Percent Frames Received in Error	Pct Poll Retry Time	-- Conge Local Not Ready
CC09 (2609)											
13:14	PMSD1	19.2	4.6	49	322	0	62	2,909	0	0	0
13:19	PMSD1	19.2	4.4	47	301	0	60	2,943	0	0	0
13:24	PMSD1	19.2	5.4	56	399	0	73	2,889	0	0	0
13:29	PMSD1	19.2	4.0	52	159	0	45	3,029	0	0	0
13:34	PMSD1	19.2	4.1	54	131	0	43	3,074	0	0	0
13:38	PMSD1	19.2	5.9	81	206	0	61	2,762	0	0	0
CC13 (2609)											
13:14	PMSD2	19.2	4.6	63	160	0	49	3,044	0	0	0
13:19	PMSD2	19.2	4.4	60	151	0	47	3,072	0	0	0
13:24	PMSD2	19.2	5.4	73	200	0	56	3,055	0	0	0
13:29	PMSD2	19.2	4.0	45	226	0	52	2,971	0	0	0
13:34	PMSD2	19.2	4.1	43	263	0	55	2,966	0	0	0
13:38	PMSD2	19.2	5.9	61	411	0	80	2,587	0	0	0

X.25 Protocol

A sample of the report section for communications lines using the X.25 protocol is shown below.

Resource Interval Report
 Communications Line Detail

10/03/03

Perf data from 14:00 to 16:00 at 1 min

Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . : 56.4 GB Started . . . : 10/02/03 1
 Library . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release . . : 5/3.0 Stopped . . . : 10/02/03 1
 Partition ID : 003 Feature Code . . : 7427-2498-7427
 PROTOCOL = X.25 (SORT BY INTERVAL)

Itv End	IOP Name/Line	Line Speed	Transmit/Receive/Average Line Util	Bytes Trnsmitd Per Sec	Total I Frames Trnsmitd	Percent I Frames Trnsmitd In Error	Bytes Recd Per Sec	Total Frames Recd	Percent Frames Recd In Err	-----Res -----Pack
CMB07 (2742)										
14:00	DPNX25C	64.0	00/00/00	0	0	0	1	20	0	0
14:00	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:01	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
14:01	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:02	DPNX25C	64.0	00/00/00	0	0	0	1	20	0	0
14:02	DPNX25B	64.0	00/00/00	0	0	0	1	20	0	0
14:03	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
14:03	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:04	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
14:04	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:05	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
14:05	DPNX25B	64.0	00/00/00	0	0	0	1	20	0	0
14:06	DPNX25C	64.0	00/00/00	0	0	0	1	20	0	0
14:06	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:07	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
14:07	DPNX25B	64.0	00/00/00	0	0	0	1	20	0	0
14:08	DPNX25C	64.0	00/00/00	0	0	0	1	20	0	0
14:08	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:09	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
14:09	DPNX25B	64.0	00/00/00	0	0	0	1	19	0	0
14:10	DPNX25C	64.0	00/00/00	0	0	0	1	19	0	0
Itv End	-- End time of the data collection interval or time vary off occurred									

```

IOP Name/Line      -- IOP resource name and model number, Line ID
Line Speed         -- Line speed (1000 bits per second)
Transmit/Receive/  -- In full duplex mode, the percent of transmit line capacity
Average Line Util  -- used, the percent of receive line capacity used, and the
                   -- average of transmit/receive capacity
Bytes Trnsmitd     -- Average number of bytes transmitted per second
Per Sec
Total I Frames     -- Number of I frames transmitted
Percent I Frames   -- Percent I frames transmitted in error
Trnsmitd in Error
Bytes Recd Per Sec -- Average number of bytes received per second
Total Frames Recd -- Number of frames received
Percent Frames     -- Percent frames received in error
Recd in Error
Reset Packets Trnsmitd -- Number of reset packets transmitted
Reset Packets Recd  -- Number of reset packets received

```

TRLAN Protocol

A sample of the report section for communications lines using the token-ring local area network (TRLAN) protocol is shown below.

```

Resource Interval Report
Communications Line Detail
Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . . : 56.4 GB Started . . . : 10/02/0
Library . . . : PTLIBV5R3 System name . . . : ABSYSTEM Version/Release . . : 5/3.0 Stopped . . . : 10/02/0
Partition ID : 003 Feature Code . . : 7427-2498-7427
PROTOCOL = TRLAN/H (SORT BY INTERVAL)

```

Itv End	IOP Name/ Line	Line Speed	Line Util	I Frames Trnsmitd Per Sec	I Frames Recd Per Sec	----- Congestion -----				Frame Retry	Rsp Timer Ended	Remote LAN -- Pct Frames Trnsmitd	
						Local Not Ready	Seq Error	Remote Not Ready	Seq Error				
CMB07 (2744)													
14:00	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:01	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:02	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:03	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:04	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:05	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:06	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:07	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	10
14:08	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:09	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:10	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:11	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:12	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:13	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:14	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:15	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:16	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:17	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:18	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
14:19	NTRN64BA	16000.0	.0	0	0	0	0	0	0	0	0	100	9
Itv End	-- End time of the data collection interval or time vary off occurred												
IOP Name/Line	-- IOP resource name and model number, Line ID												
Line Speed	-- Line speed (1000 bits per second)												
Line Util	-- Percent of available line capacity used in this interval												
I Frames Trans /Sec	-- Number of I frames transmitted per second												
I Frames Recd /Sec	-- Number of I frames received per second												
Local Not Ready	-- Percent of the interval that the system could not process incoming data												
Local Seq Error	-- Percent of the interval that the system received frames out of sequence												
Remote Not Ready	-- Percent of the interval that the remote system or device could not process incoming data												
Remote Seq Error	-- Percent of the interval that the remote system or device received frames out of sequence												
Frame Retry	-- The number of attempts to retransmit a frame to a remote controller												
Rsp Timer Ended	-- The number of times the response timer ended waiting for a response from a remote device												

Remote LAN Frames Trans -- Percent of frames transmitted to a LAN connected to the locally attached LAN
 Remote LAN Frames Recd -- Percent of frames received from a LAN connected to the locally attached LAN
 MAC Errors -- The number of medium access control errors

ELAN Protocol

A sample of the report section for communications lines using the Ethernet local area network (ELAN) protocol is shown below.

Sample Report

```

                                Resource Interval Report                                10/03/03
                                Communications Line Detail
                                Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F      Main storage . . : 56.4 GB   Started . . . : 10/02/03 1
Library . . . : PTLIBV5R3 System name . . : ABSYSTEM          Version/Release . . : 5/3.0   Stopped . . . : 10/02/03 1
Partition ID  : 003      Feature Code . . : 7427-2498-7427
PROTOCOL = ELAN/H (SORT BY INTERVAL)
  
```

Itv End	IOP Name/ Line	Line Speed	Line Util	I Frames Trnsmitd Per Sec	I Frames Recd Per Sec	----- Congestion -----				Frame Retry
						---- Local Not Ready	---- Seq Error	---- Remote Not Ready	---- Seq Error	
CMB02 (268C)										
14:00	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:01	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:02	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:03	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:04	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:05	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:06	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:07	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:08	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:09	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:10	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:11	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:12	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:13	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:14	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:15	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:16	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:17	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:18	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:19	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:20	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:21	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
14:22	VGIBETH0	1000000.0	.0	0	0	0	0	0	0	0
Itv End	-- End time of the data collection interval or time vary off occurred									
IOP Name/Line	-- IOP resource name and model number, Line ID									
Line Speed	-- Line speed (1000 bits per second)									
Line Util	-- Percent of available line capacity used in this interval									
I Frames Trans /Sec	-- Number of I frames transmitted per second									
I Frames Recd /Sec	-- Number of I frames received per second									
Local Not Ready	-- Percent of the interval that the system could not process incoming data									
Local Seq Error	-- Percent of the interval that the system received frames out of sequence									
Remote Not Ready	-- Percent of the interval that the remote system or device could not process incoming data									
Remote Seq Error	-- Percent of the interval that the remote system or device received frames out of sequence									
Frame Retry	-- The number of attempts to retransmit a frame to a remote controller									
Rsp Timer Ended	-- The number of times the response timer ended waiting for a response from a remote device									

DDI Protocol

A sample of the report section for communications lines using the distributed data interface (DDI) protocol is shown below.

Sample Report

Resource Interval Report
Communications Line Detail

Sample Resource Interval Report

Member . . . : PMISTGA1 Model/Serial . . : 500-2142/10-1803D Main storage . . : 128.0 M Started . . . : 08/11/9
Library . . . : PM42CRT System name . . : ABSYSTEM Version/Release . . : 4/2.0 Stopped . . . : 08/11/9
PROTOCOL = DDI (SORT BY INTERVAL)

Itv End	IOP Name/ Line	Line Speed	Line Util	I Frames Trnsmitd Per Sec	I Frames Recd Per Sec	----- Congestion -----				Frame Retry	Rsp Timer Ended	MAC Errors
						-- Local Ready	-- Seq Error	-- Remote Ready	-- Seq Error			
CC01 (2618)												
13:14	PMDD1	100000.0	.0	3	3	0	0	0	0	0	0	0
13:19	PMDD1	100000.0	.0	0	0	0	0	0	0	0	0	0
13:24	PMDD1	100000.0	.0	2	2	0	0	0	0	0	0	0
13:29	PMDD1	100000.0	.0	0	0	0	0	0	0	0	0	0
13:34	PMDD1	100000.0	.0	1	1	0	0	0	0	0	0	0
13:38	PMDD1	100000.0	.0	0	0	0	0	0	0	0	0	0
CC02 (2618)												
13:14	PMDD2	100000.0	.0	3	3	0	0	0	0	0	0	0
13:19	PMDD2	100000.0	.0	0	0	0	0	0	0	0	0	0
13:24	PMDD2	100000.0	.0	2	2	0	0	0	0	0	0	0
13:29	PMDD2	100000.0	.0	0	0	0	0	0	0	0	0	0
13:34	PMDD2	100000.0	.0	1	1	0	0	0	0	0	0	0
13:38	PMDD2	100000.0	.0	0	0	0	0	0	0	0	0	0

FRLY Protocol

A sample of the report section for communications lines using the frame relay (FRLY) protocol is shown below.

Sample Report

Resource Interval Report
Communications Line Detail

Sample Resource Interval Report

Member . . . : PMISTGA1 Model/Serial . . : 500-2142/10-1803D Main storage . . : 128.0 M Started . . . : 08/11/9
Library . . . : PM42CRT System name . . : ABSYSTEM Version/Release . . : 4/2.0 Stopped . . . : 08/11/9
PROTOCOL = FRLY (SORT BY INTERVAL)

Itv End	IOP Name/ Line	Line Speed	Line Util	I Frames Trnsmitd Per Sec	I Frames Recd Per Sec	----- Congestion -----				Frame Retry	Rsp Timer Ended	MAC Errors
						-- Local Ready	-- Seq Error	-- Remote Ready	-- Seq Error			
CC10 (2666)												
13:14	PMFR1	56.0	.0	0	0	0	0	0	0	0	0	0
13:19	PMFR1	56.0	.0	0	0	0	0	0	0	0	0	0
13:24	PMFR1	56.0	.0	0	0	0	0	0	0	0	0	0
13:29	PMFR1	56.0	.0	0	0	0	0	0	0	0	0	0
13:34	PMFR1	56.0	.0	0	0	0	0	0	0	0	0	0
13:38	PMFR1	56.0	.0	0	0	0	0	0	0	0	0	0
CC11 (2666)												
13:14	PMFR2	56.0	.0	0	0	0	0	0	0	0	0	0
13:19	PMFR2	56.0	.0	0	0	0	0	0	0	0	0	0
13:24	PMFR2	56.0	.0	0	0	0	0	0	0	0	0	0
13:29	PMFR2	56.0	.0	0	0	0	0	0	0	0	0	0
13:34	PMFR2	56.0	.0	0	0	0	0	0	0	0	0	0
13:38	PMFR2	56.0	.0	0	0	0	0	0	0	0	0	0

ASYNCR Protocol

A sample of the report section for communications lines using the asynchronous (ASYNCR) protocol is shown below.

Note: A protocol data unit (PDU) for asynchronous communications is a variable-length unit of data that is ended by a protocol control character or by the size of the buffer.

Sample Report

Resource Interval Report 10/03/03
 Communications Line Detail
 Perf data from 14:00 to 16:00 at 1 min

Member . . . : Q275140000 Model/Serial . . : 890/10-3907F Main storage . . . : 56.4 GB Started . . . : 10/02/03 1
 Library . . . : PTLIBV5R3 System name . . : ABSYSTEM Version/Release . . : 5/3.0 Stopped . . . : 10/02/03 1
 Partition ID : 003 Feature Code . . : 7427-2498-7427
 PROTOCOL = ASYNC (SORT BY INTERVAL)

Itv End	IOP Name/Line	Line Speed	Line Util	Bytes Transmitted Per Sec	Bytes Received Per Sec	Total PDUs Received	Pct PDUs Received in Error
CMB11 (2805)							
14:00	FAXLINT14	115.2	.0	0	0	0	0
14:00	FAXLINT13	115.2	.0	0	0	0	0
14:00	FAXLINT12	115.2	.0	0	0	0	0
14:00	FAXLINT11	115.2	.0	0	0	0	0
14:01	FAXLINT14	115.2	.0	0	0	0	0
14:01	FAXLINT13	115.2	.0	0	0	0	0
14:01	FAXLINT12	115.2	.0	0	0	0	0
14:01	FAXLINT11	115.2	.0	0	0	0	0
14:02	FAXLINT14	115.2	.0	0	0	0	0
14:02	FAXLINT13	115.2	.0	0	0	0	0
14:02	FAXLINT12	115.2	.0	0	0	0	0
14:02	FAXLINT11	115.2	.0	0	0	0	0
14:03	FAXLINT14	115.2	.0	0	0	0	0
14:03	FAXLINT13	115.2	.0	0	0	0	0
14:03	FAXLINT12	115.2	.0	0	0	0	0
14:03	FAXLINT11	115.2	.0	0	0	0	0
14:04	FAXLINT14	115.2	.0	0	0	0	0
14:04	FAXLINT13	115.2	.0	0	0	0	0
14:04	FAXLINT12	115.2	.0	0	0	0	0
14:04	FAXLINT11	115.2	.0	0	0	0	0
14:05	FAXLINT14	115.2	.0	0	0	0	0
14:05	FAXLINT13	115.2	.0	0	0	0	0
14:05	FAXLINT12	115.2	.0	0	0	0	0
14:05	FAXLINT11	115.2	.0	0	0	0	0
14:06	FAXLINT14	115.2	.0	0	0	0	0

Itv End -- End time of the data collection interval or time vary off occurred
 IOP Name/Line -- IOP resource name and model number, Line ID
 Line Speed -- Line speed (1000 bits per second)
 Line Util -- Percent of available line capacity used in this interval
 Bytes Trans /Sec -- Average number of bytes transmitted per second
 Total PDUs Received -- Number of protocol data units received
 Pct PDUs Received in Error -- Percent of protocol data units received with errors

BSC Protocol

A sample of the report section for communications lines using the binary synchronous communications (BSC) protocol is shown below.

Sample Report

Resource Interval Report 09/18/98
 Communications Line Detail
 Sample Resource Interval Report

Member . . . : PMISTGA1 Model/Serial . . : 500-2142/10-1803D Main storage . . . : 128.0 M Started . . . : 08/11/98 1
 Library . . . : PM42CRT System name . . : ABSYSTEM Version/Release . . : 4/2.0 Stopped . . . : 08/11/98 1
 PROTOCOL = BSC (SORT BY INTERVAL)

Itv	IOP Name/Line	Line	Line	Bytes Transmitted	Total Data Characters	Pct Data Characters Transmitted	Bytes Received	Total Data Characters	Pct Data Characters Received
-----	---------------	------	------	-------------------	-----------------------	---------------------------------	----------------	-----------------------	------------------------------

End	Line	Speed	Util	Per Sec	Transmitted	in Error	Per Sec	Received	in Error
CC13 (2609)									
13:14	PMBS1	19.2	.9	7	2,360	0	13	4,124	0
13:14	PMBS2	19.2	.9	13	4,124	0	7	2,360	0
13:19	PMBS1	19.2	1.1	9	2,990	0	17	5,226	0
13:19	PMBS2	19.2	1.1	17	5,226	0	9	2,990	0
13:24	PMBS1	19.2	.9	8	2,568	0	15	4,488	0
13:24	PMBS2	19.2	.9	15	4,488	0	8	2,568	0
13:29	PMBS1	19.2	1.1	10	3,103	0	18	5,423	0
13:29	PMBS2	19.2	1.1	18	5,423	0	10	3,103	0
13:34	PMBS1	19.2	1.2	11	3,424	0	19	5,984	0
13:34	PMBS2	19.2	1.2	19	5,984	0	11	3,424	0
13:38	PMBS1	19.2	1.0	9	2,463	0	15	4,302	0
13:38	PMBS2	19.2	1.0	15	4,302	0	9	2,463	0

ISDN Network Interface

A sample of the report section for the integrated services digital network (ISDN) network interface is shown below.

Sample Report

Resource Interval Report										09/23/9	
Communications Line Detail											
Sample Resource Interval Report											
Member . . .	: ISDN	DATA	Model/Serial . .	: 500-2142/10-10DFD	Main storage . . .	: 320.0 M	Started . . .	: 08/14/9			
Library . . .	: ISDN	DATA	System name . . .	: ABSYSTEM	Version/Release . .	: 4/2.0	Stopped . . .	: 08/14/9			
PROTOCOL = ISDN NETWORK INTERFACE (SORT BY INTERVAL)											
IOP		--Outgoing--		---Incoming---		LAPD	LAPD Pct	LAPD	LAPD Pct	Loss of	Local
Name/		---Calls---		----Calls----		Total	Frames	Total	Frames	Frame	End Code
Itv	Network	Line	Pct	Pct	Frames	Trnsmitd	Frames	Frames	Recd	Alignment	Violation
End	Interface	Speed	Total	Retry	Total	Reject	Trnsmitd	Again	Recd	in Error	

CC05 (2605)											
13:35	X31N00	16.3	0	0	0	0	60	0	60	0	0
13:35	X31N01	16.3	0	0	0	0	60	0	60	0	0
13:40	X31N00	16.3	0	0	0	0	60	0	60	0	0
13:40	X31N01	16.3	0	0	0	0	60	0	60	0	0
13:45	X31N00	16.3	0	0	0	0	60	0	60	0	0
13:45	X31N01	16.3	0	0	0	0	60	0	60	0	0
Itv End -- End time of the data collection interval or time that vary off occurred											
IOP Name/ -- IOP resource name and model number, Network interface description											
Network Interface											
Line Speed -- Line speed (1000 bits per second)											
Outgoing Calls Total -- Number of outgoing call attempts											
Outgoing Calls -- Percent of outgoing calls that were rejected by the network											
Pct Retry											
Incoming Calls Total -- Number of incoming call attempts											
Incoming Calls -- Percent of incoming calls that were rejected											
Pct Reject											
LAPD Total Frames -- Number of frames transmitted (applies to D-channel only)											
Trnsmitd											
LAPD Pct Frames -- Percent frames re-transmitted due to error (applies to D-channel only)											
Trnsmitd Again											
LAPD Total Frames -- Number of frames received (applies to D-channel only)											
Recd											
LAPD Pct Frames -- Percent frames received in error (applies to D-channel only)											
Recd in Error											
Loss of Frame -- Number of times a time period equivalent to two 48 bit frames elapsed without detecting valid pairs of line code violations											
Alignment											
Local End Code -- Number of unintended code violations detected by the TE for frames received on the T interface											
Violation											
Collision Detect -- Number of times that a transmitted frame corrupted by another frame was detected											

Network Interface Maintenance Channel for ISDN

A sample of the report section for the network interface maintenance channel for the ISDN protocol is shown below.

Sample Report

```

Resource Interval Report
Communications Line Detail
User-Selected Report Title
11/10/95

Member . . . : MONDAY      Model/Serial . . : 200-2050/10-1500500 Main storage . . : 160.0 M Started . . . : 11/02/95 1
Library . . . : QPFRDATA   System name . . . : ABSYSTEM Version/Release . . : 3/ 6.0 Stopped . . . : 11/02/95 1
  
```

PROTOCOL = NWI MAINTENANCE CHANNEL (SORT BY INTERVAL)

Itv End	IOP Name/ Network Interface	Line Speed	Percent Errored Seconds	Percent Severely Errored Seconds	-----Detected Access----- ----Transmission Error--- In Out	Far End Code Violation
CC11 (2623)						
14:46	ISDNSS_A	16.3	50	36	734 83	32
15:01	ISDNSS_A	16.3	6	24	32 14	52
15:16	ISDNSS_A	16.3	0	0	0 0	0

IDLC Protocol

Two samples of the report section for communications lines using the ISDN data link control (IDLC) protocol are shown below. The second report indicates which B-channel the IDLC line was using during the interval.

Sample Reports

```

Resource Interval Report
Communications Line Detail
05/22/96

Member . . . : ECL        Model/Serial . . : 500-2142/10-10DFD Main storage . . : 320.0 M Started . . . : 04/15/96 1
Library . . . : PM37CT   System name . . . : ABSYSTEM Version/Release . . : 3/7.0 Stopped . . . : 04/15/96 1
PROTOCOL = IDLC (SORT BY INTERVAL)
  
```

Itv End	IOP Name/ Network Interface	Line Description	Line Speed	Transmit/ Receive/ Average Line Util	Bytes Trnsmitd Per Sec	---Frames--- -Transmitted- Total	Pct Err	Bytes Recd Per Sec	---Frames--- --Received--- Total	Pct Err	Receive CRC Errors	Aborts Recd	Sequence Error
CC05 (2605)													
11:43	ISDNA	IDLCA01	64.0	00/00/00	42	49	4	33	47	2	0	0	0
11:43	ISDNB	IDLCB01	64.0	00/00/00	2	1	0	0	0	0	0	0	0

```

Resource Interval Report
Communications Line Detail
05/22/96

Member . . . : ECL        Model/Serial . . : 500-2142/10-10DFD Main storage . . : 320.0 M Started . . . : 04/15/96 1
Library . . . : PM37CT   System name . . . : ABSYSTEM Version/Release . . : 3/7.0 Stopped . . . : 04/15/96 1
PROTOCOL = IDLC (SORT BY INTERVAL)
  
```

Itv End	IOP Name/ Network Interface	Line Description	Channel
CC05 (2605)			
11:43	ISDNA	IDLCA01	B1
11:43	ISDNB	IDLCB01	B1

Resource Interval Report - IOP Utilizations

» The IOP Utilizations section of the Resource Interval Report contains a combination of the following input/output processor (IOP) utilizations:

Disk IOP utilizations

Gives input/output processor (IOP) utilization for direct access storage devices (DASDs). Consistent Disk IOP utilization at or above the threshold value affects system performance and causes longer response times and/or less throughput.

Multifunction IOP utilizations

Gives input/output processor (IOP) utilization for DASD, communication, and local workstation devices. Consistent utilization at or above the threshold value affects system performance and causes longer response times and/or less throughput.

Communications IOP utilizations

Gives communications input/output processor (IOP) utilization.

Local work station IOP utilizations

Gives input/output processor (IOP) utilization for local workstation devices.

Sample Report

Note: The total for the I/O processor utilization oftentimes does not match the sum of the three columns (IOP Processor Util Comm, IOP Processor Util LWSC, and IOP Processor Util DASD). This mismatch is caused by the utilization of other small components, such as system time.

Resource Interval Report											10/03/00	
IOP Utilizations												
Perf data from 14:00 to 16:00 at 1 min												
Member	Q275140000	Model/Serial . . .	890/10-3907F	Main storage	56.4 GB	Started	10/02/00					
Library	PTLIBV5R3	System name	ABSYSTEM	Version/Release . . .	5/3.0	Stopped	10/02/00					
Partition ID . .	003	Feature Code	7427-2498-7427									
IOP Name/ (Model)	Itv End	Total	Comm	LWSC	DASD	DASD Ops Reads	per sec Writes	- KB per I/O - Read	Write	KBytes Transmitted IOP	Avail Loc Storage	
CMB05	(2843) 14:00	.4	.0	.0	.0					2	0	63,4
	14:05	.4	.0	.0	.0					3	0	63,4
	14:10	.4	.0	.0	.0					2	0	63,4
	14:15	.4	.0	.0	.0					2	0	63,4
	14:20	.4	.0	.0	.0					2	0	63,4
	14:25	.4	.0	.0	.0					2	0	63,4
	14:30	.4	.0	.0	.0					2	0	63,4
	14:35	.4	.0	.0	.0					2	0	63,4
	14:40	.4	.0	.0	.0					2	0	63,4
	14:45	.4	.0	.0	.0					3	0	63,4
	14:50	.4	.0	.0	.0					2	0	63,4
	14:55	.4	.0	.0	.0					2	0	63,4
	15:00	.4	.0	.0	.0					2	0	63,4
	15:05	.4	.0	.0	.0					2	0	63,4
	15:10	.4	.0	.0	.0					2	0	63,4
	15:15	.4	.0	.0	.0					2	0	63,4
	15:20	.4	.0	.0	.0					3	0	63,4
	15:25	.4	.0	.0	.0					2	0	63,4
	15:30	.4	.0	.0	.0					2	0	63,4
	15:35	.4	.0	.0	.0					2	0	63,4
	15:40	.4	.0	.0	.0					2	0	63,4
	15:45	.4	.0	.0	.0					2	0	63,4
	15:50	.4	.0	.0	.0					2	0	63,4
	15:55	.5	.0	.0	.0					2	0	63,4
	16:00	.5	.0	.0	.0					3	0	63,4
IOP Name/ (Model)		-- Input/Output processor resource name and model number of the attached device										
Itv End		-- Interval end time (hour and minute)										

```

IOP Processor Util Total -- Total utilization for IOP
IOP Processor Util Comm -- Utilization of IOP due to communications activity
IOP Processor Util LWSC -- Utilization of IOP due to local workstation activity
IOP Processor Util DASD -- Utilization of IOP due to DASD activity
DASD Ops per sec Reads -- Number of reads per second
DASD Ops per sec Writes -- Number of writes per second
K Per Read -- Average number of kilobytes (1024) per read operation
K Per Write -- Average number of kilobytes (1024) per write operation
IOP KBytes Transmitted -- Number of Kbytes transmitted from the IOP to the system across the bus
System KBytes Transmitted-- Number of Kbytes transmitted from the system to the IOP cross the bus
Avail Local Storage (K) -- Number of kilobytes (1024) of local storage that is free
Util 2 -- Utilization of co-processor

```



Resource Interval Report - Local Work Station Response Times

» The local work station response times section provides the following for each data collection interval:

- Local work station IOP utilization
- Number of work stations active on each controller
- Range of response times for the work stations
- Average response time for the work stations

The values for the response time intervals may vary depending on the values that you use.

Sample Report

```

                                Resource Interval Report                                10/03/03
                                Local Work Station Response Times
                                Perf data from 14:00 to 16:00 at 1 min
Member . . . : Q275140000 Model/Serial . . : 890/10-3907F      Main storage . . : 56.4 GB  Started . . . : 10/02/03 1
Library . . . : PTLIBV5R3 System name . . : ABSYSTEM        Version/Release . . : 5/3.0  Stopped . . . : 10/02/03 1
Partition ID  : 003      Feature Code . . : 7427-2498-7427
IOP Name/      Work Station  Itv      Active
(Model)        Controller    End      Util  Wrk Stn  0.0- .0    .0- .0    .0- .0    .0- .0    > .0
-----
Total Responses:
IOP Name/      -- Input/Output processor resource name and
(Model)        -- model number of the attached device
Work Station Controller -- Work station controller description name
Itv End       -- Interval end time (hour and minute)
Util         -- Percentage of utilization for each IOP
Active Wrk Stn -- Number of work stations with activity
0.0- .0      -- Number of response times between 0.0 and .0 seconds
.0- .0       -- Number of response times between .0 and .0 seconds
.0- .0       -- Number of response times between .0 and .0 seconds
.0- .0       -- Number of response times between .0 and .0 seconds
> .0        -- Number of response times > .0 seconds
Rsp Time     -- Average external response time (in seconds) for
              work stations on this controller

```



Resource Interval Report - Remote Work Station Response Times

The remote work station response times section gives the following for each data collection interval:

- Number of work stations active on each controller
- Range of response times for the work stations
- Average response time for the work stations

The values for the response time intervals may vary depending on the values that you use.

Note: This section appears only if a 5494 remote controller is included in the data collection. Collection Services does not generate data for remote work stations (file QAPMRWS). This section applies only to performance data generated by the STRPFRMON command prior to V5R1 and converted in V5R1 with the Convert Performance Data (CVTPFRDTA) command.

Sample Report

```

Resource Interval Report
Remote Work Station Response Times
Sample Resource Interval Report
Member . . . : TEST20      Model/Serial . . : 500-2142/10-317CD  Main storage . . : 128.0 M  Started . . . : 09/19/99
Library . . : RWSDATA    System name . . : ABSYSTEM  Version/Release . . : 4/2.0  Stopped . . . : 09/19/99
IOP Name/   Work Station  Itv      Active
(Model)     Controller   End      Wrk Stn
-----
CC02      ( )      ABSYSTEM 16:52      1      162
          16:57      1      174
          17:02      1      195
          17:07      2      314
-----
Total Responses:
                                845      0      0      0
IOP Name/   -- Input/Output processor resource name and
(Model)     -- model number of the attached device
Work Station Controller -- Work station controller description name
Itv End     -- Interval end time (hour and minute)
Active Wrk Stn -- Number of work stations with activity
0.0- 1.0   -- Number of response times between 0.0 and 1.0 seconds
1.0- 2.0   -- Number of response times between 1.0 and 2.0 seconds
2.0- 4.0   -- Number of response times between 2.0 and 4.0 seconds
4.0- 8.0   -- Number of response times between 4.0 and 8.0 seconds
> 8.0     -- Number of response times > 8.0 seconds
Rsp Time   -- Average external response time (in seconds) for
           work stations on this controller

```

Performance Report header

Each report, regardless of the type or section, contains information in the header of the report that identifies characteristics of the data:

Report title

Identifies the type of performance report on the first line. The second line identifies the section of the report.

Current date and time

Indicates the date and time the report was printed.

Report page number

Identifies the page of the report.

Perf data from *time to time at interval*

Indicates the time period over which the data was collected and at what interval.

User-selected report title

Indicates the name assigned to the report by a user.

Member

Indicates the performance data member used in the report. This name corresponds to the name used on the MBR parameter of the Create Performance data (CRTTPFRDTA) command.

Library

Identifies the library where the performance data used for a particular report is located.

Model/Serial

Indicates the model and serial number of the server on which the performance data for the report was collected. The serial number can be 10 characters.

Main storage size

Indicates the size of the main storage on the server on which the performance data was collected.

Started

Indicates the date and time Collection Services started collecting performance data for the report. Depending on whether or not you select specific intervals or a specific starting time, you could see the following:

- If you specify no intervals at which to run the report, the start date and time is the date and time at which the data was collected.
- If you specify specific intervals at which to run the report, the start date and time is the date and time at which the data was collected.

Note: For the System Report only, you should consult the Report Selection Criteria section to find out which intervals were selected.

Stopped

The date and time Collection Services stopped collecting performance data for this report. Depending on whether or not you select specific intervals or a specific ending time, you could see the following:

- If you specify no intervals at which to run the report, the stop date and time is the date and time at which the data was collected.
- If you specify specific intervals at which to run the report, the stop date and time is the date and time at which the data was collected.

Note: For the System Report only, you should consult the Report Selection Criteria section to find out which intervals were selected.

System name

Indicates the name of the server on which the performance data was collected for the report.

Version/Release level

x/ x.0 indicates which version and release level of the operating system the server was running at the time the performance data was collected.

Partition ID

Identifies the ID of the partition on which the collection was run. This change accommodates the logical partition implementation. Here are some of the values that you might see:

- If your system is not partitioned (which is the default) or you used Collection Services to collect and print the performance data for the primary partition of a logical partition system, this value is 00.
- If you collected data with the Start Performance Monitor (STRPFRMON) command in a previous release, the value for the partition ID is 00.
- If you used Collection Services to collect and print the performance data in any secondary partition of a logical partition system, this value is the same as the partition ID that is shown on the Work with System Partitions display under the Start Service Tools (STRSST) command.

Feature Code

Identifies the Interactive feature code value for the server.

» Int Threshold

Indicates the percent of the total system CPU for interactive work that was used during the collection period. The value is obtained from the QAPMCONF file (GKEY IT) and reflects the configuration metric obtained when the collection started. You should be aware that this value may change for each interval within a collection period due to dynamic changes in logical partition configuration. «

» Virtual Processors

The number of virtual processors configured for the partition. The value is obtained from the QAPMCONF file (GKEY 13) and reflects the configuration metric obtained when the collection

started. You should be aware that this value may change for each interval within a collection period due to dynamic changes in logical partition configuration. <<

» Processor Units

The number of processor units allocated to the partition. The value is obtained from the QAPMCONF file (GKEY PU) and reflects the configuration metric obtained when the collection started. You should be aware that this value may change for each interval within a collection period due to dynamic changes in logical partition configuration.

Processing units are a unit of measure for shared processing power across one or more virtual processors. One shared processing unit on one virtual processor accomplishes approximately the same work as one dedicated processor. One shared processing unit on two virtual processors accomplishes approximately half the work of two dedicated processors. <<

Column headings

Each report also has several columns that make up the information of the report. Some are specific to a particular report and others are consistent between reports. For short descriptions of these columns, see the “Performance Report columns” page.

Performance Report columns

>8.0 (Component) The number of times the response time was greater than 8 seconds.

» %Write Cache Overruns

(Component) Percent of Write Cache Overruns during the collection interval. <<

———— (pgmname)

(Transaction) The transaction totals record. For example, ————— QUYLIST,. This report line occurs each time the job has an active-to-wait transaction. Totals are created for Rsp* (response time), CPU Secs, and I/O counts for the transaction.

A-I Wait /Tns

(Transaction) The average time, in seconds, of active-to-ineligible wait time per transaction. If this value is high, it may be because the time-slice value is set too low for many of the interactive jobs. Consider increasing the time slice-value.

Aborts Recd

(Resource Interval) The number of frames received that contained HDLC abort indicators. This indicates that the remote equipment ended frames before they were complete.

Act Jobs

(Job Interval) The number of selected jobs (interactive or noninteractive, depending on the report section) that were active during the interval.

Act Level

(Component) Initial pool activity level.

Act Lvl

(System, Pool Interval) Activity level. For the Pool Activity section of the Pool Interval Report, the activity level of the pool during the interval. For the Storage Pool Utilization section of the System Report, the activity level at the time of the first sample interval.

Act-Inel

(System, Component) Average number of active-to-ineligible job state transitions per minute.

Act-Wait

(System, Component) Number of transitions per minute from active state to wait state by processes assigned to this pool.

Active Devices

(System) Average number of active devices on the line.

Active display stations (local or remote)

(System) The number of local or remote display stations entering transactions during the measurement period.

Active Jobs

(Transaction) The number of interactive jobs that were active during the interval.

Active Jobs Per Interval

(System) Average number of jobs of this type that were active per sample interval.

Active K/T /Tns

(Transaction) An average think time and keying time (or the delay time between the end of one transaction and the start of the next transaction), in seconds, for the active work stations (described under Est of AWS). Active K/T /TNS delay time differs from Key/Think /TNS delay time in that any delay time greater than 600 seconds has been rounded to 600 seconds. This technique is used to reduce the effect of very casual users (those who may do intermittent work or leave their work stations for long periods of time) on the estimate of active work stations.

Active Wrk Stn

(Resource Interval) The number of work stations with activity.

Active/Rsp

(Transaction) The time the job spends (either waiting or active) during transaction processing, while it holds an activity level.

Activity level

(System) The sum of activity levels for all interactive pools that had interactive job activity running in them.

Activity Level Time

(Transaction) A breakdown of the transaction time spent *ACTIVE*, waiting on a *SHORT WAIT*, and waiting on a *SEIZE/CFT* (seize conflict). The *SHORT WAIT* and *SEIZE CFT* time are included under *ACTIVITY LEVEL TIME*, because the activity-level slot is not given up during these times. Note that the seize conflict time is included in the active time, not added to it to get transaction/response time, as is the case for waiting time.

Arith Ovrflw

(Component, Job Interval) The number of arithmetic overflow exceptions that occurred for the selected interactive jobs during the interval.

ASP ID

(System, Resource Interval) Auxiliary storage pool identifier.

» ASP Rsc Name

(System, Resource) Identifies the ASP resource name to which the disk unit was allocated at collection time. «

Async (System, Component, Transaction, Job Interval) The number of asynchronous disk I/O operations started by the selected interactive jobs during the interval. The job that starts the I/O operation may continue processing without having to wait for the I/O operation to complete. The I/O operation is completed by a background system test.

Async DIO /Tns

(Transaction) The sum of the averages of the asynchronous DB READ, DB WRITE, NDB READ, and NDB WRITE requests (the average number of asynchronous I/O requests per transaction for the job).

Async Disk I/O

(System, Component, Transaction) Number of asynchronous disk input/output operations per transaction.

Async Disk I/O per Second

(Component) Average asynchronous disk I/O operations per second.

Async Disk I/O Requests

(Transaction) The total number of asynchronous disk I/O requests for the given combination of priority, job type, and pool.

Async I/O /Sec

(Job Interval) The average number of asynchronous disk I/O operations started per second by the job during the interval. This is calculated by dividing the asynchronous disk I/O count by the elapsed time.

Async I/O Per Second

(Job Interval) The average number of asynchronous disk I/O operations started per second by the selected noninteractive jobs during the interval.

Async Max

(Transaction) Listed under Average DIO/Transaction, the maximum number of asynchronous DBR, NDBR, and WRT I/O requests encountered for any single transaction by that job. If the job is not an interactive or autostart job type, the total disk I/O for the job is listed here.

Async Sum

(Transaction) Listed under Average DIO/Transaction, the sum of the averages of the asynchronous DBR, NDBR, and WRT requests (the average number of asynchronous I/O requests per transaction for the job).

Asynchronous DBR

(System, Job Interval, Pool Interval) The average number of asynchronous database read operations on the disk per transaction for the job during the intervals. This is calculated by dividing the asynchronous database read count by the transactions processed. This field is not printed if the jobs in the system did not process any transactions. For the Resource Utilization section of the System Report, it is the number of asynchronous database read operations per second.

Note: The asynchronous I/O operations are performed by system asynchronous I/O tasks.

Asynchronous DBW

(System, Job Interval) The average number of asynchronous database write operations on the disk per transaction for the selected jobs during the interval. This is calculated by dividing the asynchronous database write count by the transactions processed. This field is not printed if the jobs in the system did not process any transactions. For the Resource Utilization section of the System Report, it is the number of asynchronous database read operations per second.

Note: The asynchronous I/O operations are performed by system asynchronous I/O tasks.

Asynchronous disk I/O per transaction

(System) The average number of asynchronous physical disk I/O operations per interactive transaction.

Asynchronous NDBR

(System, Job Interval, Pool Interval) The average number of asynchronous nondatabase read operations per transaction for the jobs in the system during the interval. This is calculated from the asynchronous nondatabase read count divided by the transactions processed. This field is not printed if the jobs in the system did not process any transactions. For the Resource Utilization section of the System Report, it is the asynchronous nondatabase read operations per second.

Note: The asynchronous I/O operations are performed by system asynchronous I/O tasks.

Asynchronous NDBW

(System, Job Interval, Pool Interval) The average number of asynchronous nondatabase write

operations per transaction for the jobs in the system during the interval. This is calculated from the asynchronous nondatabase write count divided by the transactions processed. This field is not printed if the jobs in the system did not process any transactions. For the Resource Utilization section of the System Report, it is the number of asynchronous nondatabase write operations per second.

Note: The asynchronous I/O operations are performed by system asynchronous I/O tasks.

Avail Local Storage (K)

(Resource Interval) The number of kilobytes of free local storage in the IOP.

Available Storage

(Component) Available local storage (in bytes). The average number of bytes of available main storage in the IOP. The free local storage is probably not joined because it has broken into small pieces.

Average

(Transaction) The average value of the item described in the column for all transactions.

Average Disk Activity Per Hour

(Component) See Disk Arm Seek Distance

Average DIO/Transaction

(Transaction) Seven columns of information about physical disk I/O counts. Physical I/O contrasts with logical I/O shown elsewhere in these reports. A logical I/O is a request sent at the program level that might result in an access to auxiliary storage (DASD). A physical I/O refers to those requests that actually result in access to auxiliary storage.

- Synchronous DBR
- Synchronous NDBR
- Synchronous Wrt
- Synchronous Sum
- Synchronous Max
- Async Sum
- Async Max

Average K per I/O

(Resource Interval) The average number of kilobytes transferred during each disk read or write operation.

Average Phys I/O /Sec

(Resource Interval) The average number of physical disk read and write operations per second made on all disks on the system.

Average Reads/Sec

(Resource Interval) The average number of physical disk read operations per second made on all disks on the system.

Average Response

(System) Average response time (in seconds) for interactive transactions. The Total/Average interactive response time does not include transactions for DDM server jobs.

Average Response Time

(System) Average disk response time per I/O operation.

Average Response Time (seconds)

(System) The average interactive response time.

Average Service Time

(System) Average disk service time per I/O operation. This is the amount of time a request would take if there were no contention.

Average Wait Time

(System) Average disk wait time per I/O operation. Normally due to contention.

Average Writes/Sec

(Resource Interval) The average number of physical disk write operations per second made on all disks on the system.

Avg CPU /Tns

(Transaction) The average number of processing unit seconds per transaction that fell in the given category.

Avg K/T /Tns

(Transaction) The average think time and keying time (or the delay time between transaction boundaries), in seconds, for the interactive jobs.

Avg Length

(Lock) The average number of milliseconds a lock or seize was held.

Avg Rsp (Sec)

(Transaction) The average transaction response time in seconds.

Avg Rsp /Tns

(Transaction) The average response per transaction (in seconds) for the transactions that fell into the given category.

Avg Rsp Time

(Component) Average transaction response time.

Avg Sec Locks

(Transaction) The average length of a lock in seconds attributed to interactive or noninteractive waiters.

Avg Sec Seizes

(Transaction) The average length of a seize in seconds attributed to interactive or noninteractive waiters.

Avg Time per Service

(Resource Interval) The amount of time a disk arm uses to process a given request.

Avg Util

(System, Resource Interval) On the Disk Utilization Summary of the Resource Report, the average percentage of available time that disks were busy. It is a composite average for all disks on the system. On the Communications Summary of the System Report, the average percentage of line capacity used during the measured time interval.

Batch asynchronous I/O per second

(System) The average number of asynchronous physical disk I/O operations per second of batch processing.

Batch CPU seconds per I/O

(System) The average number of system processing unit seconds used by all batch jobs for each I/O performed by a batch job.

Batch CPU Utilization

(Component) Percentage of available CPU time used by the following types of jobs:

- Batch
- Autostart
- Evoke

- SCPF (Start CPF), spool reader/writer

Note: For a multiple-processor system, this is the average use across all processors.

Batch impact factor

(System) Batch workload adjustment for modeling purposes.

Batch permanent writes per second

(System) The average number of permanent write operations per second of batch processing.

Batch synchronous I/O per second

(System) The average number of synchronous physical disk I/O operations per second of batch processing.

BCPU / Synchronous DIO

(Transaction) The average number of batch processor unit seconds per synchronous disk I/O operation.

Bin (Transaction) The number of binary overflow exceptions.

Binary Overflow

(Component) Number of binary overflows per second.

BMPL - Cur and Inl

(Transaction) The number of jobs currently in the activity level (beginning current multiprogramming level), and the number of jobs on the ineligible queue (beginning ineligible multiprogramming level) for the storage pool that the job ran in when the job left the wait state (the beginning of the transaction).

Note: Multiprogramming level (MPL) is used interchangeably with activity level.

» **Bundle Wait Count**

(Component) Total number of times the tasks and jobs waited for journal bundles to be written to disk. «

» **Bundle Wait Pct**

(Component) Percentage of time (relative to the interval elapsed time) spent waiting for journal bundles to be written to disk. «

Bundle Writes System

(Component) Number of bundle writes to internal system journals. A bundle write is a group of journal entries which are deposited together by the system.

Bundle Writes User

(Component) Number of bundle writes to user-created journals. A bundle write is a group of journal entries which are deposited together by the system.

Bytes per Second Received

(System) Average number of bytes received per second.

Bytes per Second Transmitted

(System) Average number of bytes transmitted per second.

Bytes Recd per Sec

(Resource Interval) The average number of bytes received per second.

Bytes Trnsmitd per Sec

(Resource Interval) The average number of bytes transmitted per second.

Category

(Transaction) A group of transactions categorized together. In the Analysis by Interactive Transaction Category, the transactions are categorized by the processing unit model. The

boundary values that are used to separate the transactions are given in the *Avg CPU /Tns* column. For the Analysis by Interactive Response Time, they are categorized by their response time. For the Analysis by Interactive Key/Think Time, they are categorized by their key/think time.

Cache Hit Statistics

(Component) Statistics data about use of cache including:

- The percent of Device Cache Read Hit for each arm.
- The percent of Controller Cache Read Hit for each arm.
- The percent of efficiency of write cache

Device read

Device Read is the number of Device Cache Read Hits (DSDCRH) divided by number of Device Read Operations (DSDROP), expressed as a percent

Controller read

Controller Read is the number Controller Cache Read Hits (DSCCRH) divided by number of Read Commands (DSRDS), expressed as a percent.

Write efficiency

Write efficiency is the difference between Write Commands (DSWRTS) and Device Write Operations (DSDWOP) divided by Write Commands (DSWRTS), expressed as a percent.

EACS Read

The percent of read hits by the Extended Adaptive Cache Simulator.

EACS Resp

The percent of response time improvement by the Extended Adaptive Cache Simulator.

Channel

(Resource Interval) The B-channel used by the IDLC line. (special condition)

Cmn (Job Interval) The number of communications I/O operations performed by the selected interactive jobs during the interval.

Cmn I/O

(Component) Number of communications operations (Get, Put).

Cmn I/O Per Second

(Job Interval) The average number of communications I/O operations performed per second by the selected noninteractive jobs during the interval.

Collision Detect

(Resource Interval) The number of times that the terminal equipment (TE) detected that its transmitted frame had been corrupted by another TE attempting to use the same bus.

» Commit Ops

(Component) Commit operations performed. Includes application and system-provided referential integrity commits. «

Communications I/O Count

(System) Number of communications I/O operations.

Communications I/O Get

(System) Number of communication get operations per transaction.

Communications I/O Put

(System) Number of communication put operations per transaction.

Communications Lines

(System, Component, Job Interval, Pool Interval) For the Report Selection Criteria, the list of communications lines selected to be included (SLTLINE parameter) or excluded (OMTLIN parameter). These are the communications line names you specify.

Control Units

(System, Component, Job Interval, Pool Interval) The list of control units selected to be included (SLTCTL parameter) or excluded (OMTCTL parameter). These are the controller names you specify.

Count (Transaction, Lock) The number of occurrences of the item in the column. For example, in a lock report, it is the number of locks or seizes that occurred.

CPU (Transaction) The total processing unit seconds used by the jobs with a given priority.

CPU /Tns

(Transaction, Job Interval) The amount of available processing unit time per transaction in seconds.

CPU Model

(System) The processing unit model number.

CPU per I/O Async

(System) CPU use per asynchronous I/O.

CPU per I/O Sync

(System) CPU use per synchronous I/O.

CPU per Logical I/O

(System) Processing unit time used for each logical disk I/O operation.

CPU QM

(Transaction) The simple processing unit queuing multiplier.

CPU Sec

(Transaction) The processing unit time used by the job in this state.

CPU Sec /Sync DIO

(Transaction) The ratio of CPU seconds divided by synchronous disk I/O requests for each type of job.

CPU Sec Avg and Max

(Transaction) The average processing unit time per transaction for the job and the largest processing unit time used for a transaction in the job. If the job is not an interactive or autostart job type, then only the total processing unit time for the job is listed under the MAX column heading.

CPU Sec per Tns

(Transaction) The processing unit time per transaction.

CPU Seconds

(System, Transaction, Component) Average processing unit seconds used per transaction. For System Summary Data, it is the total available processing unit time used by the jobs during the trace period. For Priority-Jobtype-Pool Statistics, it is the total processing unit seconds used by the jobs with a given combination of priority, job type, and pool. For Batch Job Analysis, it is the amount of available processor unit time used by the job in seconds. For Concurrent Batch Job Statistics, it is the amount of available processor unit time used by the jobs in the job set in seconds.

CPU seconds per transaction

(System) The average processing unit seconds per transaction.

CPU Util

(System, Component, Transaction, Job Interval, Pool Interval, Batch Job Trace) Percentage of available processing unit time used. For multiple-processor systems, this is the total utilization divided by the number of processors.

CPU Util per Transaction

(Component) The result of the CPU Utilization divided by the total number of transactions for the job.

CPU Utilization (Batch)

The percentage of available CPU time that is used by batch jobs. This is the average of all processors.

CPU Utilization (Interactive)

The percentage of available CPU time that is used by interactive jobs. This is the average of all processors.

CPU Utilization (Total)

The percentage of available CPU time that is used by interactive and batch jobs. This is the average of all processors.

CPU/Async I/O

(Job Interval) The average number of milliseconds of processing unit time taken for each asynchronous disk I/O operation. This is calculated by dividing the milliseconds of the processing unit time the job used by the asynchronous disk I/O count.

CPU/Sync I/O

(Job Interval) The average number of milliseconds of processing unit time taken for each synchronous disk I/O operation. This is calculated from the milliseconds of the processing unit time used by the job divided by the synchronous disk I/O count.

CPU/Tns

(Transaction) The average number of processing seconds per transaction for the job during the interval. This is calculated from the amount of processing unit time used divided by the number of transactions processed.

Cpu/Tns (Sec)

(Transaction) The number of processing unit seconds per transaction.

Ctl (Component) Controller identifier.

Cum CPU Util

(Transaction) The cumulative percentage of available processing unit time used by the transactions that have an average response time per transaction equal to or less than the given category. For example, in CPU by Priority for All Jobs for Total Trace Period (System Summary Data), it is the unit time used by the jobs with a priority higher or equal to the given priority.

Cum Pct Tns

(Transaction) Cumulative CPU percent per transaction. For system summary data, it is the cumulative CPU percentage of all transactions that have an average response time per transaction equal to or less than the given category. For Interactive Program Transactions Statistics, it is the cumulative CPU percentage of all transactions through the listed program. For Job Statistics section, it is the cumulative CPU percentage of total transactions through the listed job. For Interactive Program Statistics section, it is the cumulative CPU percentage of all transactions through the listed program.

Cum Util

(System) Cumulative CPU use (a running total).

Note: This is taken from the individual jobs and may differ slightly from the total processing unit use on the workload page.

Cur Inl MPL

(Transaction) The number of jobs waiting for an activity level (ineligible) in the storage pool.

Cur MPL

(Transaction) The number of jobs holding an activity level in the storage pool.

» Current User

(Job) The user under which the job was running at the end of each interval. «

DASD Ops/Sec

(Component) Disk operations per second.

DASD Ops Per Sec Reads

(Resource) Number of reads per second

DASD Ops Per Sec Writes

(Resource) Number of writes per second

Datagrams Received

(Component) The total number of input datagrams received from interfaces. This number includes those that were received in error.

DB Cpb Util

(Component) The percentage of database capability that is used to perform database processing.

DB Fault

(System, Component) Average number of database faults per second.

DB Pages

(System, Component) Average number of database pages read per second.

DB Read

(Transaction) When listed in Physical I/O Counts column, it is the number of database read requests while the job was in that state. When listed in the Sync Disk I/O Rqs/Tns column, it is the average number of synchronous database read requests per transaction.

DB Write

(Transaction) When listed in the Sync Disk I/O Rqs/Tns column, it is the average number of synchronous database write requests per transaction.

DB Wrt

(Transaction) When listed in the Physical I/O Counts column, it is the number of database write requests while the job was in that state. When listed in the Synchronous Disk I/O Counts column, it is the number of synchronous database write requests per transaction.

DDM I/O

(Component, Job Interval) The number of logical database I/O operations for a distributed data management (DDM) server job.

DDM Svr Wait /Tns

(Transaction) The average time, in seconds, that a source distributed data management (DDM) server job spent waiting for the target system to respond to a request for data per transaction. This value includes line time and time spent by the target system responding to the request for data.

Dec (Transaction) The number of decimal overflow exceptions.

Decimal Data

(Component) Data exception count per second. A data exception occurs when data that is not valid is detected by arithmetic instructions. Examples are signs or digit codes that are not valid in decimal instructions, or an insufficient number of farthest left zeros in multiply instructions.

» Decommit Ops

(Component) Decommit operations performed. Includes application and system-provided referential integrity decommits. «

Decimal Overflow

(Component) Number of decimal overflows per second.

Description

(Component) More detailed description of the exception type.

Detected Access Transmission Error (DTSE) In

(Resource Interval) The number of times the network termination 1 (NT1) end point notified the terminal equipment (TE) of an error in data crossing the ISDN U interface from the line transmission termination (LT) to the NT1 end point. The NT1 end point reports the errors to the TE through the maintenance channel S1.

Detected Access Transmission Error (DTSE) Out

(Resource Interval) The number of times the network termination 1 (NT1) end point notified the terminal equipment (TE) of an error in data crossing the ISDN U interface from the NT1 end point to the LT. The NT1 end point reports the errors to the TE through the maintenance channel S1.

Device

(Component) Device identifier.

DIO/Sec Async

(System) Number of asynchronous I/O operations per second.

DIO/Sec Sync

(System) Number of synchronous I/O operations per second.

Disk Arm Seek Distance

(Component) Average seek distance distributions per hour:

0	Number of zero seeks
1/12	Number of seeks between 0 and 1/12 of the disk
1/6	Number of seeks between 1/12 and 1/6 of the disk
1/3	Number of seeks between 1/6 and 1/3 of the disk
2/3	Number of seeks between 1/3 and 2/3 of the disk
>2/3	Number of seeks greater than 2/3 of the disk

Disk Arms

(System) The number of disk arms for this IOP.

Disk Capacity

(Component) Average amount of disk space used or available.

MB Millions of bytes available on the disk.

Percent Percent of space available on the disk.

Disk Controllers

(System) The number of disk storage controllers for this IOP.

Disk Feature

(System) The type of disk (9332, 9335, and so on).

Disk I/O Async

(System, Component) Total number of asynchronous disk I/O operations.

Disk I/O Logical

(Component) The number of logical disk operations, such as gets and puts.

Disk I/O per Second

(System) Average number of physical disk I/O operations per second.

Disk I/O Reads /Sec

(Resource Interval) The average number of disk read operations per second by the disk IOP.

Disk I/O Requests

(Transaction) The total number of synchronous and asynchronous disk I/O requests issued by the jobs during the trace period.

Disk I/O Sync

(System, Component) Total number of synchronous disk I/O operations.

Disk I/O Writes /Sec

(Resource Interval) The average number of disk write operations per second by the disk IOP.

Disk IOPs

(System) The number of disk IOP controllers.

Disk mirroring

(System) Indicates whether disk mirroring is active.

Disk Space Used

(Resource Interval) The total disk space used in millions of bytes for the entire system.

Disk transfer size (KB)

(System) The average number of kilobytes transferred per disk operation.

Disk utilization

(System) The fraction of the time interval that the disk arms were performing I/O operations.

Dsk CPU Util

(System, Resource Interval) The percentage of CPU used by the disk unit.

Dtgm Req Transm Dscrd

(Component) The percentage of IP datagrams that are discarded because of the following reasons:

- No route was found to transmit the datagrams to their destination.
- Lack of buffer space.

Dtgm Req for Transm Tot

(Component) The total number of IP datagrams that local IP user-protocols supplied to IP in requests for transmission.

Elapsed Seconds

(Transaction, Component) The elapsed time in seconds. For the Batch Job Analysis section of the Transaction Report, it is the number of seconds elapsed from when the job started to when the job ended. For the Concurrent Batch Job Statistics section of the Transaction Report, it is the total elapsed time of all jobs in that job set.

Elapsed Time

(Job Interval) The amount of time (minutes and seconds) for which the job existed during the interval. This is the same as the interval length unless the job started or ended during the interval, in which case it is less.

Elapsed Time—Seconds

(Transaction) Shows the time spent by the job, in the following columns:

Long Wait

Elapsed times in the state (such as waiting for the next transaction or lock-wait time).

Active/Rsp

During transaction processing, the time the job spends (either waiting or active) while it holds an activity level. At the end of a transaction (on the transaction totals line), this is the time the job spent processing the transaction in an activity level, for long waits caused by locks, and in the ineligible state.

Inel Wait

The time the job spent in the ineligible wait state waiting for an activity level.

EM3270 Wait /Tns

(Transaction) The average, in seconds, of the time spent waiting on the host system communications for Systems Network Architecture (SNA) and binary synchronous communications (BSC) 3270DE per transaction. Program logic is required to determine if the emulation program is communicating with the display or the host processing unit. Because there are requirements on event-wait processing, not all transition combinations can be detected.

EORn (Transaction) Listed in the Wait Code column, End of response time for transaction n. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

EOTn (Transaction) Listed in the Wait Code column, End of transaction for transaction for type n. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

Estimated Exposr AP Not Jrnld

(Component) System-estimated access path recovery time exposure in minutes if no access paths were being journaled by the system.

Estimated Exposr Curr System

(Component) System-estimated access path recovery time exposure in minutes.

Est Of AWS

(Transaction) An estimate of the number of active work stations for the trace period or interval. Any delay time greater than 600 seconds has been rounded to 600 seconds. This technique is used to reduce the effect of very casual users (those who may do intermittent work or leave their work stations for long periods of time) on the estimate of active work stations.

Event Wait /Tns

(Transaction) The average time, in seconds, of the event-wait time per transaction. Often requests made by a job that runs on the system are made to asynchronous jobs. These asynchronous jobs use an event to signal completion of the request back to the requester. The event-wait time is the time the requesting job waits for such a signal.

EVT (Transaction) Listed in the Wait Code column, Event Wait. This is a long wait that occurs when waiting on a message queue.

Exception Type

(Component) Type of program exception that results from the internal microprogram instructions being run in internal microprogram instructions procedure. Because these exceptions are monitored at a low level within the system, it is difficult to associate these exceptions with specific end-user operations. The counts are meaningful when the processing unit time required to process them affects system performance. A variation in the counts may indicate a system change that could affect performance. For example, a large variation in seize or lock counts may indicate a job scheduling problem or indicate that contention exists between an old application and a new one that uses the same resources.

Note: To see the seize and lock counts, you should collect the trace data by using the Start Performance Trace (STRPFRTTC) command. Run the Print Transaction Report (PRTTNSRPT) to list the objects and jobs that are holding the locks.

Exceptional wait

(System) The average exceptional wait time, in seconds, per transaction. An *exceptional wait* is that portion of internal response time that cannot be attributed to the use of the processor and disk. An exceptional wait is caused by contention for internal resources of the system, for example, waiting for a lock on a database record.

Constant

The portion of exceptional wait time held constant as throughput increases.

Variable

The portion of exceptional wait time that varies as throughput increases.

Excp (Component, Transaction) For the Component Report, it is the total number of program exceptions that occurred per second. For the Transaction Report, a Y in this column means that the transaction had exceptions. The types of exceptions that are included are process access group exceptions, and decimal, binary, and floating point overflow. See the "Transaction Report - Transition Report Option" on page 41 to see which exceptions the transaction had.

Excp Wait

(Transaction) The amount of exceptional wait time for the jobs in the job set in seconds.

Excp Wait /Tns

(Transaction) The average exceptional wait time, in seconds, per transaction. This value is the sum of those waits listed under the Exceptional Wait Breakdown by Job Type part.

Excp Wait Sec

(Transaction) The total amount of exceptional wait time in seconds for the job.

Excs ACTM /Tns

(Transaction) The average time, in seconds, of the excess activity level time per transaction (for example, time spent in the active state but not using the processing unit). If enough activity levels are available and there is plenty of interactive work of higher priority to do, a job waits longer for processing unit cycles. If the value is greater than .3, look at jobs that correspond to particular applications for more information. By looking at these jobs, you might be able to determine which application's jobs are contributing most to this value. Use the Transaction and Transition Reports for these jobs for additional information. The formula for excessive activity-level time is shown below:

Active Time - [
(multiplier X CPU X Beginning Activity Level) +
(Number of synchronous disk I/O operations X .010)]

Note: If the beginning activity level is greater than 1, the multiplier equals 0.5. If the beginning activity level is any other value, the multiplier equals 1.

Expert Cache

(System, Component) Directs the system to determine which objects or portions of objects should remain in a shared main storage pool based on the reference patterns of data within the object. Expert cache uses a storage management tuner, which runs independently of the system dynamic tuner, to examine overall paging characteristics and history of the pool. Some values that you might see in this column are associated with the Work with Shared Pools (WRKSHRPOOL) command:

- 0=*FIXED, which indicates the system does not dynamically adjust the paging characteristics of the storage pool. The system uses default values.
- 3=*CALC, which indicates the system dynamically adjusts the paging characteristics of the storage pool for optimum performance.

Exposed AP System Journalled

(Component) The number of exposed access paths currently being journalled by the system.

Exposed AP System Not Journalled

(Component) The number of exposed access paths currently not being journalled by the system.

/F (System, Resource Interval) The line speed of the protocol reported as full duplex. This indicator applies to the line speeds for an Ethernet (ELAN) token-ring (TRLAN) line, or an asynchronous transfer mode line.

Far End Code Violation

(Resource Interval) The number of unintended code violations detected by the network termination 1 (NT1) end point for frames transmitted to the NT1 end point on the interface for the T reference point. The NT1 end point reports a violation to the termination equipment (TE) through the maintenance channel S1.

Faults (System) A value that represents the total page faults that occurred for each job type or job priority during the collection. This is the same value as shown in the JBTFLT field of the QAPMJOBS or QAPMJOB L file.

File (Transaction) The file that contains the object.

Flp (Transaction) The number of floating point overflow exceptions.

Flp Overflow

(Component) Number of floating point overflows per second.

Frame Retry

(Resource Interval) The number of attempts to retransmit a frame to a remote controller.

Frames Received Pct Err

(Resource Interval) The percentage of frames received in error. Errors can occur when the host system has an error or cannot process received data fast enough.

Frames Received Total

(Resource Interval) The total number of frames received including frames with errors and frames that are not valid.

Frames Transmitted Pct Err

(Resource Interval) The percentage of frames retransmitted due to error.

Frames Transmitted Total

(Resource Interval) The total number of frames transmitted.

Functional Areas

(System, Component, Transaction, Job Interval, Pool Interval) For Report Selection Criteria, the list of functional areas selected to be included (SLTFCNARA parameter) or excluded (OMTFCNARA parameter).

/H (System, Resource Interval) The line speed of the protocol reported as half duplex. This indicator applies to the line speeds for an Ethernet (ELAN) token-ring (TRLAN) line, or an asynchronous transfer mode line.

HDW (Transaction) Listed in the Wait Code column, Hold Wait (job suspended or system request). The job released a lock it had on the object named on the next detail line of the report (OBJECT —). The job that was waiting for the object is named on this line (WAITER —) along with the amount of time the job spent waiting for the lock to be released.

High Srv Time

(Resource Interval) The highest average service time in seconds for a disk arm in the system.

High Srv Unit

The disk arm with the highest service time.

High Util

(Resource Interval) The percentage of use for the disk arm that has the highest utilization.

High Util Unit

(Component, Resource Interval) The disk arm with the highest utilization.

High Utilization Disk

(Component) Percent of utilization of the most utilized disk arm during this interval.

High Utilization Unit

(Component) Disk arm that had the most utilization during this interval.

Holder Job Name

(Transaction) The name of the job that held the object.

Holder Number

(Transaction) The number of the job that held the object.

Holder Pool

(Transaction) The pool that held the job while it was running.

Holder Pty

(Transaction) The priority of the holder's job.

Holder Type

(Transaction) The type and subtype of the holder's job.

Holder User Name

(Transaction) The name of the user that held the object.

Holder's Job Name

(Lock) The name of the job holding the lock.

I Frames Recd per Sec

(Resource Interval) The number of information frames received per second.

I Frames Trnsmitd per Sec

(Resource Interval) The number of information frames transmitted per second.

I/O Wait

(Resource Interval) The amount of time in which a given I/O request is ready to be processed, but the disk arm is not yet available to perform the request.

ICMP Messages Error

(Component) This is the number of Internet Control Message Protocol (ICMP) messages that the entity received but determined that the messages had errors or are messages that the entity did not send due to problems.

ICMP Messages Received

(Component) This is the total number of Internet Control Message Protocol (ICMP) messages that the entity received.

ICMP Messages Sent

(Component) This is the total number of Internet Control Message Protocol (ICMP) messages that the entity attempted to send.

Incoming Calls Pct Retry

(Resource Interval) The percentage of incoming calls that were rejected by the network.

Incoming Calls Total

(Resource Interval) The total number of incoming call attempts.

Inel Time A-I/W-I

(Transaction) The amount of time the job spent in the ineligible state, either coming from time slice end (active-to-ineligible) or from the wait state (wait-to-ineligible).

Inel Wait

(Transaction) Listed in the Elapsed Time—Seconds column, the time the job spent in the ineligible wait state waiting for an activity level.

Int Feat Util

(Component) The percentage of Interactive Feature that is used by all jobs.

Inter CPU Utilization

(Component) Percentage of available processing unit time used by the following types of jobs:

- Interactive
- Multiple requester terminal (MRT)
- System/36^(TM) environment interactive
- Pass-through
- Target distributed data management (DDM) servers
- servers

Note: For a multiple-processor system, this is the average use across all processors.

IOP (Component) Input/output processor (IOP) Resource name and model number for each communications IOP, DASD IOP, local workstation IOP, and multifunction IOP. Communications IOP is the percent of CPU used in the IOP. The percent does not necessarily mean that the IOP is doing any data transfers. Some of the percent can be attributed to overhead of an active line.

IOP Name/Line

(System, Resource Interval) Input/output (IOP) processor resource name and model number line.

IOP Name(Model)

(Resource Interval) The input/output processor (IOP) identification and the model number in parentheses.

IOP Name

(System, Component) Input/Output processor (IOP) resource name.

IOP Name Network Interface

(Resource Interval) The IOP name of the network interface.

IOP Processor Util Comm

(Component, Resource) Utilization of IOP due to communications activity.

IOP Processor Util LWSC

(Component, Resource) Utilization of IOP due to local workstation activity.

IOP Processor Util DASD

(Component, Resource) Utilization of IOP due to DASD activity.

IOP Processor Util Total

(Component, Resource Interval) The total percent of utilization for each local workstation, disk, and communications IOP.

IOP Util

(System) For the Disk Utilization section of the System Report, it is the percentage of utilization for each input/output processor (IOP).

Note: For the multifunction I/O processors, this is utilization due to disk activity only, not communications activity. For the System Model Parameter section it is the fraction of the time interval the disk IOP was performing I/O operations.

Itv End

(Component, Transaction, Job Interval, Pool Interval, Resource Interval) The time (hour and

minute) when the data was collected. For the Exception Occurrence Summary and Interval Counts of the Component Report, it is the ending time for the sample interval in which Collection Services recorded the exception.

Job Maximum A-I

(Pool Interval) The highest number of active-state to ineligible-state transitions by a selected job in the pool or subsystem.

Job Maximum A-W

(Pool) The highest number of active-to-wait state transitions by a selected job in the pool or subsystem.

Job Maximum CPU Util

(Pool Interval) The highest percentage of available processing unit time used by a selected job in the pool or subsystem.

Job Maximum Phy I/O

(Pool Interval) The highest number of physical disk input and output operations by a selected job in the pool or subsystem.

Job Maximum Rsp

(Pool Interval) The highest response time in seconds per transaction by a selected job in the pool or subsystem. The response time is the amount of time spent waiting for and using the resources divided by the number of transactions.

Job Maximum Tns

(Pool Interval) The highest number of transactions by a selected job in the pool or subsystem.

Job Maximum W-I

(Pool Interval) The highest number of wait-state to ineligible-state transitions by a selected job in the pool or subsystem.

Job Name

(Component, Transaction, Job Interval, Batch Job Trace) Name of the job. In the Job Summary Report of the Transaction Report, a job (identical job name, user name, and job number) appears multiple times in this list if the job uses the system Reroute Job (RRTJOB) command.

Job Number

(Component, Transaction, Job Interval, Batch Job Trace) The number of the job which the summary line describes. In the Transaction Report, an asterisk (*) before the job number indicates the job signed on during the measurement period. An asterisk (*) after the job number indicates the job signed off during the measurement period.

Job Pty

(Batch Job Trace) Priority of the job.

Job Set

(Transaction) The number of job sets is the number of batch jobs that could be active at any time during the trace period. If two jobs run sequentially, they show up as two jobs in the same job set. If two jobs run concurrently, they show up in two different job sets.

Job Type

(All Reports except where noted for the Transaction Report) Job type and subtype. Possible job type values include the following:

- A** Autostart
- B** Batch
- BD** Batch immediate (Transaction only)

Note: The batch immediate values are shown as BCI on the Work with Active Job display and as BATCHI on the Work with Subsystem Job display.

- BE** Batch evoke (Transaction only)
- BJ** Batch pre-start job (Transaction only)
- C** Programmable workstation application server, which includes 5250 emulation over APPC and iSeries^(TM) Access host servers running either APPC or TCP/IP. A job is reported as a iSeries Access server if any of the following items are true:
 - Incoming APPC evoke requests one of the server program names. This also applies to the pre-started jobs for the QSERVER, QCMN, and QSYSWRK subsystems that are already waiting for the named program.
 - Incoming IP port number corresponds to one of the service name-description-port-numbers. This also applies to the pre-started jobs for the QSERVER, QCMN, and QSYSWRK subsystems that are already waiting for the assigned IP port number.
 - Incoming IPX socket number corresponds to one of the service name-description-port-numbers. This also applies to the pre-started jobs for the QSERVER, QCMN, and QSYSWRK subsystems that are already waiting for the assigned IPX port number.
 - Incoming 5250 display emulation jobs that come from APPC data streams sent by 5250 emulation under OS/2^(R) Communications Manager or WARP equivalent.
- D** Target distributed data management (DDM) server
- I** Interactive. Interactive includes twinaxial data link control (TDLC), 5250 remote workstation, and 3270 remote workstation. For the Transaction Report, this includes twinaxial data link control (TDLC), 5250 remote workstation, 3270 remote workstation, SNA pass-through, and 5250 Telnet.
- L** Licensed Internal Code task
- M** Subsystem monitor
- P** SNA pass-through and 5250 Telnet pass-through. On the Transaction Report, these jobs appear as I (interactive).
- R** Spool reader
- S** System
- W** Spool writer, which includes the spool write job, and if Advanced Function Printing (AFP^(TM)) is specified, the print driver job.
- WP** Spool print driver (Transaction only)
- X** Start system job

Possible job subtype values include the following:

- D** Batch immediate job
- E** Evoke (communications batch)
- J** Pre-start job
- P** Print driver job
- T** Multiple requester terminal (MRT) (System/36 environment only)
- 3** System/36

Noninteractive job types include:

- Autostart
- Batch
- Evoke

- » iSeries Access-Bch«
- » Server«
- Spool
- » Distributed data management (DDM) server«

Special interactive job categories include:

- Interactive
- Multiple requester terminal (MRT)
- Pass-through
- System/36

Jobs (System, Component, Transaction, Pool Interval, Job Interval) The jobs you specify. The format of the entries is jobnumber/username/jobname. For the Report Selection Criteria report, it is the list of jobs selected to be included (SLTJOB parameter) or excluded (OMTJOB parameter). This does not include jobs selected by using the STLFCNARA or OMTFCNARA parameter.

K per I/O

(System, Resource Interval) The average number of kilobytes (1024 bytes) read or written for each disk I/O operation.

K/T /Tns Sec

(Transaction) The average delay time, or time spent keying and thinking between transactions for the job, in seconds. The value represents the time interval between active-to-wait and wait-to-active or wait-to-ineligible job state transitions.

KB per I/O Read

(Resource Interval) The average number of kilobytes (1 KB equals 1024 bytes) transferred per read operation.

KB per I/O Write

(Resource Interval) The average number of kilobytes (1024 bytes) transferred per write operation.

KB Received/Second

(System, Component) The total number of kilobytes (1024) received per second on the specified interface when it was active on the selected intervals, which includes framing characters.

KB Transmitted/Second

(System, Component) The total number of kilobytes (1024) transmitted per second from the specified interface when it was active on the selected intervals, which includes framing characters.

KBytes Transmitted IOP

(Component, Resource Interval) Total kilobytes transmitted from an IOP to the system across the bus.

KBytes Transmitted System

(Component, Resource Interval) Total kilobytes transmitted to the IOP from the system across the bus.

Key/Think

(Transaction) The amount of time spent waiting for the work station user by the program.

Key/Think /Tns

(Transaction) The average think time and keying time (or the delay time between transaction boundaries), in seconds, for the interactive jobs.

L (Lock) Whether this is a lock or seize conflict. The column contains an L if lock, blank if seize.

LAPD Pct Frames Recd in Error

(Resource Interval) The percentage of frames received in error (applies to D-channel only). Errors can occur when the host system has an error or cannot process received data fast enough.

LAPD Pct Frames Trnsmitd Again

(Resource Interval) The percentage of frames retransmitted due to error (applies to D-channel only).

LAPD Total Frames Recd

(Resource Interval) The total number of frames received including frames with errors and frames that are not valid (applies to D-channel only).

LAPD Total Frames Trnsmitd

(Resource Interval) The total number of frames transmitted (applies to D-channel only).

Last 4 Programs in Invocation Stack

(Transaction) The last four programs in the program stack. For example, at the start of a transaction (such as when the work station operator presses the Enter key), you see the program names QT3REQIO, QWSGET, and the program that issued a read operation. At the end of the transaction (such as when the program writes to the display), you see QT3REQIO, QWSPUT, and the program that wrote the display. Usually, the third or fourth program in the stack is the program shown in the transaction summary PGMNAME data. However, if the *Wait Code* column has a value, the program in the column labeled *Last* is the one that caused the trace record. If there is no program name in a column, the program name was the same as the previous one in the column, and the name is omitted.

Length of Wait

(Lock) The number of milliseconds the requester waited for the locked object.

Lgl I/O /Sec

(Job Interval) The average number of logical disk I/O operations performed per second by the job during the interval. This is calculated from the logical disk I/O count divided by the elapsed time.

Library

(System, Transaction) The library that contains the object.

Line Count

(Job Interval) The number of lines printed by the selected noninteractive jobs during the interval.

Line Descriptn

(Resource Interval) Line description name.

Line Errors

(Resource Interval) The total of all detected errors. Check the condition of the line if this value increases greatly over time.

Line Speed

(System, Resource Interval) The line speed in kilobits (1 kilobit = 1000 bits) per second.

Line Type/Line Name

(Component, System) The type and name of the line description that is used by the interface. For interfaces that do not use a line descriptions, the Line Name field will be shown as *LOOPBACK, *OPC, or *VIRTUALIP with no Line Type specified.

Line Util

(Resource Interval) The percent of available line capacity used by transmit and receive operations.

LKRL (Transaction) Lock Released. The job released a lock it had on the object named on the next detail line of the report (OBJECT —). The job that was waiting for the object is named on this line (WAITER —) along with the amount of time the job spent waiting for the lock to be released.

LKW (Transaction) Listed in the Wait Code column, Lock Wait. If there are a number of these, or you

see entries with a significant length of time in the ACTIVE/RSP* column, additional analysis is necessary. The LKWT report lines that precede this LKW report line show you what object is being waited on, and who has the object.

LKWT

(Transaction) Listed in the Wait Code column, Lock Conflict Wait. The job is waiting on a lock conflict. The time (* / time /*) is the duration of the lock conflict and, though not equal to the LKW time, should be very close to it. The holder of the lock is named at the right of the report line (HOLDER —). The object being locked is named on the next report line (OBJECT —).

Local End Code Violation

(Resource Interval) The number of times an unintended code violation was detected by the terminal equipment (TE) for frames received at the interface for the ISDN S/T reference point.

Local Not Ready

(Resource Interval) The percent of all receive-not-ready frames that were transmitted by the host system. A large percentage often means the host cannot process data fast enough (congestion).

Local work station IOP utilization

The fraction of the time interval the work station I/O processors are busy.

Local work station IOPs

(System) The resource name and model number for each local workstation IOP.

Lock Conflict

(Component) Number of lock exceptions per second. Database record contention is reflected in this count. For more information, issue the Start Performance Trace (STRPFRTTC) command and use the PRTTNSRPT and PRTLCKRPT commands. This count could be very high, even under normal system operation. Use the count as a monitor. If there are large variations or changes, explore these variations in more detail.

Lock Wait /Tns

(Transaction) The average time, in seconds, of the lock-wait time per transaction. If the value is high, investigate with the transaction detail calculation and the PRTLCKRPT command.

Logical

(Job Interval) The number of logical disk I/O operations performed by the selected interactive jobs during the interval.

Logical Database I/O Other

(System) Other logical database operations per transaction. This includes operations such as update and delete.

Logical Database I/O Read

(System) Logical database read operations per transaction.

Logical Database I/O Write

(System) Logical database write operations per transaction.

Logical DB I/O

(System) Average number of logical I/O operations per transaction.

Logical DB I/O Count

(System) Number of times an internal database I/O read, write, or miscellaneous function was called. This does not include I/O operations to readers, writers, or I/O operations caused by the Copy Spooled File (CPYSPLF) command or the Display Spooled File (DSPSPLF) command. If you specify SEQONLY(*YES), you see numbers that show each block of records read or written, not the number of individual records read or written. Miscellaneous functions include the following: updates, deletes, force-end-of-data, and releases.

Logical Disk I/O

(Component) Number of logical disk operations (Get, Put, Update, Other).

Logical I/O /Second

(System) Average number of logical disk I/O operations per second.

Logical I/O Per Second

(Job Interval) The average number of logical disk I/O operations performed per second by the selected noninteractive jobs during the interval.

Long Wait

(Transaction) The time the job spent waiting for a system resource. An example of a long wait would be a record-lock conflict. Also listed in the Elapsed Time—Seconds column, it is the elapsed time in the state (such as waiting for the next transaction or lock-wait time).

Long Wait Lck/Oth

(Transaction) The amount of time the job spent waiting for a system resource. An example of a long wait would be a record-lock conflict.

Loss of Frame Alignment

(Resource Interval) The number of times a time period equivalent to two 48-bit frames elapsed without detecting valid pairs of line code violations.

MAC Errors

(Resource Interval) The number of medium access control (MAC) errors.

Main storage (MB)

(System) The total main storage size, as measured in megabytes. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

Max Util

(System) Consistent use at or above the threshold value given will affect system performance and cause longer response times or less throughput.

Maximum

(Transaction) The maximum value of the item that occurred in the column.

Member

(System, Transaction) For the System Report, this is the name of the performance data member that was specified on the TOMBR parameter of the CRTPFRTDA command. For the Transaction Report, the member that was involved in the conflict.

Minimum

(Transaction) The minimum value of the item that occurred in the column.

MRT Max Time

(System) The time spent waiting, after MRTMAX is reached, by jobs routed to a multiple requester terminal.

Note: No value appears in this column if job type is not MRT.

MTU size (bytes)

(System) The size of the largest datagram that can be sent or received on the interface. The size is specified in octets (bytes). For interfaces that are used for transmitting network datagrams, this is the size of the largest network datagram that can be sent on the interface.

Nbr A-I

(Transaction) The number of active-to-ineligible state transitions by the job. This column shows the number of times that the job exceeded the time-slice value assigned to the job, and had to wait for an activity-level slot before the system could begin processing the transaction. If a value appears in this column, check the work that the job was doing, and determine if changes to the time-slice value are necessary.

Nbr Evt

(Transaction) The number of event waits that occurred during the job processing.

Nbr Jobs

(Transaction) The number of jobs.

Nbr Sign offs

(Transaction) The number of jobs that signed off during the interval.

Nbr Sign ons

(Transaction) The number of jobs that signed on during the interval.

Nbr Tns

(Transaction) The number of transactions in a given category.

Note: The values for transaction counts and other transaction-related information shown on the reports you produce using the PRTTNSRPT command may vary from the values shown on the reports you produce using the PRSYSRPT and PRTCPTRPT commands. These differences are caused because the PRTTNSRPT command uses trace data as input, while the PRSYSRPT and PRTCPTRPT commands use sample data as input.

If there are significant differences in the values for transaction-related information shown on these reports, do not use the data until you investigate why these differences exist.

Nbr W-I

(Transaction) The number of wait-to-ineligible state transitions by the job. This column shows how many times the job had to wait for a transaction.

NDB Read

(Transaction) Listed in Physical I/O Counts column, it is the number of nondatabase read requests while the job was in that state. Listed in the Sync Disk I/O Rqs/Tns column, it is the average number of synchronous nondatabase read requests per transaction.

NDB Write

(Transaction) Listed in the Sync Disk I/O Rqs/Tns column, it is the average number of synchronous nondatabase write requests per transaction.

NDB Wrt

(Transaction) Listed in Physical I/O Counts column, the number of nondatabase write requests while the job was in that state. Listed under Synchronous Disk I/O Counts column, it is the number of synchronous nondatabase write requests per transaction.

Non-DB Fault

(System, Component) Average number of nondatabase faults per second.

Non-DB Pages

(System, Component) Average number of nondatabase pages read per second.

» Non SMAPP

(Component) Journal deposits not directly related to SMAPP (System Managed Access Path Protection). «

» Non-SSL Inbound Connect

(System) The number of non-SSL inbound connections accepted by the server. «

Non-Unicast Packets Received

(System) The total number of non-unicast packets delivered to a higher-layer protocol for packets received on the specified interface.

Non-Unicast Packets Sent

(System) The total number of packets that higher-level protocols requested to be transmitted to a non-unicast address; therefore, this number includes those packets that were discarded or were not sent as well as those packets that were sent.

Number

(Transaction) The number of the job with which the transaction is associated.

Number I/Os per Second

(System) The number of I/Os per second for this particular IOP.

Number Jobs

(Transaction) The number of batch jobs in the job set.

Number Lck Cft

(Transaction) The number of lock-wait (including database record lock) state conflicts that occurred during the job processing. If this number is high, look at the Transaction and Transition Reports for the job to see how long the lock-wait state conflicts were lasting. In addition, you can do further investigation using the reports produced when you use the PRTLCKRPT command.

Number Lck Conflict

(Transaction) The number of times the job had a lock conflict.

Number Locks

(Transaction) The number of locks attributed to interactive or noninteractive waiters.

Number of batch jobs

(System) The average number of active batch jobs. A batch job is considered active if it averages at least one I/O per 5 minutes.

Number of Jobs

(System) Number of jobs.

Number of Packets Received with Errors

(System) The total number of packets that were received with errors or discarded for other reasons. For example, a packet could be discarded to free up buffer space.

Number Seizes

(Transaction) The number of seizures attributed to interactive or noninteractive waiters.

Number Sze Cft

(Transaction) The number of seize/lock conflicts that occurred during the job processing. If this number is high, look at the Transaction and Transition Reports for the job to see how long the conflicts lasted, the qualified name of the job that held the object, the name and type of object being held, and what the job was waiting for.

Number Sze Conflict

(Transaction) The number of times the job had a seize conflict.

Number Tns

(System, Transaction) Total number of transactions processed. For example, in the System Report it is the total number of transactions processed by jobs in this pool. In the Transaction Report it is the number of transactions associated with the program.

Number Traces

(Batch Job Trace) Number of traces.

Number Transactions

(System) Total number of transactions processed.

Object File

(Transaction) The file that contains the object.

Object Library

(Transaction) The library that contains the object.

Object Member

(Transaction) The member that was involved in the conflict.

Object Name

(Lock) The name of the locked object.

Object RRN

(Transaction) The relative record number of the record involved in the conflict.

Object Type

(Transaction, Lock) The type of the locked object. The following are possible object types:

AG Access group
CB Commit block
CBLK Commit block
CD Controller description
CLS Class
CMD Command
CTLD Controller description
CTX Context
CUD Control unit description
CUR Cursor
DEV
Device description
DS Data space
DSI Data space index
DTAARA
Data area
EDTD Edit description
FILE File
JOB Job description
JOBQ Job queue
JP Journal port
JRN Journal
JRNRCV
Journal receiver
JS Journal space
LIB Library
LIND Line description
LUD Logical unit description
MBR Member
MEM Database file member
MSGF Message file
MSGQ
Message queue
ND Network description

OCUR	Database operational cursor
OUTQ	Output queue
PGM	Program
PROG	Program
PRTIMG	Print image
QDAG	Composite piece - access group
QDDS	Composite piece - data space
QDDSI	Composite piece - data space index
QTAG	Temporary - access group
QTDS	Temporary - data space
QTDSI	Temporary - data space index
SBSD	Subsystem description
TBL	Table

Omit Parameters

(System, Component, Transaction, Job Interval, Pool Interval) The criteria used to choose the data records to be excluded from the report. The criteria are generally specified using an OMTxxx parameter of the command. Only nondefault values (something other than *NONE) are printed. If a parameter was not specified, it does not appear on the report.

Op per Second

(System) Average number of disk operations per second.

Other Wait /Tns

(Transaction) The average time, in seconds, spent waiting that was not in any of the previous categories per transaction. For example, the time spent waiting during a save/restore operation when the system requested new media (tape or diskette).

Outgoing Calls Pct Retry

(Resource Interval) The percentage of outgoing calls that were rejected by the network.

Outgoing Calls Total

(Resource Interval) The total number of outgoing call attempts.

Over commitment ratio

(System) The main storage over commitment ratio (OCR).

PAG (Transaction) The number of process access group faults.

PAG Fault

(Component, Job Interval) In the Exception Occurrence Summary of the Component Report, it is the total number of times the program access group (PAG) was referred to, but was not in main storage. The Licensed Internal Code no longer uses process access groups for caching data.

Because of this implementation, the value will always be 0 for more current releases. In the Exception Occurrence Summary of the Component Report, it is the number of faults involving the process access group per second.

Page Count

(Job Interval) The number of pages printed by the selected noninteractive jobs during the interval.

Pct CPU By Categories

(Transaction) The percentage of available processing unit time used by the transactions that fell into the various categories. See the ANALYSIS by Interactive Transaction Categories part of the System Summary Data Section for an explanation of the categories.

Pct Data Characters Received in Error

(Resource Interval) The percent of data characters received with error.

Pct Data Characters Transmitted in Error

(Resource Interval) The percent of data characters transmitted with error.

Pct Datagrams Error

(Component) The percentage of datagrams that were discarded due to these errors:

- The IP address in the destination field of the IP header was not a valid address to be received at this entity.
- The protocol was unknown or unsupported.
- Not enough buffer space.

» Pct Error Responses

(Component) Percentage of responses in error. «

Pct Ex-Wt /Rsp

(Transaction) The percentage of the response time that is due to exceptional wait.

Pct ICMP Messages Error

(Component) This is the number of Internet Control Message Protocol (ICMP) messages that the entity received but determined that the messages had errors or are messages that the entity did not send due to problems.

Pct Of Tns Categories

(Transaction) The percentage of all transactions that fell into the various categories. See the Analysis by Interactive Transaction Categories part of the System Summary Data Section for an explanation of the categories.

Pct Packets Received Error

(System) The percentage of packets that were received with errors or discarded for other reasons. For example, a packet could be discarded to free up buffer space.

Pct Packets Sent Error

(System) The percentage of packets that were not sent because of errors or discarded for other reasons. For example, a packet could be discarded to free up buffer space.

Pct PDUs Received in Error

(Resource Interval) The percent of protocol data units (PDUs) received in error during the time interval. These errors can occur if the host system has errors or cannot receive data fast enough (congestion).

Note: A protocol data unit (PDU) for asynchronous communications is a variable-length unit of data that is ended by a protocol control character or by the size of the buffer.

Pct Poll Retry Time

(Resource Interval) The percent of the time interval the line was unavailable while the IOP waited for a response from a work station controller (or remote system) that was in disconnect mode.

Note: To minimize this lost time:

- Vary on only the controllers that are turned on.
- Turn on all controllers.
- Use the Change Line Description (SDLC) (CHGLNSDLC) command to set the connect poll timer to a small value (reduces wait time).
- Use the Change Controller Description (CHGCTLxxxx) command (where xxxx is APPC, FNC, RWS, or RTL, as appropriate) to set the NDMPOLLTMR value to a large value (increases time between polls).

Pct Tns

(Transaction) The percentage of the total transactions. For the System Summary section of the Job Summary Report, the transactions are within the given trace period with the given purge attribute. For the Interactive Program Transaction Statistics section of the Job Summary Report, the percentage of transactions that were associated with a program. For the Job Statistics section, it is the percentage of total transactions that were due to this job. For the Interactive Program Statistics section, it is all transactions that were associated to a program.

Pct UDP Datagrams Error

(Component) The percentage of User Datagram Protocol (UDP) datagrams for which there was no application at the destination port or that could not be delivered for other reasons.

Percent Errored Seconds

(Resource Interval) The percentage of seconds in which at least one Detected Access Transmission (DTSE) in or out error occurred.

Percent Frames Received in Error

(Resource Interval) The percent of all received frames that were received in error. Errors can occur when the host system has an error or cannot process received data fast enough (congestion).

Percent Full

(System) Percentage of disk space capacity in use.

Percent I Frames Trnsmitd in Error

(Resource Interval) The percent of transmitted information frames that required retransmission. Retransmissions can occur when a remote device has an error or cannot process received data fast enough (congestion).

Percent Severely Errored Seconds

(Resource Interval) The percent of seconds in which at least three Detected Access Transmission (DTSE) in or out errors occurred.

Percent transactions (dynamic no)

(System) A measure of system main storage utilization. The percent of all interactive transactions that were done with the purge attribute of dynamic NO.

Percent transactions (purge no)

(System) A measure of system main storage utilization. The percent of all interactive transactions that were done with the purge attribute of NO.

Percent transactions (purge yes)

(System) A measure of system main storage utilization. The percent of all interactive transactions that were done with the purge attribute of YES.

Percent Util

(System) Average disk arm utilization (busy). Consistent use at or above the threshold value provided for disk arm utilization affects system performance, which causes longer response times or less throughput.

Note: The percent busy value is calculated from data measured in the I/O processor. When

comparing this value with percent busy reported by the Work with Disk Status (WRKDSKSTS) command, some differences may exist. The WRKDSKSTS command estimates percent busy based on the number of I/O requests, amount of data transferred, and type of disk unit.

The system-wide average utilization does not include data for mirrored arms in measurement intervals for which such intervals are either in resuming or suspended status.

» Perm Size

(Component) Kilobytes placed within the permanent area; these are traditional journal entries which can be retrieved and displayed. «

Perm Write

(Component, Job Interval) The number of permanent write operations performed for the selected jobs during the interval.

Permanent writes per transaction

(System) The average number of permanent write operations per interactive transaction.

Physical I/O Count

(Transaction, Batch Job Trace) For the Job Summary section of the Batch Job Trace Report, the number of synchronous and asynchronous disk operations (reads and writes). For the Transition Report, the next five columns provide information about the number of synchronous and asynchronous disk I/O requests while the job was in the given state. The first line is the synchronous disk I/O requests, and the second line is the asynchronous disk I/O requests.

DB Read

The number of database read requests while the job was in that state.

DB Wrt

The number of database write requests while the job was in that state.

NDB Read

The number of nondatabase read requests while the job was in that state.

NDB Wrt

The number of nondatabase write requests while the job was in that state.

Tot The total number of DB Read, DB Wrt, NDB Read, and NDB Wrt requests.

» Physical Writes

(Component) Physical journal write operations to disk. «

PI (Component, Transaction, Job Interval, Pool Interval) The number of the pool in which the subsystem or job ran.

Pool (Transaction, Job Interval, Batch Job Trace) The number of the pool containing the transaction (for example, in which the job ran.)

Pool ID

(System) Pool identifier.

Pool ID Faults

(Component) User pool that had the highest page fault rate.

Pool Mch Faults/Sec

(Component) Average number of machine pool page faults per second.

Pool size (KB)

(System, Component) For the Storage Pool Activity section of the Component Report it is the

initial pool size in kilobytes (1024 bytes). For the System Model Parameters section of the System Report, it is the total size in kilobytes of all pools that incurred interactive job activity.

Pool User Faults/Sec

(Component) Average number of user pool page faults per second, for the user pool with highest fault rate during this interval.

Pools (System, Component, Transaction, Job Interval, Pool Interval) In the Report-Selection Criteria section, the list of pools selected to be included (SLTPOOLS parameter) or excluded (OMTPOOLS parameter). Otherwise, the pools you specify. The values can be from 1 through 64.

Prg (Transaction) The purge attribute of the jobs.

Printer Lines

(System, Job Interval) The number of lines printed by the job during the interval.

Printer Pages

(System, Job Interval) The number of pages printed by the job during the interval.

Priority

(System, Transaction) The priority of the job.

Program

(Transaction) The name of the program with which the transaction is associated.

Program Name

(Transaction) For the Job Summary section of the Transaction Report, the name of the program in control at the start of the transaction. Other programs may be used during the transaction. For the Transaction Report section, the name of the program active at the start of the transaction. If ADR=UNKNWN (address unknown) is shown under the column, the program was deleted before the trace data was dumped to the database file. If ADR=000000 is shown under the column, there was not enough trace data to determine the program name, or there was no program active at that level in the job when the trace record was created.

Protocol

(System) Line protocol.

- SDLC
- ASYNC
- BSC
- X25
- TRLAN
- ELAN (Ethernet)
- IDLC
- DDI
- FRLY

Pty (Component, Transaction, Job Interval) Priority of the job. For the Concurrent Batch Job Statistics section of the Transaction Report, it is the priority of the jobs in the job set.

Purge (Transaction) The purge attribute of the jobs.

PWrt (Transaction) The number of permanent write I/O operations.

Queue Length

(Resource Interval) The average number of I/O requests that had to wait in the queue for this unit.

Rank (Transaction) The order. For the Job Summary section, it is the order of the program according to the number of transactions. For the Job Statistics section, it is the order of the job. For the Interactive Program Statistics section, it is the order of the program. For the Individual

Transaction Statistics section, it is the order of the transaction according to the data being put in order by importance. For the Largest Seize/Lock Conflicts section, it is the order of the seize or lock conflict.

Ratio of write disk I/O to total disk I/O

(System) The fraction of the total disk activity that is due to writing data to the disks.

Reads per Second

(Resource Interval) The average number of disk read operations performed per second by the disk arm.

Receive CRC Errors

(Resource Interval) The number of received frames that contained a cycle redundancy check (CRC) error. This indicates that the data was not received error free.

Record Number

(Lock) For database file members, the relative record number of the record within the database file member.

Remote LAN Pct Frames Recd

(Resource Interval) The number of frames received from a local area network (LAN) connected to the locally attached LAN.

Remote LAN Pct Frames Trnsmitd

(Resource Interval) The number of frames transmitted to a local area network (LAN) connected to the locally attached LAN.

Remote Not Ready

(Resource Interval) The percentage of all receive-not-ready frames that were received by the host system. A large percentage often means the remote device cannot process data fast enough (congestion).

Remote Seq Error

(Resource Interval) The percent of frames received out of order by a remote device or system. This can occur when the remote device or system cannot process data fast enough.

» **Req type**

(Component) The type of request being reported. «

» **Requests received**

(System, Component) The number of requests of all types received by the server. «

Requestor's Job Name

(Lock) The name of the job requesting the locked object (the same as in the detail listing).

Reset Packets Recd

(Resource Interval) The number of reset packets received by the network. **Reset packets** are packets retransmitted because an error occurred.

Reset Packets Trnsmitd

(Resource Interval) The number of reset packets transmitted by the network.

Response

(System) Average system response (service) time.

Response Sec Avg and Max

(Transaction) The average (AVG) and maximum (MAX) transaction response time, in seconds, for the job. The average response time is calculated as the sum of the time between each pair of wait-to-active and active-to-wait transitions divided by the number of pairs that were encountered for the job. The MAX response time is the largest response time in the job.

Response Seconds

(System) Average response time in seconds per transaction.

» Responses sent

(System, Component) The number of responses of all types sent by the server. «

Rsp (Component) Average interactive transaction response time in seconds.

Rsp Time

(Component, Resource Interval) The average external response time (in seconds). For the Local Work Station IOP Utilizations section of the Resource Interval Report, it is the response time for work stations on this controller. For the Remote Work Stations section of the Component Report, it is the response time for this work station.

Rsp Timer Ended

(Resource Interval) The number of times the response timer ended waiting for a response from a remote device.

Rsp/Tns

(Component, Transaction, Job Interval) The average response time (seconds) per transaction. For the Job Summary section of the Job Interval Report, it is the response time per transaction for the selected interactive jobs during the interval (the amount of time spent waiting for or using the system resources divided by the number of transactions processed). This number will not be accurate unless at least several seconds were spent processing transactions.

S/L (Transaction) Whether the conflict was a seize (S) or lock (L) conflict.

Segments Pct Rtrns

(Component) The percentage of segments retransmitted. This number is the TCP segments that were transmitted and that contain one or more previously transmitted octets (bytes).

Segments Rcvd per Second

(Component) The number of segments received per second. This number includes those received in error and those received on currently established connections.

Segments Sent per Second

(Component) The number of segments sent per second. This number includes those sent on currently established connections and excludes those that contain only retransmitted octets (bytes).

Seize and Lock Conflicts

(Batch Job Trace) Number of seize conflicts and lock waits.

Seize Conflict

(Component) Number of seize exceptions per second. For more detailed information, issue the Start Performance Trace (STRPFRTTC) command, and use the PRTTNSRPT or PRTLCKRPT commands. This count could be very high, even under normal system operation. Use the count as a monitor. If there are large variations or changes, explore these variations in more detail.

Seize Hold Time

(Transaction) The amount of time that the transaction held up other jobs in the system by a seize or lock on an object.

Seize Wait /Tns

(Transaction) The average time, in seconds, for all seize-lock conflicts that occur during an average transaction. More than one seize-lock conflict can occur during a single transaction for the same job. If this number is high, investigate those jobs with seize conflicts. The Transaction Report lists each conflict that occurs, the name of the holder, and the name of the object held. For the Transaction by 5-Minute Intervals section of the Job Summary Report, it is the average seize wait time per transaction in seconds. This is the average amount of time that the transactions spent in a seize/lock conflict. If this number is high, look at the Transaction and Transition Reports for the jobs that are causing the excessive wait time.

Select Parameters

(System, Component, Transaction, Job Interval, Pool Interval) The criteria used to choose the data

records to be included in the report. The criteria are generally specified using an SLTxxx parameter of the command. Only nondefault values (something other than *ALL) are printed. If a parameter is not specified, it does not appear on the report.

Sequence Error

(Resource Interval) The number of frames received that contained sequence numbers indicating that frames were lost.

» **Server job name**

(System) The server job number. Identifies the child job for the server. <<

» **Server job user**

(System) The server job user. Identifies the child job for the server. <<

» **Server name**

(System) The server job name. Identifies the child job for the server. <<

» **Server start date/time**

(System) The most recent start or restart time in format mm/dd/yy hh:mm:ss <<

Short Frame Errors

(Resource Interval) The number of short frames received. A short frame is a frame that has fewer octets between its start flag and end flag than are permitted.

Short Wait /Tns

(Transaction) The average time, in seconds, of short (active) wait time per transaction. For the Interactive Program Statistics section, if the value is high, it may be due to the use of data queues or to the use of DFRWRT(*NO) or RSTDSP(*YES) in the program display files.

Short WaitX /Tns (Short wait extended)

(Transaction) The average time, in seconds, of wait time per transaction that resulted due to a short (active) wait that exceeded 2 seconds, and caused a long wait transition to occur. The activity level has been released but this time is still counted against your total response time. Waits on data queues or the use of DFRWRT(*NO) and/or RSTDSP(*YES) in the display files could be reasons for this value to be high.

Size (Component) Decimal data overflow and underflow exceptions per second. An indication of improper field size on numeric calculations.

Size (K)

(System, Pool Interval) The size of the pool in kilobytes (1024 bytes).

Size (M)

(System) Disk space capacity in millions of bytes.

SMAPP ReTune

(Component) System-managed access path protection tuning adjustments.

» **SMAPP System**

(Component) SMAPP-induced journal entries deposited in system-provided (default) journals. <<

» **SMAPP User**

(Component) SMAPP-induced journal entries deposited in user-provided journals. <<

SOTn (Transaction) Listed in the Wait Code column, Start of transaction n. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

Spool CPU seconds per I/O

(System) The average number of system processing unit seconds used by all spool jobs for each I/O performed by a spool job.

Spool database reads per second

(System) The average number of read operations to database files per second of spool processing.

Spool I/O per second

(System) The average number of physical disk I/O operations per second of spool processing.

Srv Time

(Component) Average disk service time per request in seconds not including the disk wait time.

» SSL Inbound Connections

(System) A The number of SSL inbound connections accepted by the server. «

Start (Transaction) The time the job started.

Started

(Transaction) The time of the first record in the trace data, in the form HH.MM.SS (hours, minutes, seconds).

State (Transaction) The three possible job states are:

- **W**—(Wait state) not holding an activity level.
- **A**—(Active or wait state) holding an activity level.
- **I**—(Ineligible state) waiting for an activity level.

The table below shows the possible job state transitions. For example, from **W** to **A** is **y**, or yes, which means it is possible for a job to change from the *wait* state to the *active* state.

		To state		
		A	W	I
From	A	y	y	y
State	W	y	-	y
	I	y	-	-

State Transitions A-A

(Batch Job Trace) Number of active-to-active transitions.

State Transitions A-I

(Batch Job Trace) Number of active-to-ineligible transitions.

Stop (Transaction) The time the job ended.

Stopped

(Transaction) The time of the last record in the trace data, in the form HH.MM.SS (hours, minutes, seconds).

Subsystem Name

(Pool Interval) The name of the subsystem.

Subsystems

(System, Component, Pool Interval) For the System Report, the subsystem names you specify. Each name is a 10-character name. For the Component Report, the list of subsystems selected to be included (SLTSBS parameter) or excluded (OMTSBS parameter).

Sum (Transaction) Listed in the Sync Disk I/O Rqs/Tns column, the sum of the averages of the synchronous DB READ, DB WRITE, NDB READ, and NDB WRITE requests (the average number of synchronous I/O requests per transaction for the job).

SWX (Transaction) Listed in the Wait Code column, Short Wait Extended. The short wait has exceeded a 2-second limit and the system has put the transaction into a long wait. This long wait must be charged to the transaction response time. In most cases, this active-to-wait transaction does not reflect a transaction boundary.

Sync (Job Interval) The number of synchronous disk I/O operations performed by the selected interactive jobs during the interval.

Sync DIO /Tns

(Transaction) The average number of synchronous I/O requests per transaction during the interval.

Sync Disk I/O

(System, Component, Transaction) Synchronous disk I/O operations.

Sync Disk I/O per Second

(Component) Average synchronous disk I/O operations per second.

Sync Disk I/O Requests

(Transaction) The total number of synchronous disk I/O requests for the given combination of priority, job type, and pool.

Sync Disk I/O Rqs/Tns

(Transaction) The next five columns provide information about the number of synchronous disk I/O requests per transaction:

DB Read

The average number of synchronous database read requests per transaction.

DB Write

The average number of synchronous database write requests per transaction.

NDB Read

The average number of synchronous nondatabase read requests per transaction.

NDB Write

The average number of synchronous nondatabase write requests per transaction.

Sum

The sum of the averages of the synchronous DB READ, DB WRITE, NDB READ, and NDB WRITE requests (the average number of synchronous I/O requests per transaction for the job).

Sync I/O /Elp Sec

(Transaction) The average number of synchronous disk I/O requests for all jobs, per second of elapsed time used by the jobs.

Sync I/O /Sec

(Job Interval) The average number of synchronous disk I/O operations performed per second by the job during the interval. This is calculated from the synchronous disk I/O count divided by the elapsed time.

Sync I/O Per Second

(Job Interval) The average number of synchronous disk I/O operations performed per second by the selected noninteractive jobs during the interval.

Synchronous DBR

(System, Transaction, Job Interval, Pool Interval) The average number of synchronous database read operations. It is the total synchronous database reads divided by the total transactions. For the Pool Interval and Job Interval Reports, it is calculated per transaction for the job during the intervals. For the System Report, it is calculated per second. For the Transaction (Job Summary) it is calculated per transaction. Listed under Average DIO/Transaction, the average number of synchronous database read requests per transaction. This field is not printed if the jobs in the system did not process any transactions.

Synchronous DBW

(System, Transaction, Job Interval, Pool Interval) The average number of synchronous database write operations. It is the total synchronous database writes divided by the total transactions. For the Pool Interval and Job Interval Reports, it is calculated per transaction for the job during the intervals. For the System Report, it is calculated per second. For the Transaction (Job Summary) it

is calculated per transaction. Listed under Average DIO/Transaction, the average number of synchronous database read requests per transaction. This field is not printed if the jobs in the system did not process any transactions.

Synchronous DIO / Act Sec

(System, Transaction) The number of synchronous disk I/O operations per active second. The active time is the elapsed time minus the wait times.

Synchronous DIO / Ded Sec

(Transaction) The estimated number of synchronous disk I/O operations per second as if the job were running in dedicated mode. Dedicated mode means that no other job would be active or in contention for resources in the system.

Synchronous DIO / Elp Sec

(Transaction) The number of synchronous disk I/O operations per elapsed second.

Synchronous Disk I/O Counts

(Transaction) The next five columns provide information about the number of synchronous disk I/O requests per transaction:

DB Read

The number of synchronous database read requests per transaction.

DB Wrt

The number of synchronous database write requests per transaction.

NDB Read

The number of synchronous nondatabase read requests per transaction.

NDB Wrt

The number of synchronous nondatabase write requests per transaction.

Sum The sum of the synchronous DB Read, DB Wrt, NDB Read, and NDB Wrt requests (the number of synchronous I/O requests per transaction).

Synchronous disk I/O per transaction

(System, Transaction) The average number of synchronous physical disk I/O operations per interactive transaction.

Synchronous Max

(Transaction) The maximum number of synchronous DBR, NDBR, and WRT I/O requests encountered for any single transaction by that job. If the job is not an interactive or autostart job type, the total disk I/O for the job is listed here.

Synchronous NDBR

(System, Transaction, Job Interval, Pool Interval) The average number of synchronous nondatabase read operations per transaction for the jobs in the system during the interval. For the Transaction Report, the operations on the disk per transaction for the selected jobs in the pool. This is calculated from the synchronous nondatabase read count divided by the transactions processed. This field is not printed if the jobs in the system did not process any transactions.

Synchronous NDBW

(System, Job Interval, Pool Interval) The average number of synchronous nondatabase write operations on the disk per transaction for the selected jobs in the pool. For the System Report, it is the operations per transaction for the jobs in the system during the interval. This is calculated from the synchronous nondatabase write count divided by the transactions processed. This field is not printed if the jobs in the system did not process any transactions.

Synchronous Sum

(Transaction) The sum of the averages of the synchronous DBR, NDBR, and WRT requests (the average number of synchronous I/O requests per transaction for the job).

Synchronous wrt

(Transaction) The average number of synchronous database and nondatabase write requests per transaction.

System CPU per transaction (seconds)

(System) The average number of system processing unit seconds per interactive transaction.

System disk I/O per transaction

(System) The total number of physical disk I/O operations attributed to the system per interactive transaction.

System Starts

(Component) The number of start journal operations initiated by the system.

System Stops

(Component) The number of stop journal operations initiated by the system.

System Total

(Component) The total number of journal deposits resulting from system-journaled objects. These are the deposits performed by system-managed access path protection (SMAPP).

System ToUser

(Component) The number of journal deposits resulting from system-journaled objects to user-created journals.

SZWG

(Transaction) Listed in the Wait Code column, Seize Wait Granted. The job was waiting on a seize conflict. The original holder released the lock that it had on the object, and the lock was then granted to the waiting job. The job that was waiting for the object is named on this line (WAITER —) along with the amount of time the job spent waiting for the seize conflict to be released. The object that is held is named on the next line of the report (OBJECT —).

SZWT (Transaction) Listed in the Wait Code column, Seize/Lock Conflict Wait. The job is waiting on a seize/lock conflict. The time (* / time /*) is the duration of the seize/lock conflict, and is included in the active time that follows it on the report. The holder of the lock is named at the right of the report line (HOLDER —). The object being held is named on the next report line (OBJECT —).

Teraspace EAO

(Component) Listed in the Exception Occurrence summary and Interval Counts. A teraspace effective address overflow (EAO) occurs when computing a teraspace address that crosses a 16-boundary. A quick estimate indicates that a 1% performance degradation would occur if there were 2,300 EAOs per second.

Thread

(Job Summary, Transaction, Transition) A thread is a unique flow of control within a process. Every job has an initial thread associated with it. Each job can start one or more secondary threads. The system assigns the thread number to a job as follows:

- The system assigns thread IDs sequentially. When a job is started that uses a job structure that was previously active, the thread ID that is assigned to the initial thread is the next number in the sequence.
- The first thread of a job is assigned a number.
- Any additional threads from the same job are assigned a number that is incremented by 1. For example:

Job Name	User Name/ Thread	Job Number
QJVACMSRV	SMITH	023416
QJVACMSRV	00000006	023416
QJVACMSRV	00000007	023416
QJVACMSRV	00000008	023416

A thread value greater than 1 does not necessarily mean the job has had that many threads active at the same time. To determine how many threads are currently active for the same job, use the WRKACTJOB, WRKSBSJOB, or WRKUSRJOB commands to find the multiple three-part identifiers with the same job name.

» **Threads active**

(System) The number of threads doing work when the data was sampled. <<

» **Threads idle**

(System) The number of idle threads when the data was sampled. <<

Time (Transaction) The time when the transaction completed, or when a seize or lock conflict occurred. Also, a column heading that shows the time the transition from one state to another occurred, in the HH.MM.SS.mmm arrangement.

Tns (Component, Pool Interval) The total number of transactions processed by the selected jobs in the pool or subsystem.

Tns Count

(Component, Job Interval) The number of transactions performed by the selected interactive jobs during the interval.

Tns/Hour

(Component, Transaction, Job Interval) The average number of transactions per hour processed by the selected interactive jobs during the interval.

Tns/Hour Rate

(System) Average number of transactions per hour.

TOD of Wait

(Lock) The time of day of the start of the conflict.

Tot (Transaction) Listed in Physical I/O Counts column, the total number of DB Read, DB Wrt, NDB Read, and NDB Wrt requests.

Tot Nbr Tns

(Transaction) The total number of transactions the PRTTNSRPT program determined from the input data that were accomplished for the job.

Total (Component) Total exception counts for the reporting period.

Total /Job

(Transaction) The total (sum) of the items in the column for the job.

Total characters per transaction

(System) The average number of characters either read from or written to display station screens per interactive transaction.

Total CPU Sec /Sync DIO

(Transaction) The ratio of total CPU seconds divided by the total synchronous disk I/O requests.

Total CPU Utilization

(System, Component) Percentage of available processing unit time used by interactive jobs, batch jobs, all system jobs, and Licensed Internal Code tasks. For a multiple-processor system this is the average use across all processors. For a multiple-processor system, *Total CPU Utilization* is replaced by a utilization value for each processor in the system. Here is an example of this part of the display for a system with two processors:

```
Average CPU utilization . . . . . : 41.9
CPU 1 utilization . . . . . : 41.7
CPU 2 utilization . . . . . : 42.2
```

Note: This value is taken from a system counter. Other processing unit uses are taken from the individual job work control blocks (WCBs). These totals may differ slightly.

Total CPU Utilization (Database Capability)

(System) Shows you the DB2 Universal Database^(TM) for iSeries activity on your systems. This field applies to all systems running V4R5 or later and includes all database activity, including all SQL and data I/O operations.

Total CPU Utilization (Interactive Feature)

(System) The CPU Utilization (Interactive Feature) shows the CPU utilization for all jobs doing 5250 workstation I/O operations relative to the capacity of the system for interactive work. Depending on the system and associated features purchased, the interactive capacity is equal to or less than the total capacity of the system.

Total Data Characters Received

(Resource Interval) The number of data characters received successfully.

Total Data Characters Transmitted

(Resource Interval) The number of data characters transmitted successfully.

Total Datagrams Requested for Transmission

(Component) The percentage of IP datagrams that are discarded because of the following reasons:

- No route was found to transmit the datagrams to their destination.
- Lack of buffer space.

Total fields per transaction

(System) The average number of display station fields either read from or written to per interactive transaction.

Total Frames Recd

(Resource Interval) The number of frames received, including frames with errors and frames that are not valid.

Total I Frames Trnsmitd

(Resource Interval) The total number of information frames transmitted.

Total I/O

(System) Sum of the read and write operations.

Total PDUs Received

(Resource Interval) The number of protocol data units (PDUs) received during the time interval.

Note: A protocol data unit (PDU) for asynchronous communications is a variable-length unit of data that is ended by a protocol control character or by the size of the buffer.

Total Physical I/O per Second

(Resource Interval) The average number of physical disk I/O operations performed per second by the disk arm.

Total Responses

(Component, Resource Interval) The total number of transactions counted along with the average response time for all active work stations or devices on this controller for the report period.

Total Seize/Wait Time

(Component) The response time in milliseconds for each job.

Total Tns

(Component) Number of transactions processed in this pool.

Transaction Response Time (Sec/Tns)

(Transaction) The response time in seconds for each transaction. This value includes no communications line time. Response times measured at the work station exceed this time by the

data transmission time (the time required to transmit data from the work station to the processing unit and to transmit the response data back to the work station from the processing unit).

Transactions per hour (local)

(System) The interactive transactions per hour attributed to local display stations.

Transactions per hour (remote)

(System) The interactive transactions per hour attributed to remote display stations.

» **Transient Size**

(Component) Kilobytes placed within the journal transient area; these are hidden journal entries produced by the system. «

Transmit/Receive/Average Line Util

(Resource Interval) In duplex mode, the percentage of transmit line capacity used, the percentage of receive line capacity used, and the average of the transmit and receive capacities.

TSE (Transaction) Listed in the Wait Code column, Time Slice End. The program shown in the stack entry labeled LAST is the program that went to time slice end.

Typ (Component, Transaction) The system job type and subtype. The Component Report allows only one character in this column. The Transaction Report allows two characters. The Transaction Report reports the job type and job subtype directly from the QAPMJOBS fields. The Component Report takes the job type and job subtype values and converts it to a character that may or may not be the value from the QAPMJOBS field. The possible job types are:

A Autostart

B Batch

BD Batch immediate (Transaction only)

Note: The batch immediate values are shown as BCI on the Work with Active Job display and as BATCHI on the Work with Subsystem Job display.

BE Batch evoke (Transaction only)

BJ Batch pre-start job (Transaction only)

C Programmable work station application server, which includes 5250 emulation over APPC and iSeries Access host servers running either APPC or TCP/IP. You can find the host server information under the Host server administration topic in the iSeries Information Center. A job is reported as a iSeries Access server if any of the following items are true:

- Incoming APPC evoke requests one of the server program names. This also applies to the pre-started jobs for the QSERVER, QCMN, and QSYSWRK subsystems that are already waiting for the named program.
- Incoming IP port number corresponds to one of the service name-description-port-numbers. This also applies to the pre-started jobs for the QSERVER, QCMN, and QSYSWRK subsystems that are already waiting for the assigned IP port number.
- Incoming IPX socket number corresponds to one of the service name-description-port-numbers. This also applies to the pre-started jobs for the QSERVER, QCMN, and QSYSWRK subsystems that are already waiting for the assigned IPX port number.
- Incoming 5250 display emulation jobs that come from APPC data streams sent by 5250 emulation under OS/2 Communications Manager or WARP equivalent.

D Target distributed data management (DDM) server

I Interactive. For the Component Report, this includes twinaxial data link control (TDLC), 5250 remote workstation, and 3270 remote workstation. For the Transaction Report, this

includes twinaxial data link control (TDLC), 5250 remote workstation, 3270 remote workstation, SNA pass-through, and 5250 Telnet.

L	Licensed Internal Code Task
M	Subsystem monitor
P	SNA pass-through and 5250 Telnet pass-through. On the Transaction Report, these jobs appear as I (interactive).
R	Spool reader
S	System
W	Spool writer, which includes the spool write job, and if Advanced Function Printing (AFP) is specified, the print driver job.
WP	Spool print driver (Transaction only)
X	Start the system

The possible job subtypes are:

D	Batch immediate job
E	Evoke (communications batch)
J	Pre-start job
P	Print driver job
T	Multiple requester terminal (MRT) (System/36 environment only)
3	System/36

Notes:

1. Job subtypes do not appear on the Component Report.
2. If the job type is blank or you want to reassign it, use the Change Job Type (CHGJOBTYPE) command to assign an appropriate job type.

Type (System, Transaction, Job Interval) One of the transaction types listed in the description of the DTNTY field.

(System)

The disk type.

(Transaction)

The type and subtype of the job.

(Transaction)

For the Seize/Lock Conflicts by Object section, the type of seize/lock conflict.

UDP Datagrams Received

(Component) The total number of User Datagram Protocol (UDP) datagrams delivered to UDP users.

UDP Datagrams Sent

(Component) The total number of User Datagram Protocol (UDP) datagrams sent from this entity.

» **Uncap CPU Avail**

(Component) Percentage of CPU time available to a partition in the shared processors pool during the interval in addition to its configured CPU. This value is relative to the configured CPU available for the particular partition. «

Unicast Packets Received

(System) The total number of subnetwork-unicast packets delivered to a higher-layer protocol. The number includes only packets received on the specified interface.

Unicast Packets Sent

(System) The total number of packets that higher-level protocols requested to be transmitted to a subnetwork-unicast address. This number includes those packets that were discarded or were not sent.

Unit (System, Component, Resource Interval) The number assigned by the system to identify a specific disk unit or arm. An 'A' or 'B' following the unit number indicates that the disk unit is mirrored. (For example, 0001A and 0001B are a mirrored pair.)

Unit Name

The resource name of the disk arm.

User ID

(System, Component, Transaction, Job Interval, Pool) The list of users selected to be included (SLTUSRID parameter) or excluded (OMTUSRID parameter).

User Name

(Component, Transaction, Job Interval, Batch Job Trace) Name of the user involved (submitted the job, had a conflict, and so on.)

User Name/Thread

(Component, Transaction) If the job information contains a secondary thread, then this column shows the thread identifier. If the job information does not contain a secondary thread, then the column shows the user name. The system assigns the thread number to a job as follows:

- The system assigns thread IDs sequentially. When a job is started that uses a job structure that was previously active, the thread ID that is assigned to the initial thread is the next number in the sequence.
- The first thread of a job is assigned a number.
- Any additional threads from the same job are assigned a number that is incremented by 1. For example:

Job Name	User Name/ Thread	Job Number
QJVACMSRV	SMITH	023416
QJVACMSRV	00000006	023416
QJVACMSRV	00000007	023416
QJVACMSRV	00000008	023416

A thread value greater than 1 does not necessarily mean the job has had that many threads active at the same time. To determine how many threads are currently active for the same job, use the WRKACTJOB, WRKSBSJOB, or WRKUSRJOB commands to find the multiple three-part identifiers with the same job name.

User Starts

(Component) The number of start journal operations initiated by the user.

User Stops

(Component) The number of stop journal operations initiated by the user.

User Total

(Component) The total number of journal deposits resulting from system-journaled objects.

Util (Component, Resource Interval) The percent of utilization for each local work station, disk, or communications IOP, controller, or drive.

Note: The system-wide average utilization does not include data for mirrored arms in measurement intervals for which such intervals are either in resuming or suspended status.

Util 2 (Component, Resource) Utilization of co-processor.

Value (Transaction) For the Individual Transaction Statistics section of the Job Summary report, it is the value of the data being compared for the transaction. For the Longest Seize/Lock Conflicts section, it is the number of seconds in which the seize or lock conflict occurred.

Verify (Component) Number of verify exceptions per second. Verify exceptions occur when a pointer needs to be resolved, when blocked MI instructions are used at security levels 10, 20, or 30, and when an unresolved symbolic name is called. This count could be very high, even under normal system operation. Use the count as a monitor. If there are large variations or changes, explore these variations in more detail.

W-I Wait/Tns

(Transaction) The average time, in seconds, of wait-to-ineligible time per transaction. This value is an indication of what effect the activity level has on response time. If this value is low, the number of wait-to-ineligible transitions probably has little effect on response time. If the value is high, adding additional interactive pool storage and increasing the interactive pool activity level should improve response time. If you are unable to increase the interactive pool storage (due to limited available storage), increasing the activity level may also improve response time. However, increasing the activity level might result in excessive faulting within the storage pool.

Wait Code

(Transaction) The job state transition that causes the trace record to be produced. The values can be as follows:

EVT Event Wait. A long wait that occurs when waiting on a message queue.

EOTn End of transaction for transaction for type n. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

EORn End of response time for transaction n. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

» Error Responses

(Component) The number of responses in error. «

HDW Hold Wait (job suspended or system request).

LKRL Lock Released. The job released a lock it had on the object named on the next detail line of the report (OBJECT —). The job that was waiting for the object is named on this line (WAITER —) along with the amount of time the job spent waiting for the lock to be released.

LKW Lock Wait. If there are a number of these, or you see entries with a significant length of time in the ACTIVE/RSP* column, additional analysis is necessary. The LKWT report lines that precede this LKW report line show you what object is being waited on, and who has the object.

LKWT

Lock Conflict Wait. The job is waiting on a lock conflict. The time (* / time /*) is the duration of the lock conflict and, though not equal to the LKW time, should be very close to it. The holder of the lock is named at the right of the report line (HOLDER —). The object being locked is named on the next report line (OBJECT —).

SOTn Start of transaction n. These codes are in the wait code column, but they are not wait codes. They indicate transaction boundary trace records.

SWX Short Wait Extended. The short wait has exceeded a 2-second limit and the system has put the transaction into a long wait. This long wait must be charged to the transaction response time. In other words, this active-to-wait transaction does not reflect a transaction boundary.

SZWG

(Transaction) Listed in the Wait Code column, Seize Wait Granted. The job was waiting on a seize conflict. The original holder released the lock that it had on the object, and the lock was then granted to the waiting job. The job that was waiting for the object is named on this line (WAITER —) along with the amount of time the job spent waiting for the seize conflict to be released. The object that is held is named on the next line of the report (OBJECT —).

SZWT Seize/Lock Conflict Wait. The job is waiting on a seize/lock conflict. The time (* / time /*) is the duration of the seize/lock conflict, and is included in the active time that follows it on the report. The holder of the lock is named at the right of the report line (HOLDER —). The object being held is named on the next report line (OBJECT —).

TSE Time Slice End. The program shown in the stack entry labeled LAST is the program that went to time slice end. Every time a job uses 0.5 seconds of CPU time (0.2 seconds on the faster processors) between long waits, the system checks if there are jobs of equal priority on the CPU queue. If there are, then the next job with equal priority is granted the CPU and the interrupted job is moved to the queue as the last of equal priority. The job, however, retains its activity level. This is an internal time slice end. When a job reaches the external time slice value, there can be a job state transition from active to ineligible if another job is waiting for an activity level. When a job is forced out of its activity level, its pages are liable to be stolen by other jobs, and cause additional I/O when the job regains an activity level. The IBM^(R)-supplied default values of 2 seconds for interactive jobs and 5 seconds for batch jobs may often be too high, especially for the high-end processors. As an initial value, set the time slice at 3 times the average CPU seconds per transaction.

WTO Wait Timed Out. The job has exceeded the wait time-out limit defined for a wait (such as a wait on a lock, a message queue, or a record).

Wait-Inel

(System, Component) Average number of wait-to-ineligible job state transitions per minute.

Work Station Controller

(Resource Interval) The name of the remote work station controller.

Writes per Second

(Resource Interval) The average number of disk write operations performed per second by the disk arm.

WTO (Transaction) Listed in the Wait Code column, Wait Timed Out. The job has exceeded the wait time-out limit defined for a wait (such as a wait on a lock, a message queue, or a record).

0.0-1.0 (Component, Resource Interval) The number of times the response time was between 0 and 1 second.

1.0-2.0 (Component, Resource Interval) The number of times the response time was between 1 and 2 seconds.

2.0-4.0 (Component, Resource Interval) The number of times the response time was between 2 and 4 seconds.

4.0-8.0 (Component, Resource Interval) The number of times the response time was between 4 and 8 seconds.

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