



IBM eServerJ iSeriesJ

Session: SP03

WebSphere Application Performance Sizing and Capacity Planning for iSeries

Part 1 - Sizing WebSphere Workload on iSeries Servers

Part 2 - Create Model for WebSphere Applications Capacity Planning



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FOUO 03/06/2003 WAS - sizing and capacity planning.PRZ

ITSO iSeries Technical Forum



Acknowledgments

- ▶ Thanks to *Ash Ishak and Anna Sue Parker* who helped to put together the Workload Estimator and sizing information
- ▶ Thanks to *Lloyd Perera* who helped me to develop the approach for creating a capacity planning model for WebSphere applications using Patrol Predict for iSeries



Sizing WebSphere Workload on iSeries Servers

Session Objectives

- Part 1 - Sizing
 - ▶ Learn how Workload Estimator supports WebSphere workload
 - ▶ Learn how to answer the WebSphere workload questions
 - ▶ Demonstrate and review case studies for sizing WebSphere workloads
- Part 2 - Capacity Planning
 - ▶ Learn how to create a model from collected performance data of WebSphere applications
 - ▶ Demonstrate the advantages of doing Capacity Planning over Sizing

Workload Estimator for iSeries

- Why use WLE?
 - ▶ Current application growth
 - ▶ Emerging application sizing

- How do I use WLE?
 - ▶ Internet:<http://www-912.ibm.com/servlet/EstimatorServlet>
 - ▶ Techline provides WebSphere sizing assistance

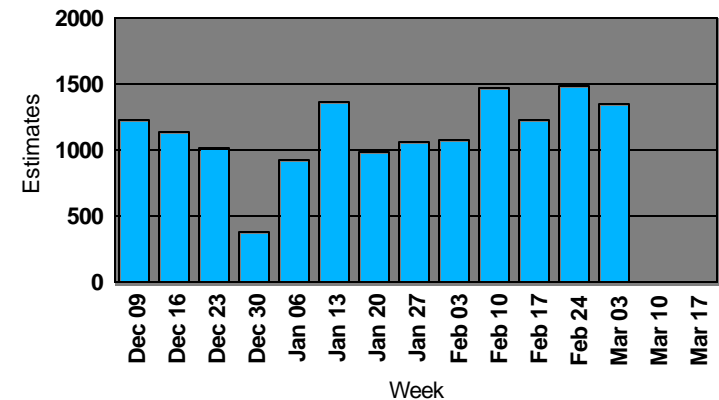
- Who can use the WLE?
 - ▶ Customers
 - ▶ Business Partners
 - ▶ IBMers



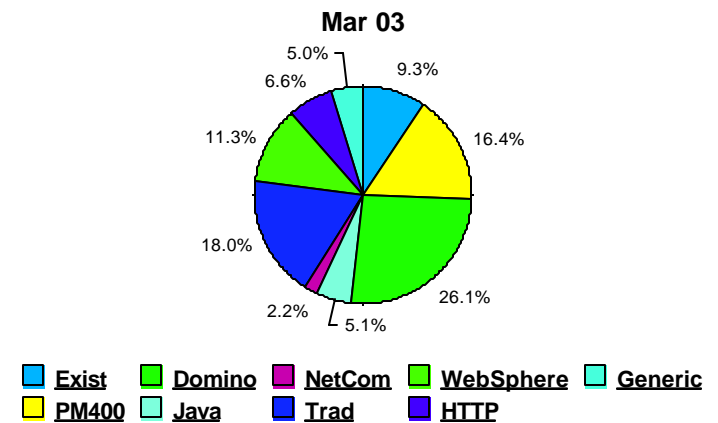
The workloads supported by WLE

- The Supported workloads
 - ▶ Exists
 - ▶ Traditional
 - ▶ Generic
 - ▶ PM/400
 - ▶ Domino
 - ▶ WebSphere Workload V5
 - ▶ Web Serving Workload (HTTP)
 - ▶ WebSphere Commerce Workload
 - ▶ Java™ Workload
 - ▶ WebFacing Workload
 - ▶ WebSphere Portal Server
 - ▶ File Serving Workload (Linux)

Estimates Over Time



Percent Workload Usage Breakdown



Getting Started... (new version available Jan. 28th)

www.ibm.com/eserver/series/support/estimator

New
Name

IBM  eServer Workload Estimator

Version: 2003.1 beta.1
15-Jan-03
pippe12

The IBM eServer Workload Estimator (Workload Estimator) and related materials are provided by International Business Machines Corporation (IBM) as a service to you and may be used for informational purposes only. Use of the Workload Estimator is restricted to the purpose of helping you predict a possible iSeries model processor, interactive feature, memory and DASD for a given workload. All representations of throughput, response time, memory, DASD, and other performance data in the Workload Estimator are estimates and averages based on certain assumptions and conditions. No representation is made that these throughputs and their corresponding response times or other performance data will be accurate or achieved in any given iSeries installation environment. They are based on specific configurations and run time environments. Customer results will vary. Any configuration recommended by the Workload Estimator should be tested and verified. By accepting this information or using the Workload Estimator

I Accept

I do not Accept

Always check this!

- Enhancements to the workloads supported, and new workloads is ongoing.

What's New!

We are providing a new version of the IBM eServer Workload Estimator 3 to 4 times a year. In the **2003.1** version (released Jan 2003), we have responded to your requests for various improvements, including the following new improvements and features:

Contents

[Support for the new iSeries Systems](#)

[WebSphere Application Server V5 for iSeries](#)

[WebSphere Application Server - Express V5 for iSeries](#)

[WebSphere Portal Server](#)

[WebFacing](#)

[Linux workloads for web serving and file serving](#)

[HTTP workload becomes the Web Serving workload](#)

[Web Commerce workload becomes the WebSphere Commerce workload](#)

[New Name for this Tool](#)

- **Support for the new iSeries Systems** - The Estimator has been updated to include the new iSeries systems that were recently announced. With this version of the Estimator, the new 800, i810, i825, i870 and new i890 models will be the systems that will by default be considered during the recommendation phase of the Estimator. The previous systems are still available by changing your options.
- **WebSphere Application Server V5 for iSeries** - The Estimator has been updated to support Version 5 as well

Navigation

✦ Save/Restore a Workload

✦ Save as PDF

✦ Print Recommendation

✦ Help

PM data used to build WLE workload profile
 LPAR Options: No, partial, full proc

- File
 - ▶ Add Workload
 - ▶ Restore
 - ▶ Save all
 - ▶ Print
 - ▶ PDF
- Edit
 - ▶ Refresh
 - ▶ Reset
 - ▶ Estimation Identificatio
 - ▶ Options
- Navigation
 - ▶ Workload Selection
 - ▶ Selected System
- Contact IBM
- Tutorials
 - ▶ Basic Walk-through
 - ▶ Detailed Walk-through
 - ▶ Save and Reuse
 - ▶ Consolidation
 - ▶ **PM eServer iSeries**
 - ▶ Logical Partitioning
- HELP
 - ▶ Detail descriptions of all the workloads



Options



Version: 2003.1.beta.1
15-Jan-03
pppe12

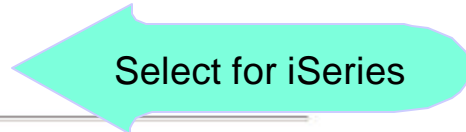
User Options

User Options

You have never viewed the options for the Workload Estimator. Please thoroughly review the default options so that estimates can be made more accurately.

Series Specific Settings

To review and update your iSeries options, click here: [Go to iSeries](#)



Operational Settings

1. What [series type](#) would you like to set as default?

- Cancel
- Load Standard Options
- Load My Options
- Save My Options
- Use This Time

IBM Workload Estimator for iSeries

an IBM eServer

Options

- ★ Set assumptions
 - ◆ Gather from customer

- ★ Options effect the size of the projected workload
 - ◆ Processor Utilization
 - ◆ Disk Storage
 - ◆ Family of servers

- ★ Recommendation is the minimum system for adequate performance

- ★ **The Estimator is not a configuration.**

Options

Base Calculation Defaults

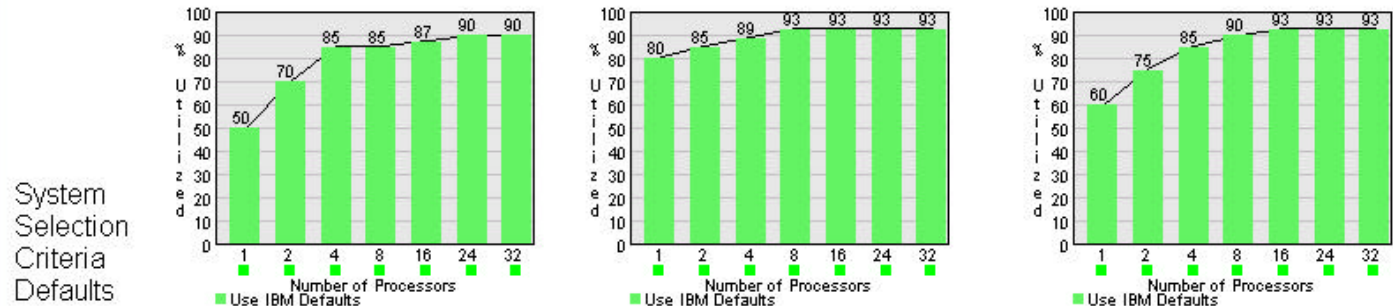
[OS Version Selection:](#) OS400 - V5R1

[DBCS Support:](#) No

[RAID Support:](#) RAID5

Note: Drag and Drop the top of each green bar to adjust the values. (See [Tutorial](#))

[Target Processor Utilization:](#) [Target Interactive Feature Utilization:](#) [Target LPAR Processor Utilization:](#)



System Selection Criteria Defaults

[Disk Storage Percent Full:](#) 0% 100% **85.0%**

[Disk Storage Type:](#) IBM Default (10K RPM)

Select which [Family](#) to target the sizing against: IBM Default (250,270,8xx)

System Size Adjustments Use the **GENERIC WORKLOAD** to make any adjustments to the number of diskarms, or the amount of disk storage of the selected system

Selecting Workload(s) and LPAR

IBM Workload Estimator

Home | Products & services | Support & downloads | My account

Version: 2002.3.fix.1
21-Nov-02
www-912

IBM Workload Estimator for iSeries

an IBM eServer

Workload Selection

Type of Workload	Name of Workload
Workload Type	Workload #1
Workload Type	Workload #2
Workload Type	Workload #3

Use the pull downs to select your workloads. Then press **Next**

Allow Another Workload

LPAR Status: No LPAR

Options: OS400 - V5R2, RAID Support = RAID-5, DBC
Developed by the Rochester iSeries System Performance Team

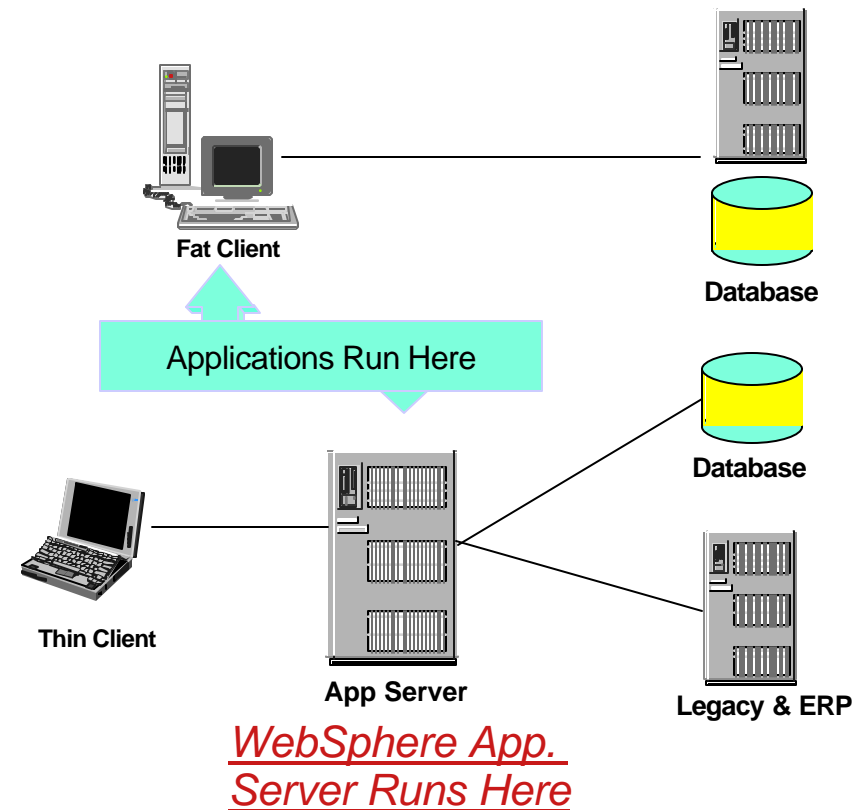
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Selecting Workload(s) - the new look

The screenshot shows the IBM Workload Estimator interface. At the top left is the IBM logo. To its right is a search bar with a 'Search' button. Below the logo is a navigation bar with links for 'Home', 'Products & services', 'Support & downloads', and 'My account'. The main heading is 'IBM eServer Workload Estimator'. On the right side, it says 'Version: 2003.1', '24-Jan-03', and 'pippen2' with a right-pointing arrow. The main content area is titled 'Basic Workload Selection'. Below this title, there is a section 'Add Workloads to This Solution: (help)' with an 'Expert View' button circled in red. Below that, it says 'Solution: MySolution' and an 'Add Workload' link. A list of workload options follows: Domino Workload, Existing Workload, File Serving (Linux) Workload, Generic Workload, Java Workload, Traditional Workload, Web Serving Workload, Web Serving (Linux) Workload, WebFacing Workload, WebSphere Workload, WebSphere Commerce Workload, and WebSphere Portal Server Workload. At the bottom right of the list is a 'Next' button with a right-pointing arrow.

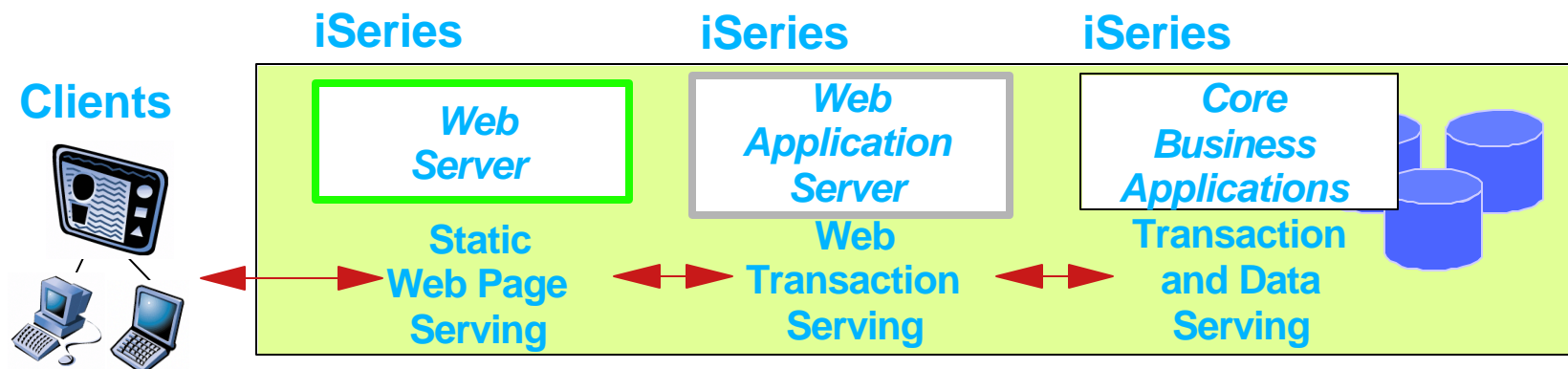
The WebSphere Application Server

- Fat Client
 - ▶ Update client code
 - ▶ Multiple Versions
 - ▶ Application code on client
 - ▶ Connects to DB Server
- WebSphere
 - ▶ User management
 - ▶ Connection management
 - ▶ Database and system resources
 - ▶ Integration to back-end systems
 - ▶ Application code on Server
 - ▶ WAS run Java code



The Web Workloads supported by WLE

- ▶ WebSphere Workload
 - WAS Workload V5
 - WAS Workload Express V5
- ▶ HTTP Workload
 - Web Serving
- ▶ Linux web and file serving
- ▶ Web Commerce Workload
- ▶ Java Workload
- ▶ WebFacing Workload
- ▶ Portal Workload



Scenario #1 - Insurance Company

- **Current Environment**
 - ▶ **The Claims application is a 5250 "green screen" RPG application**
 - Claims application is "home grown"
 - 50 Adjusters use this application
 - They typically add 400 claims per hour
 - Runs today on a 170-2183 512MB RAM

- **Opportunity**
 - Modernize by web enabling the legacy claims application
 - Future: Customers can file the claim on the Web

- **What to propose?**
 - WebFacing solution to their 5250 application
 - Web browser access to Claims application (internet/intranet)

Scenario #1 - Insurance Company - Review

- **What do I need to size the application?**
 - ▶ **Number of transactions per hour**
 - ▶ **Number of users**
 - ▶ **Average number of fields per screen**
 - ▶ **Number of unique screens**
 - ▶ **Will the new system continue to handle the "old" workload**

Scenario #1 - Insurance Company - Review

- **What do I need to size the application?**
 - ▶ **Number of transactions per hour**
 - 400 transactions per hour
 - ▶ **Number of users**
 - 50 users - Not needed
 - ▶ **Average number of fields per screen**
 - # of fields per screen - 100 is the default
 - ▶ **Number of unique screens**
 - DDS record formats
 - ▶ **Will the new system continue to handle the "old" workload**
 - WAS would run on a separate system or same system

WebFacing Workload Screen - Workload Definition

WebFacing #1

WebFacing Workload Definition

1. How many [transactions per hour](#) do you anticipate during the busiest hour of the day (one 5250 screen is a transaction)?
2. For a typical user of your application, what is the average number of [fields per 5250 screen](#) ? Refer to the help text for specific advice.
3. How many [unique 5250 screens](#) will be served through WebFacing?
4. So far, you have described the WebFacing processing for the 5250 screens. Would you also like to represent the [5250 application](#) in this estimation?
 Yes
 No
5. [DBCS Support](#) for this workload:
6. [RAID Support](#) for this workload:



Existing WebFaced Workload Definition

Web-Faced Existing #1

Existing System Workload Definition

Please note: The information requested for an Existing System is information about the workload on an existing iSeries or AS/400e that you would like to have added to a new iSeries.

	Model	Processor Interactive Feature	Processor Feature Code	Processor CPW	Processor Interactive CPW
1. Processor Model	170-2183	N/A	2183	319	65
2. Total CPU Utilization	<input type="text" value="50"/>				
3. Interactive Utilization	<input type="text" value="50"/>				
4. Processors Activated (For Processor on Demand models only)	<input type="text" value="1"/>				
5. Memory (MB)	<input type="text" value="512"/>				
6. Disk Arms Distribution:		Unprotected	Mirrored	RAID-5	
	7,200 RPM:	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="4.00"/>	
	10K RPM:	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	
		Unprotected	Mirrored	RAID-5	
	7,200 RPM:	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="32.00"/>	
	10K RPM:	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	
7. Storage Used (GB):					
8. Additional Characteristics:	<input type="text" value="None"/>				
9. Will this workload be changed to use WebFacing Support?	<input type="text" value="Yes"/>				

Selected System Screen

Selected System

Choose Base System

An existing system has been chosen as one of the workloads. Please make a selection below.

If you chose one of the existing systems, then after all the processing requirements of the various workloads have been calculated, the system selection algorithms will attempt to give preference to the selected system or a system on its upgrade path.

	Workload Name	Model	Type	Feature	Hardware Feature
<input type="button" value="Select"/> *	Web-Faced Existing #1	170	2183		2183
<input type="button" value="Select"/>	Do not limit selection based on upgrade path information from any existing system. Size to any possible system.				

* -- These systems do not have any systems in their upgrade path. Please choose another system, or choose to not limit the selection to an upgrade path.

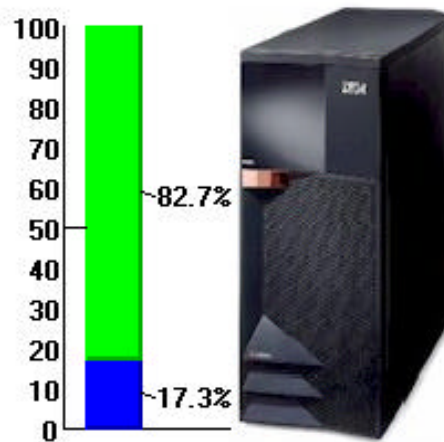


System Recommendation

Immediate Solution

Growth Solution

■ Available
■ WebFacing #1



[Growth Trends](#) can be changed [here](#).



The 800-2464/7408 can handle the defined workloads **NOW**.

It can also handle the specified growth.

Model/Feature:	800-2464/7408	950/50
Processor CPW:	950	950
Interactive CPW:	50 (0% utilized)	50 (0% utilized)
CIW Rating:	350	350
Database Capacity:	N/A	N/A
N-Way:	Uni	Uni
CPU Utilization:	17.3 %	26.0 %
Software Pricing Tier:	P10	P10
Memory (MB):	926 of 8,192	1,355 of 8,192
Disk Drives (arms):	6 of 63	9 of 63
Capacity (GB):	40 of 4,445	58 of 4,445
LPAR-able:	Shared	Shared

Scenario #2 - Distribution Company

- **Current Environment**
 - ▶ Customer wrote a Java application using WebSphere Application Server running on 8-Way NT Server. The customer is not happy with the NT management challenges and wants to select a more stable platform. Customer already has an iSeries system running LOB application.

- Opportunity
 - Migrate the application from NT to iSeries

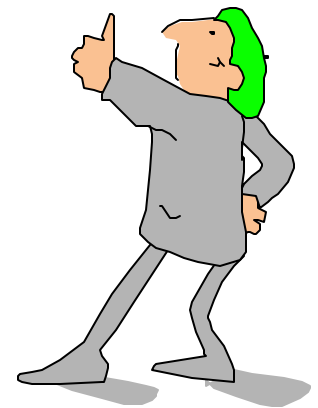
- What to propose?
 - Propose a new iSeries and LPAR
 - CUoD models - 825 and higher

Answering sizing questions.... WebSphere Workload

- **Version of WAS? 3.5, 4.0, Express and 5.0**
- **Which best describe the plans for web serving?**
 - ▶ **Serving web pages, Web-enabling legacy apps., Web appl w/DB access**
- **Describe a web site visit ?**
 - ▶ **Display a screen, process a claim, mouse click, etc.**
- **How many visits per hour at peak times?**
- **How many concurrent users?**
- **How many of the following will be accessed per web site visit? Are any complex doing calculations, etc. or more basic queries?**
 - ▶ **Static web pages - Basic Webpage - Dynamic pages or JSPs**
 - ▶ **Servlets - Runs on the server - EJBs - Usually one EJB per entity**
- **How large are the web pages being served?**
 - ▶ **Average number of files/page**
 - ▶ **Average size of file served**

Planning questions for Sizing WebSphere workload...

- Is the solution a tiered approach? How many tiers?
- Using SSL (Secure Sockets Layer)?
- What percentage of processor will be utilized by WAS?
- What type of transaction will be built in the application business logic?
 - ▶ Query with pre-build SQL
 - ▶ Lightweight Transactions
 - ▶ Medium Transactions
 - ▶ Complex Transactions
- How much disk storage is required for image files and sound files? (MB)
- Database utilization by servlets or EJB Session Beans? low, med, or high
- Describe back-end interaction that occurs during each web transaction
 - ▶ Read-only data - small (100 bytes), medium (1K), large (10+K)
 - ▶ Update data- small (5 columns), large (500 columns)
 - ▶ OLTP - size of COMM AREA - small (100 bytes), medium (1K)



Scenario #2 - Distribution Company - Review

- **What do I need to size the application?**
 - ▶ **Transactions**
 - Number of transactions
 - Number of JSPs
 - Number of Servlets
 - Number of static Web Pages
 - ▶ **EJB**
 - Entity EJB
 - Session EJB
 - ▶ **Complexity**
 - Database
 - EJBs
 - ▶ **DBCS and RAID**

WebSphere Workload Screen #1 - Workload Definition

WebSphere #1

WebSphere Workload Definition

1. Which [WebSphere Version](#) will be used? v4.0 v5.0
2. Will [WebSphere Express](#) be used?
3. How many [visits per hour](#) do you anticipate during the **busiest** hour of the day?
4. A visit is a group of transactions from a given user. In a typical visit, how many of the following operations will occur:
 - a. [Static web pages and files](#) served:
 - b. [Java Server Pages \(JSPs\)](#) served:
 - c. [Java Servlets](#) executed:
 - d. [EJB Session Beans](#) accessed:
 - e. [EJB Entity Beans](#) accessed:
5. [DBCS support](#) for this workload:
6. [RAID support](#) for this workload:



WebSphere Workload Questions... Screen #1 Notes

- Java Server Pages Served
 - ▶ Average number of JSPs used during a visit
- Servlets
 - ▶ Average number of servlets used during a visit
- EJB Session Beans
 - ▶ Average number of session beans used during a visit
 - ▶ Used in enterprise application to represent the logic in a transaction
- EJB Entity Beans
 - ▶ Average number of entity beans used during a visit
 - ▶ Used or accessing data in a database
 - ★ Entity beans can also be used to access data in legacy applications. In this case, you should size your legacy application separately (using, for example, the Traditional workload).
- DBCS (Double Byte Character Set)
 - Guidelines for DBCS provided by (and currently used by) Japanese Sales and Business Partners.
- RAID
 - The RAID-5 setting is usually the optimal solution.

WebSphere Workload Screen #2 - ExpertWorkload

WebSphere #1

ExpertWorkload Definition

1. Rate the [complexity of the Java Server Pages \(JSPs\)](#) used during a typical visit:
2. Rate the [complexity of the Java Servlets](#) used during a typical visit:
3. What is the [database utilization of the servlets](#)?
4. Do servlets typically use [servlet chaining](#)?

5. Rate the [complexity of the EJB Session Beans](#) used during a typical visit:
6. What is the [database utilization of the EJB Session Beans](#)?
7. Do your EJBs use [Pass-By-Reference](#)?

If EJB is needed, then questions 5, 6, and 7 are displayed.

WebSphere Workload Questions... Screen #2 Notes

- JSP Complexity
 - ▶ Simple - JSP for formatting data from other sources
 - ▶ Moderate - some computation (in-line code or Java Bean) and formatting data
 - ▶ Complex - JSP doing most of the work, this is rare
 - ★ Use Simple for JSP complexity for WebFacing
- Servlet Complexity
 - ▶ Simple - Does not perform session management, and does not use SSL
 - ▶ Moderate - Includes more computation or logic, does session management, may use SSL for a small percentage of transactions, & some data formatting
 - ▶ Complex - Does session management and a significant amount of computational work, and may use SSL for some transactions
 - ★ Use Moderate for servlet complexity for WebFacing
- ▶ Database Utilization of Servlets (local database)
 - ▶ None- Servlet with no Database work
 - ▶ Light - Light database access (1/3 or less is db code)
 - ▶ Average - approx. half of servlet time is spent accessing a database
 - ▶ Heavy - more that half of servlet is used for accessing a database (adding/deleting rows, or complex queries)
- ★ Usually assume the database is being used at an Average usage

WebSphere Workload Questions... Screen #2 Notes

- Servlet Chaining (yes/no)
 - ▶ Use of multiple Servlets or JSPs to process a single HTTP request
 - ★ Usually assume NO, don't configure unless the developer knows it is used
- Session Bean Complexity
 - ▶ Simple - stateless with 5-6 bean operations during a call
 - ▶ Moderate - stateful bean with minimal processing, and may access entity beans
 - ▶ Complex - stateful bean with complex processing and may access entity beans
- Session Bean Database Usage
 - ▶ None - Session Bean has no database access
 - ▶ Light - Light database access, usually accessing existing data
 - ▶ Average - More complex queries
 - ▶ Heavy - Session Bean that resides in an application, and does not use entity beans for database operations
- Pass-by-reference (yes/no)
 - ▶ WebSphere includes a "Pass-By-Reference" option for EJB calls
 - ▶ Could improve performance, but test the application carefully
 - ★ Usually assume "no", not using Pass-By-Reference customer or ISV...

Scenario #2- Workload Estimator Results...

- The results...
 - ▶ iSeries model 810 2-way
 - ▶ 2700 CPW
 - ▶ 2G RAM
 - ▶ 120GB Disk
 - ▶ Handles workloads NOW
- or
 - ▶ iSeries model 825 3-way
 - ▶ 3600 CPW
 - ▶ 3-4 GB
 - ▶ 200 GB Disk
 - ▶ Has room for growth
 - ▶ supports CUoD

Scenario #2 Result

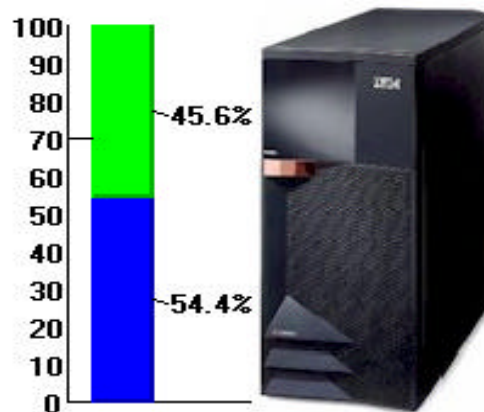
Selected System

Consider Growth

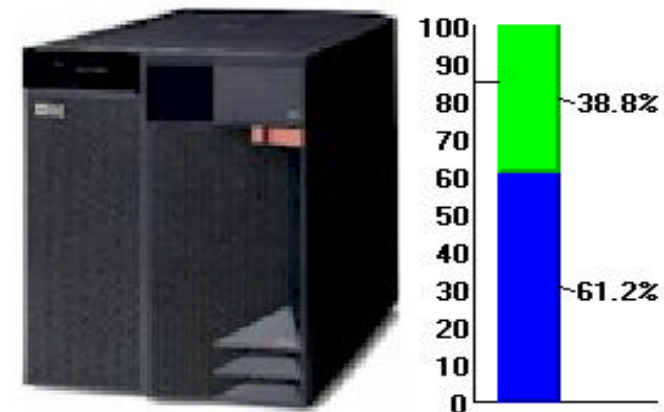
Immediate Solution

Growth Solution

■ Available
■ WebSphere #1



[Growth Trends](#) can be changed [here](#).

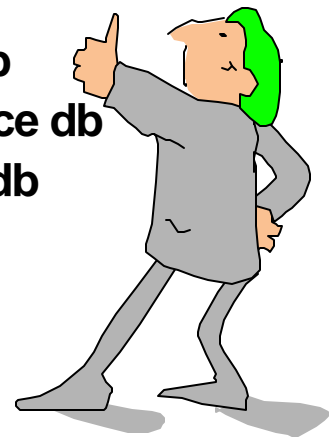


Model/Feature:	810-2469/7428 2700/0
Processor CPW:	2700
Interactive CPW:	0 (0% utilized)
CIW Rating:	975
Database Capacity:	N/A
N-Way:	2-way
CPU Utilization:	54.4 %
Software Pricing Tier:	P20
Memory (MB):	1,591 of 16,384
Disk Drives (arms):	7 of 198
Capacity (GB):	41 of 13,971
LPAR-able:	Shared

Model/Feature:	825-2473/7416 3600/0
Processor CPW:	3600 (for 3 processors)
Interactive CPW:	0 (0% utilized)
CIW Rating:	1570 (for 3 processors)
Database Capacity:	N/A
N-Way:	3-way
CPU Utilization:	61.2 %
Software Pricing Tier:	P30
Memory (MB):	2,354 of 16,384
Disk Drives (arms):	11 of 825
Capacity (GB):	58 of 58,216
LPAR-able:	Shared

Planning questions for Commerce workloads

- Use same as WebSphere workloads
- Obtain assistance from the programmers to determine number of Commerce Transactions per second - **Key question...**
- Database planning should include not only inventory but also orders, and customer information
- Prevent one of the bottleneck of poor disk I/O rate
 - ▶ Recommended
 - Low degree of db activity, 6 disk arms allocated for commerce db
 - Medium degree of db activity, 12 disk arms allocated for commerce db
 - High degree of db activity, 18 disk arms allocated for commerce db



Basic WebSphere on iSeries Sizing Guidelines

Product Name	Main Memory	Processor CPW
WebSphere Application Server v4.0, Advanced Single Server Edition for iSeries	750 MB	500
WebSphere Application Server v4.0, Advanced Edition for iSeries	1GB	500
WebSphere Application Server - Express, V5.0 for iSeries	500 MB	300
WebSphere Application Server v5.0 for iSeries	750 MB	500
WebSphere Application Server Network Deployment v5.0 for iSeries	750 MB	450
WebSphere Commerce Professional Entry Edition for iSeries, v5.4	1 GB	950
WebSphere Commerce Professional Edition for iSeries, v5.4	1 GB	420
WebSphere Commerce Business Edition for iSeries, v5.4	1 GB	500
WebSphere Portal Enable for iSeries v4.1	1 GB? per user?	900?

Notes:

- The above recommendations are minimum iSeries configurations. It is recommended to run a pilot workload to correctly size the system.
- The number of users, transactions, and type of application are major factors in driving the configuration.

Sizing of WebSphere workloads Factors

- Working with Techline/Partnerline and using WLE provide **estimates** that help roughly size the processor capacity needed for a web application.
- A Pilot workload running in a test environment would provide a more accurate sizing estimate – *ideally*.
- WLE allows multiple workloads, but can also size separate workloads
- **Recommendation**
 - ▶ iSeries configured with L2 Cache for better perf. & WAS startup performance
 - ▶ iSeries server be at least 300 CPW, and 400 CPW if using EJB
- **Be aware ! WLE uses Minimum configuration rules for ...**
 - ▶ Number of disks arms and Amount of memory
- **WebFacing Considerations...**
 - Always use the pre-touch tool; number of fields and screens are key...

Performance Factors for WebFacing

- Webfacing WLE
 - ▶ Will require someone familiar with application to use
 - ▶ Need to know average fields-per-screen, number of unique screens
 - ▶ Validation of algorithms using real world applications results

- Webfacing Deployment
 - ▶ Always invoke the pre-touch tool before application deployment

Where do I get support.... Techline and Partnerline

Americas

- Web access
 - ▶ w3.ibm.com/support/americas/techline
- Techline Phone List
 - ▶ US and Canada -- 1-888-426-5525
 - Option 1 = Software Solutions
 - Option 2 = e(logo)Server Hardware and Systems Software
 - Option 3 = Storage and Networking
 - Option 4 = Competeline
 - Option 5 = Printing Systems
 - Option 6 = ISV Solutions
 - ▶ Business Partners (US and Canada) -- 1-800-426-9990
 - ▶ ISV Solution Sizing (US and Canada)-- 1-800-426-0222
 - ▶ Latin America --
 - For Techline, CompeteLine, and ISV Sizing requests, call tie-line 445-9700 or 770-835-9700
 - Business Partners call their in-country PartnerLine

Where to get support?

Asia/Pacific

- Techline
 - ▶ http://w3-6.ibm.com/support/ap/ap_techline.html
- AP Technical Sales Support (ATS)
 - ▶ <http://w3-6.ibm.com/support/ap/>

EMEA

- <http://w3-1.ibm.com/support/emea/econtact.html>

Global Technical Sales and Support (for IBM)

- <http://w3.ibm.com/support/index.html>



Capacity Planning for iSeries

Create Model

A **Model** represents performance data and iSeries configuration information from the system selected for Capacity Planning review.

PATROL for iSeries - Predict has many options available to create models and perform predictive modeling. This section will introduce a simple use of the **model creation** part ("Analyze") of the product running on the iSeries through a 5250-interface, and how to upload the model to a PC.

This section will be followed by a presentation on a simple usage of the predictive modeling component running on the PC.

These sections will be followed by a simple lab exercise, on the use of PATROL for iSeries - Predict.

Later sections will discuss more detailed environments and uses of PATROL for iSeries - Predict.

'Transactions' in WebSphere

- ▶ Business Transactions vary with each customer/situation
 - ▶ Interactions - # of times user clicks, submits, requests, etc...
 - ▶ Hits/sec - serving of static data
 - ▶ HTTP - # of JSPs passed
 - ▶ WAS - # of servlets processed
 - ▶ Application - # of calls to specific programs
 - ▶ Database - total DB requests, or specific SQL requests, open account, create....
- ▶ Transactions are not automatically defined for you when measuring WebSphere Application Performance
 - ▶ have to be counted elsewhere
 - ▶ HTTP log
 - ▶ application data base
 - ▶ statistical data gathered in WAS
 - ▶ have to be defined with *NONE as Non Interactive transactions

Start Patrol Predict Modeling - STRPTRL

```
MAIN                               AS/400 Main Menu                               System:  XXXXXXXX

Select one of the following:

    1. User tasks
    2. Office tasks
    3. General system tasks
    4. Files, libraries, and folders
    5. Programming
    6. Communications
    7. Define or change the system
    8. Problem handling
    9. Display a menu
   10. Information Assistant options
   11. Client Access/400 tasks

    90. Sign off

Selection or command:
===> strptrl F4

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel   F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 1999.
```

STRPTRL

The default library for PATROL Predict - for iSeries code on the iSeries is **PATROL PRED**. Make sure you add this library (ADDLIB) to your library list before running the STRPTRL command. The Start PATROL Capacity Planner (STRPTRL) command starts the "Analyze" part of the capacity plan, which creates the model.

Pressing F4 will allow you to specify default iSeries libraries for
PATROL models and
iSeries performance data

STRPTRL

Start PATROL (STRPTRL)

Type choices, press Enter.

Type choices, press Enter.

Parameter
Name

Defaults

PATROL data library	<i>PTRLDTALIB</i>	*CURLIB
Performance data library	<i>PFRDTALIB</i>	QMPGDATA

Bottom

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

STRPTRL

The STRPTRL command allows two parameters to be supplied:

PATROL data library (PTRLDTALIB) - the PATROL data library where models are stored. The default value is *CURLIB and when a current library is not specified for the 5250-session, QGPL will be used. Use the CHGCURLIB command to change the current library for the session.

Performance data library (PFRDTALIB) - the performance data library containing iSeries performance data. The default is QMPGDATA library.

Disclaimer

PATROL** for iSeries (AS/400) - Predict

Disclaimer:

The performance estimates presented are approximations which are believed to be sound. The degree of success which you may achieve in the use of BMC programs is dependent upon a number of factors, many of which are not under BMC Software's control. Thus BMC Software neither warrants nor guarantees that you can or will achieve similar results. It is your responsibility to validate the estimates furnished and to determine their relevance to your operation.

PATROL is a registered trademark of BMC Software, Inc., Houston, TX, USA.

(c) Copyright 1975-2002, as an unpublished work. All rights reserved. Contains confidential information and trade secrets proprietary to BMC Software, Inc. and one or more third parties. Disassembly or decompilation of the software is prohibited.

Bottom

Press Enter to continue.

F12=Cancel

Disclaimer

The disclaimer emphasizes the fact it is not possible to **"warrants nor guarantees"** the results of a predictive analysis of hardware requirements, because of the uncertainties associated with the predictive process. Not only is it difficult to predict the behavior of application code, but it is even more difficult to determine user behavior and activity in the future.

Considering these uncertainties, it is important to understand the limitation of the predicted results in terms of overall "accuracy", and this limitation must be conveyed to the customer and realistic levels of expectation set at the outset.

Predict Main Menu

PATROL for iSeries (AS/400) - Predict, Release 7.1.00

Select one of the following:

1. Create PATROL model from performance data
10. Work with PATROL models
20. Work with job classification members
30. Work with Product Control Files
50. About PATROL for iSeries (AS/400) - Predict

Selection or command

====>

F3=Exit F4=Prompt F9=Retrieve F12=Cancel

Predict Main Menu

The PATROL Predict - for iSeries Main Menu has the following options:

1. Create PATROL model from performance data
creates a new model from iSeries performance data.
10. Work with PATROL models
copies, deletes, renames, or transfers PATROL created previously.
20. Work with job classification members
A job classifications identifies how iSeries jobs are to be grouped to form workloads. Jobs classified by the user can be saved for reuse, including changing, deleting, renaming and print its contents.
30. Work with Product Control Files
provides the interface to enter license information for the specific iSeries system(s) to be modeled.
50. About PATROL for iSeries (AS/400) - Predict
provides a brief description of PATROL for iSeries - Predict and an overview of how to use it.

Create Product Control File

Work with Product Control Files

Type options, press Enter. Product Control Files verify that you are licensed to create PATROL models of specific systems. Any system can create a PATROL model, provided it has the Product Control File for the system that generated the performance data.

1=Create 2=Change 3=Copy 4=Delete

Opt	Serial Number	Text
1	10-4AV4M	
	10-SAP2T	SAP Perf Data

Command
 ==>
 F3=Exit F4=Promp

Create Product Control File

Type choices, press Enter. Be sure to enter the data EXACTLY as provided by BMC Software. Note that the symbol \$ should be replaced by your national currency symbol.

```

Company Name . . . . . ???????
Coded Company Name . . . . . ???????
Company Location . . . . . ???????

Coded Company Locaton . . . . . ???????
System Serial Number . . . . . : BCDE Last four characters
Product ID . . . . . : IP400
Expiration Date . . . . . nn/nn/nn Date
Product Code . . . . . ??????????????

Text . . . . .
F3=Exit F12=Cancel
    
```

Create Product Control File

Prior to creating a model using PATROL for iSeries - Predict on the iSeries, the appropriate entries must be made in the Product Control File. Information to complete the entries (one for each iSeries system to be processed through the "Analyze" function of PATROL) must be obtained from BMC.

The Product Control File (**CTLF_IP400**) contains a member for each of the iSeries Systems that are licensed to have their Predict Models created on the iSeries System.

It contains

- the Company Name and Coded ID
- the iSeries serial number
- a license key
- an expiry date
- etc.

Create Model

Create PATROL Model from Performance Data

Type choices, press Enter. Use *SLTHOUR to select an hour-long time period or use *SLTITV to select first and last interval of a one to two hour time period. The time period selected should be representative of your peak processing activity.

Performance data:

Member	Q108142248	Name, F4 for list
Library	PERFDATA	Name
Start time	*SLTITV	Time, *FIRST, *SLTHOUR, *SLTITV
Start date	*FIRST	Date, *FIRST
Stop time	*LAST	Time, *LAST
Stop date	*LAST	Date, *LAST

F3=Exit F4=Prompt F12=Cancel

Create Model

Specify the following:

the required performance data set based on which the PATROL model is to be created.

the time periods over which data is to be used in the model

*FIRST - selects the first (or only) interval found in the data.

*LAST - selects the last interval in the data.

*SLTHOUR - helps select an hour-long time period of performance data. By default, the data presented in hour long periods in descending sequence by CPU utilization. The time stamp shown is that of the last interval in the time period. The data may be sorted in sequence by

F15=Sort by interval

F16=Sort by count

F17=Sort by rsp time

F18=Sort by total CPU util

F19=Sort by total I/Os

*SLTITV - allows you to select the first and last interval from a list. By default, the data presented in hour long periods in descending sequence by CPU utilization. The time stamp shown is that of the last interval in the time period. The data may be sorted in sequence by

F15=Sort by interval

F16=Sort by count

F17=Sort by rsp time

F18=Sort by total CPU util

F19=Sort by total I/Os

Select Time Interval

```

                                Select Time Interval

Library . . . . . : PERFDATA      Performance member . . : Q108142248

Type option, press Enter.  Select first and last interval.
  1=Select

Opt   Date       Time          ----Transaction----  --CPU Util---  I/Os per Sec
      04/18/02   14:25:00          Count  Rsp Time  Total  Inter  Sync  Async
  1   04/18/02   14:30:00           52     .4    86     2    58   135
  1   04/18/02   14:35:00          118     .5    89     6    44   125
      04/18/02   14:40:00          130     .9    90    11    42   120
  1   04/18/02   14:45:00          153    1.5    94    16    32    94

                                                                    Bottom

F3=Exit   F12=Cancel   F15=Sort by interval   F16=Sort by count
F17=Sort by rsp time   F18=Sort by total CPU util   F19=Sort by total I/Os
    
```

Select Time Interval

Only first and last intervals may be selected. The time stamp shown is that of the last interval in the time period.

Use the appropriate Sort Function keys to arrange the data intervals as required:

F15=Sort by interval

F16=Sort by count

F17=Sort by rsp time

F18=Sort by total CPU util

F19=Sort by total I/Os

Classify Jobs

Classify Jobs

PATROL uses Job Classifications to group jobs from performance data into workloads. PATROL provides a default job classification which generates a Client Access workload, an Interactive workload, a Non-interactive workload, and a special default workload containing everything else. These provide a general idea of how the system is performing.

If you are interested in jobs for a particular jobname, a particular set of users, a particular subsystem, etc., then create your own job classifications. This gives you more control over exactly which jobs go into which workloads, and leads to much more useful results.

Select one of the following:

- 1. Use default job classification
- 2. Classify jobs into workloads
- 3. Use existing job classifications

Selection

F3=Exit F12=Cancel

Specify Job Classification Category

Type choice, press Enter.

Category 6

- 1=User ID
- 2=Job type
- 3=Job name
- 4=Account code
- 5=Job number
- 6=Subsystem
- 7=Pool
- 8=Control unit
- 9=Comm line
- 10=Functional area
- 11=Multiple category

Classify Jobs

Default Job Classification

Classifies Jobs into four workload categories

- interactive
- non-interactive
- CLIENTAC4
- QDEFAULT

Classify jobs into workloads

"Manual" classification in to workloads based on the following categories:

- 1=User ID
- 2=Job type
- 3=Job name
- 4=Account code
- 5=Job number
- 6=Subsystem
- 7=Pool
- 8=Control unit
- 9=Comm line
- 10=Functional area
- 11=Multiple category - All other options were available in BEST/1. This option is new in PATROL for iSeries - Predict.

Use existing job classifications

Use job classifications previously created and saved.

Assign Jobs to Workloads

Assign Jobs to Workloads

Workload WEBSPHERE

Type options, press Enter. Unassigned jobs become part of workload QDEFAULT.
 1=Assign to above workload 2=Unassign

Opt	Workload	Subsystem	Number of Transactions	CPU Seconds	I/O Count
			0	9.201	2387
	BATCH	CHAINBCH	0	1152.268	130881
	BATCH	QBATCH	0	615.503	56856
		QCMN	0	.000	3
1	WEBSPHERE	QEJBSBS	0	953.318	525
	INTER	QINTER	453	219.628	1044
		QMQM	0	.239	2
		QSERVER	0	.015	32
		QSYSWRK	0	15.427	7590
		QUSRWRK	0	.000	3

Bottom

F3=Exit F12=Cancel F15=Sort by workload F16=Sort by subsystem
 F17=Sort by transactions F18=Sort by CPU seconds F19=Sort by I/O count

Assign Jobs to Workloads

Specify a Workload name and allocate the iSeries jobs based on the selected category. For each workload to be created, enter its name in the workload field and then select jobs to assign to it. Repeat this process until no more workloads need to be created. Unassigned jobs are assigned to the QDEFAULT workload. Use F9=Display values from data to display all the values within the selected category

User ID - User Profile

Job type -

*AUTOSTART

*BATCH

*DDM

*EVOKE - communications batch

*INTERACTV - 5250

*LIC - License Internal Code

*PTHRUTGT - Target Passthrough

*PTHRUSRC - Source Passthrough

*CLIENTAC4 - Client Access

*MONITOR - Subsystem Monitor

*SYSTEM

*SCPF - System Control Program Functions

Job name

Account code

Job Number

Subsystem - Subsystems names for allocation by Subsystem

Pool - Memory Pools

Control unit

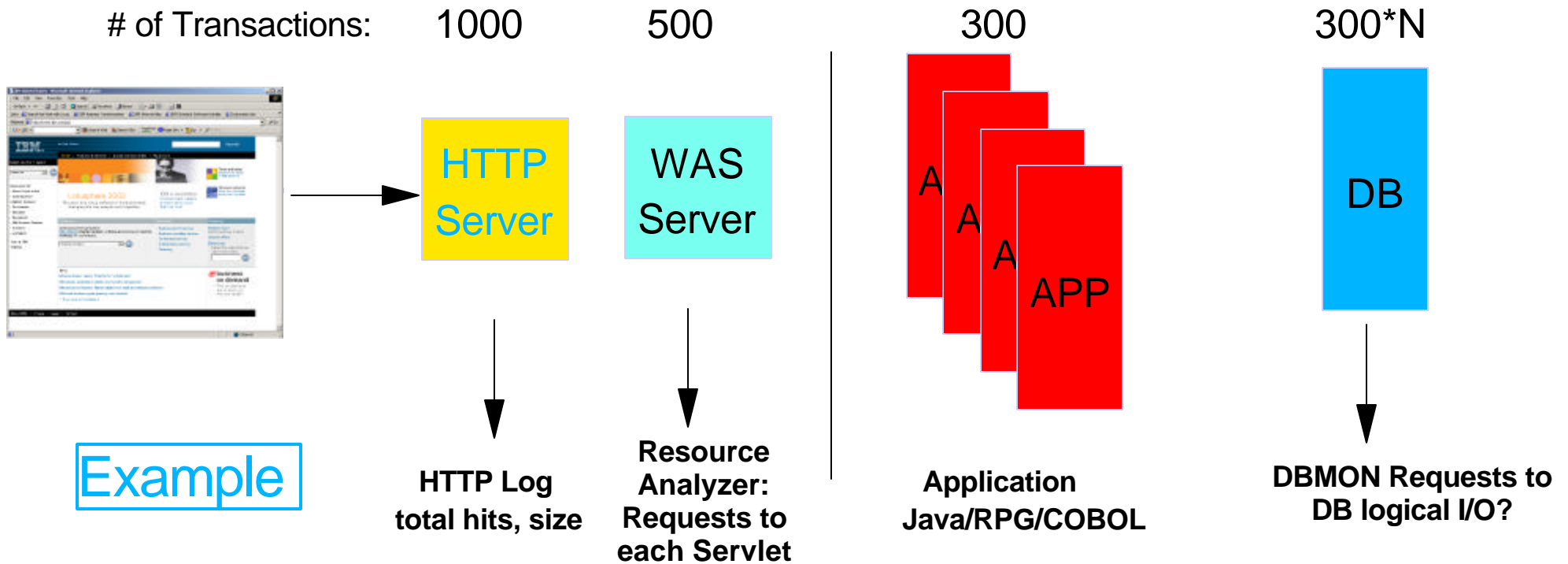
Comm line

Functional area - (create Functional Areas using the option in Performance Tools)

Multiple category - allows workload identification based on multiple categories (see following Chart)

Distribution of work

- ▶ Not all activities coming into the system are equally effect resources
 - ▶ many hits from browsers might be requests for static information handled by the HTTP server
 - ▶ some hits will be forwarded to the application server for processing
 - ▶ each servlet call might call one or more application modules
 - ▶ each application might execute one or more DB requests



Notes: Distribution of work

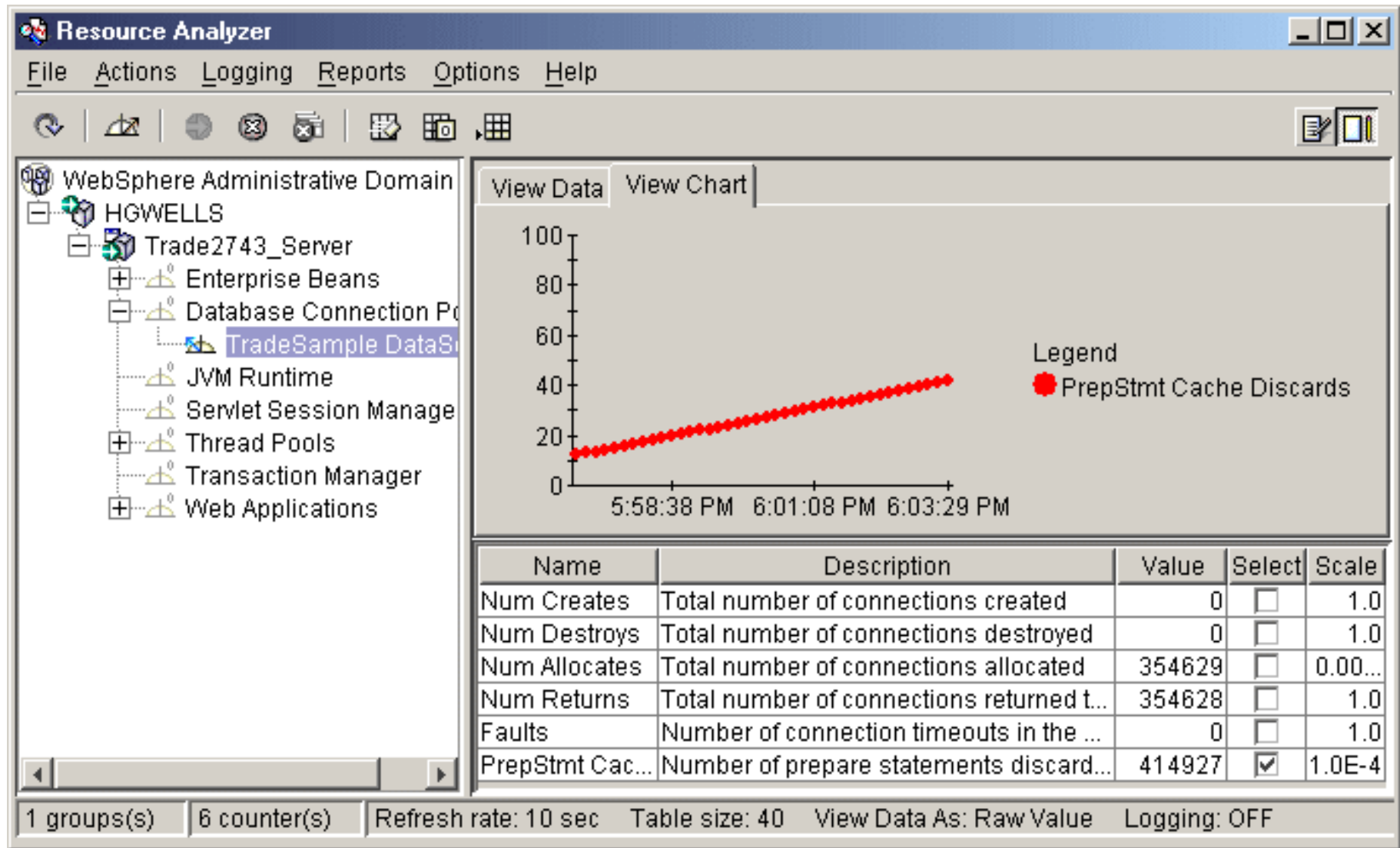
▶ Resource Utilization

- ▶ All Capacity Planning for Hardware excludes "Application Bottlenecks"
- ▶ HTTP/WebSphere Application Server/Application Code/DB
- ▶ Careful of "doubling" the transaction count by Predict - because of pools!

How to Measure WebSphere Transactions?

- ▶ Capacity Planning Unit of Measure - CPUMs
 - ▶ Consider business transactions, for example:
 - ▶ Order entry business transactions:
 - ▶ Retrieving Customer data
 - ▶ Enter Order requirements
 - ▶ Check Stock availability
 - ▶ Produce Order summary and so on
 - ▶ each business transaction may have many individual interactions/mouse clicks
 - ▶ Measurement of Business Transactions can be based on:
 - ▶ User - hits per HTTP session
 - ▶ Application Server - call of specific servlets
 - ▶ Database Server - advance order number
 - ▶ Modelling results include response times and throughput per Business Transaction
 - ▶ Note: Don't make the business transactions too big... like truck load, cars manufactured
 - ▶ Individual "request/mouse-click" response time should be relevant

Using Resource Analyzer to determine # transactions



Resource Analyzer can monitor the following information

EJB information - Number of active beans, method statistics, cache and pool information

Database connection pools - Number of connections, average wait time, number of threads, number of times connection used

System (IMS) - Number of physical connections, Number of connection handles

JVM run time - Total memory available to JVM, amount of free memory

Servlet session manager - Total number of HTTP sessions, average time to perform request, average concurrent active HTTP sessions

Thread pools - Object Request Broker (ORB) pool, web container pools thread information

Transaction manager - Average number of active transactions, duration of transactions, number of methods per transaction

Web applications - Number of loaded Servlets, average response time for requests, number of requests for the Servlet

Notes: The Analyzer collects and reports performance data for the following resource categories:

Enterprise beans. Data for this category reports load values, response times, and life cycle activities for enterprise beans. Examples include the average number of active beans and the number of times bean data is loaded or written to the database. It reports information for enterprise bean methods, which are the remote interfaces used by an enterprise bean. Examples include the number of times a method was called and the average response time for the method. It also reports information on the size and usage of a cache of bean objects (enterprise bean object pools). Examples include the number of calls attempting to retrieve an object from a pool and the number of times an object was found available in the pool.

Database connection pools. Data for this category reports usage information about connection pools for a database. Examples are the average size of the connection pool (number of connections), the average number of threads waiting for a connection, the average wait time in milliseconds for a connection, and the average time the connection was in use.

J2C Connectors. Data for this category reports usage information about the J2EE (Java 2 Enterprise Edition) Connector Architecture that enables enterprise beans to connect and interact with procedural back-end systems, such as Customer Information Control System (CICS), and Information Management System (IMS). Examples are the number of managed connections (physical connections) and the total number of connections (connection handles).

JVM run time. Data for this category reports memory used by a process as reported by the JVM. Examples are the total memory available and the amount of free memory for the JVM.

JVMPi run time. In addition, the Resource Analyzer makes use of a Java Virtual Machine Profiler Interface (JVMPi) to enable a more comprehensive performance analysis. This profiling tool enables the collection of information about the Java Virtual Machine (JVM) that runs the application server. See Enabling JVMPi data reporting.

Servlet session manager. Data for this category reports usage information for HTTP sessions. Examples include the total number of sessions being accessed, the average amount of time it takes for a session to perform a request, and the average number of concurrently active HTTP sessions.

Thread pools. Data for this category reports information about the pool of Object Request Broker (ORB) threads that an application server uses to process remote methods and the Web container pools that are used to process HTTP requests coming into the application server. Examples include the number of threads created and destroyed, the maximum number of pooled threads allowed, and the average number of active threads in the pool.

Transaction manager. Data for this category reports transaction information for the container. Examples include the average number of active transactions, the average duration of transactions, and the average number of methods per transaction.

Web applications. Data for this category reports information for the selected server. Examples include the number of loaded servlets, the average response time for completed requests, and the number of requests for the servlet.

Using Resource Analyzer to determine # transactions

Resource Analyzer
_ □ ×

File Actions Logging Reports Options Help

↻ 📊 🔍 📄 📁 📑 📄 📄
📄

WebSphere Administrative Domain

- [-] TOLKIEN
 - [-] Trade2_Server
 - [-] Enterprise Beans
 - [-] Default EJB Containe
 - [-] Default EJB Containe
 - [-] Methods
 - [-] Default EJB Containe
 - [-] Default EJB Containe
 - [-] Default EJB Containe
 - [-] Default EJB Containe
 - [-] Default EJB Containe
 - [-] Default EJB Containe
 - [-] Methods
 - [-] Default EJB Containe
 - [-] Methods
 - [-] Database Connection Po
 - [-] jdbc/TradeSample
 - [-] JVM Runtime
 - [-] Servlet Session Manage
 - [-] Thread Pools
 - [-] Transaction Manager
 - [-] Web Applications
 - [-] Trade2_Server.Apact
 - [-] Trade2_Server.trade

View Data
View Chart

Legend

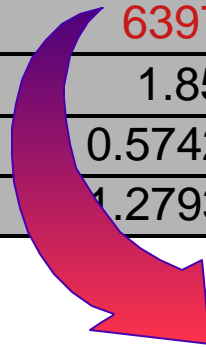
- Num Creates
- Num Removes
- ▲ Num Activates

Name	Description	Value	Select	Scale
Num Creates	Number of times beans were created	8	<input checked="" type="checkbox"/>	1.0
Num Removes	Number of times beans were removed	12599	<input checked="" type="checkbox"/>	0.0010
Num Activates	Number of times beans were activated	13130	<input checked="" type="checkbox"/>	0.0010
Num Passivates	Number of times beans were passivated	539	<input type="checkbox"/>	1.0
Num Instantiates	Number of times beans were instantiated	12608	<input type="checkbox"/>	1.0
Num Destroys	Number of times beans freed	12599	<input type="checkbox"/>	1.0
Num Loads	Number of times bean data was loaded from	13130	<input type="checkbox"/>	1.0

1 groups(s) 22 counter(s) RefreshRate: 10 sec Table size: 40 View Data As: Raw Value Logging: OFF

Application recorded business transactions, example - SAP R/3 CCMS Data

	Dialog	Resp secs	CPU secs	DB secs
9:35	629	1,751	205	1,632
9:40	715	830	151	676
9:45	718	498	92	404
9:50	672	963	426	449
9:55	570	5,498	2,172	3,394
10:00	370	227	158	65
10:05	435	312	180	131
10:10	415	184	65	115
10:15	655	276	70	202
10:20	416	908	55	849
10:25	363	171	52	125
10:30	439	188	47	142
Total	6397	11806	3673	8184
Ave Resp	1.85			
Ave CPU	0.5742			
Ave DB	1.2793			



Use to specify Number of Dialog steps

Server Dialogs

Specify Paging Behaviors
Define Non-Interactive Transactions

Job classification category : Job Number

Type choices, press Enter.

	---Activity Counted as Transaction---		
Workload	Type	Quantity	Total Transactions when Type = *NONE
QDEFAULT	*LGLIO	100.0	0
UPDATE	*NONE	100.0	12350
BATCH	*NONE	100.0	56
DIALOG	*NONE	100.0	6397

Bottom

Type: *LGLIO, *CMNIO, *CPUSEC, *PRINT, *NONE

F3=Exit F12=Cancel

WebSphere transactions are "Non-Interactive Transactions"

```

Define Non-Interactive Transactions

Job classification category . . . . . : Subsystem

Type choices, press Enter.

---Activity Counted as Transaction---
Workload      Type      Quantity      Total Transactions
QDEFAULT      *LGLIO      100.0         when Type = *NONE
SERVERS       *NONE       100.0         200
WEBSHERE     *NONE      100.0         24000
INTER         *LGLIO      100.0         0
BATCH         *LGLIO      100.0         0

Type:  *LGLIO, *CMNIO, *CPUSEC, *PRINT, *NONE

F3=Exit  F12=Cancel

Bottom
    
```

Non- Interactive Transactions

Use the Define Non-Interactive Transactions display to modify the definition of a non-interactive transaction.

The default definition of a non-interactive transaction is that **100 non-interactive logical I/Os (*LGLIO)** correspond to one non-interactive transaction.

If no type of activity is found in the performance data and resource consumption occurred, then a default value of 60 transactions (1 per minute) will be assigned to the workload.

For non-interactive jobs, enter the type of activity that should be used to create PATROL transactions. The supported types are:

*LGLIO for logical I/Os

*CMNIO for communication I/Os

*CPUSEC for CPU seconds

*PRINT for print lines

***NONE** to indicate an actual number of non-interactive transactions

The number of non-interactive transactions per hour generated by the workload must be specified in the Total transactions column.

Save Job Classification

Save Job Classification Member

Change values if desired, press Enter.

Member	SERVER_INT	Name
Library	PATROLMDS	Name
Text	Server and interactive Workload	
Replace	N	Y=Yes, N=No

F12=Cancel

Save Job Classification

After the iSeries Jobs in a performance dataset are classified in to workloads, the classification details may be saved for re-use or modification. Specify a classification name and a iSeries library to save it in.

The Job Classification is saved as a member in the physical file **PTRLJBCL** in the specified iSeries library.

Previously Saved Classifications

Classify Jobs

Select one of the following:

1. Use default job classification
2. Classify jobs into workloads
- 3. Use existing job classifications**

Select Job Classification Member

PATROLMDLS Name

Type option, press Enter.

1=Select

Opt	Member	Text	Date	Time
	SUBSYSTEMS	Job Classification by Subsystem	09/26/02	15:33:31
	SERVER_INT	Server and interactive Workload	09/26/02	15:28:34

Bottom

F3=Exit F5=Refresh F12=Cancel F15=Sort by member F16=Sort by text
F19=Sort by date and time

PATROL for iSeries (AS/400)-Predict

Select one of the following:

1. Create PATROL model from performance data
10. Work with PATROL models
- 20. Work with job classification members**
30. Work with Product Control Files
50. About PATROL for iSeries (AS/400) - Predict

Select Job Classification Members

Library PATROLMDLS Name

Type options, press Enter.

2=Change 3=Copy 4=Delete 7=Rename

Opt	Member	Text	Date	Time
	SUBSYSTEMS	Job Classification by Subsystem	09/26/02	10:00:28
	SERVER_INT	Server and interactive Workload	09/26/02	15:28:34

Bottom

Command

==>

© 2003 IBM Corporation F4=Prompt F5=Refresh F9=Retrieve F12=Cancel

F03SP03Forum2003 WAS - sizing and capacity planning PRZ F15=Sort by member F16=Sort by text F19=Sort by date and time

Previously Saved Classifications

When classifying jobs in to workloads, a previously saved Job Classification member maybe reused to minimize the effort in specifying workloads.

Saved Job Classifications can also be modified through Option-20 of the Main PATROL Predict menu.

Confirm Creation

Confirm Creation of PATROL Model

Type choices, press Enter.

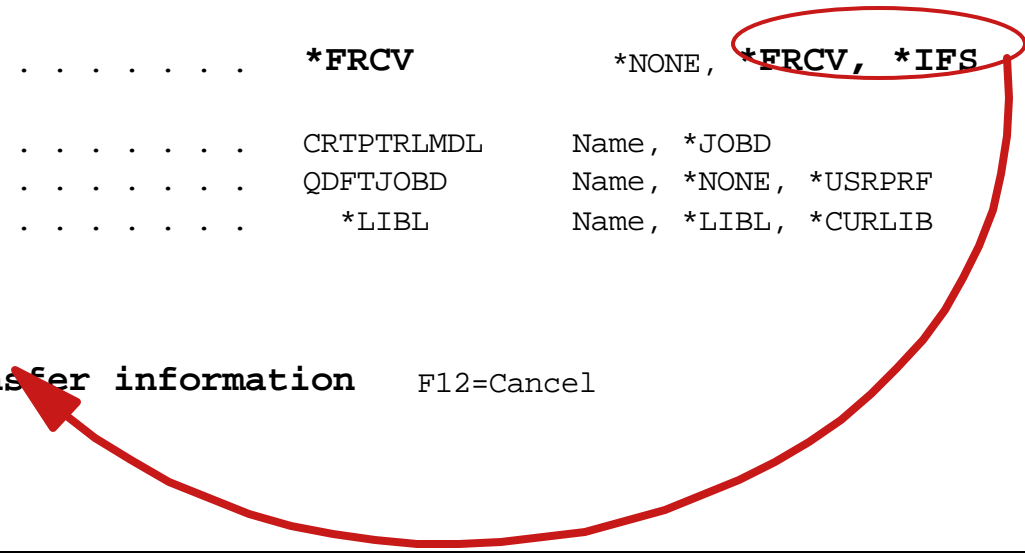
```

Model . . . . . TESTMODEL      Name
  Library . . . . . PATROLMDSL   Name
Text . . . . . Test Model - Default Workloads
Replace . . . . . N              Y=Yes, N=No

Destination mode . . . . . *FRCV      *NONE, *FRCV, *IFS

Job name . . . . . CRTPTRLMDL   Name, *JOB
Job description . . . . . QDFTJOB  Name, *NONE, *USRPRF
  Library . . . . . *LIBL        Name, *LIBL, *CURLIB
    
```

F6=Specify transfer information F12=Cancel



Confirm Creation

In the final screen, specify the workload name and the iSeries library it is to be saved in.

If the created model is also to be saved as a streamfile either
on the iSeries IFS or
transferred to a PC,
use **F6** to specify details of the system and directory to receive the model.

Note: If *FRCV is used to transfer the model to a PC, either at model creation or at a later time, the model name is truncated to 8-characters.

Transfer Model

```

Transfer PATROL Model
Model . . . . . : DFTCLASSIF
Library . . . . . : PATROLMDDL
Text . . . . . : Default Job Classification (20mins)

Type the location information to receive model. File names of models
transferred using *FRCV are truncated to 8 characters.
Destination mode . . . . . *FRCV
Remote system . . . . . 10.11.12.13

Destination folder . . . . . C:\Program Files\Patrol3\BEST1\
NTC\local\workarea
    
```

DOS Prompt - ipconfig

default location for .MD files

F3=Exit F12=Cancel

```

Transfer PATROL Model
Model . . . . . : DFTCLASSIF
Library . . . . . : PATROLMDDL
Text . . . . . : Default Job Classification (20mins)

Type the location information to receive model. File names of models
transferred using *FRCV are truncated to 8 characters.

Destination mode . . . . . *FRCV *NONE, *FRCV, *IFS
Remote system . . . . . lloyd.rochester.ibm.com
Destination folder . . . . . C:\ITC\PATROLMDDL
    
```

F3=Exit F12=Cancel

```

Transfer PATROL Model
Model . . . . . : DFTCLASSIF
Library . . . . . : PATROLMDDL
Text . . . . . : Default Job Classification (20mins)

Type the location information to receive model. File names of models
transferred using *FRCV are truncated to 8 characters.

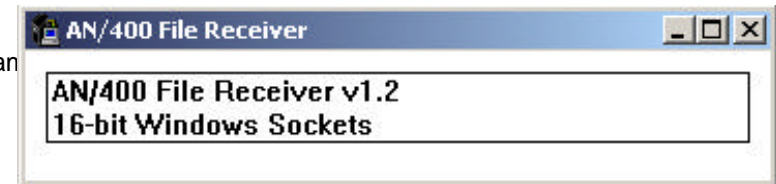
Destination mode . . . . . *IFS *NONE, *FRCV, *IFS
Remote system . . . . .
Destination folder . . . . . \PATROLMDDL
    
```

F3=Exit F12=Cancel

- Note:**
- ✓ *FRCV - File Receiver program must be running on PC (C:\Program Files\BMC Software\Patrol3\BEST1\NTC\bgsbin\RECEIVER.EXE)
 - ✓ *IFS - Remote System Name is ignored

Transfer Model

Select **F6** (=Specify transfer information), if you wish to transfer the model as a streamfile.



Specify the following:

Destination mode

*FRCV - transfers the streamfile to a connected PC

Ensure that the **Receiver.exe** program is active on the PC

Default location - C:\Program Files\BMC Software\Patrol3\BEST1\NTC\local\setup\receiver.exe

Note: The .md file name is truncated to 8-characters (the actual Predict model name **in the file** can be up to 10 characters)

*IFS - writes the streamfile to a folder on the iSeries Integrated File System (IFS). If the file is written to the IFS, it can later be moved/copied/transferred using FTP or a Windows Browser to the PC for predictive evaluation.

Note: The .md file name is **NOT** truncated to 8-characters.

Remote System

IP address or network address of the connected PC.

Required only if you are transferring the streamfile to a PC.

Destination Folder

Name of a folder (in the IFS or PC) for the streamfile.

Completion Message:

Transfer to Remote System

TCP/IP transfer of model <model-name> in library <library-name> succeeded.

Transfer to IFS

"Transfer to IFS folder succeeded for model <model-name> in library <library-name>.

Note: If the .md files already exist in the specified directory, they will be overwritten and no warning message is issued.

Work with Models

PATROL for iSeries (AS/400) - Predict, Release 7.1.00

Select one of the following:

- 1. Create PATROL model from performance data
- 10. Work with PATROL models**
- 20. Work with job classification members
- 30. Work with Product Control Files
- 50. About PATROL for iSeries (AS/400) - Predict

Selection or command

==> **10**

F3=Exit F4=Prompt F9=Retrieve F12=Cancel

Note: The model name is truncated to 8 characters when using *FRCV.

Work with PATROL Models

Library PATROLMDLS Name

Type options, press Enter.

3=Copy 4=Delete 7=Rename 8=Transfer

Opt	Model	Text	Date	Time
	SBSYS01	Workload by Subsystems	09/26/02	10:01:39
	DFT01	Default Job Classification (20mins)	09/26/02	09:38:05
	DFTCLASSIF	Default Job Classification (20mins)	09/26/02	08:01:26

Bottom

Command

==>

F3=Exit F4=Prompt F5=Refresh F9=Retrieve F12=Cancel
 F15=Sort by model F16=Sort by text F19=Sort by date and time

Work with Models

Option -10. Work with PATROL models allows you to work with the models created by the Analyze function on the iSeries. The models are retained in a source physical file named MD as file members of the same name.

This option allows for

- Copy
- Delete
- Rename
- Transfer

of the models in the MD file.

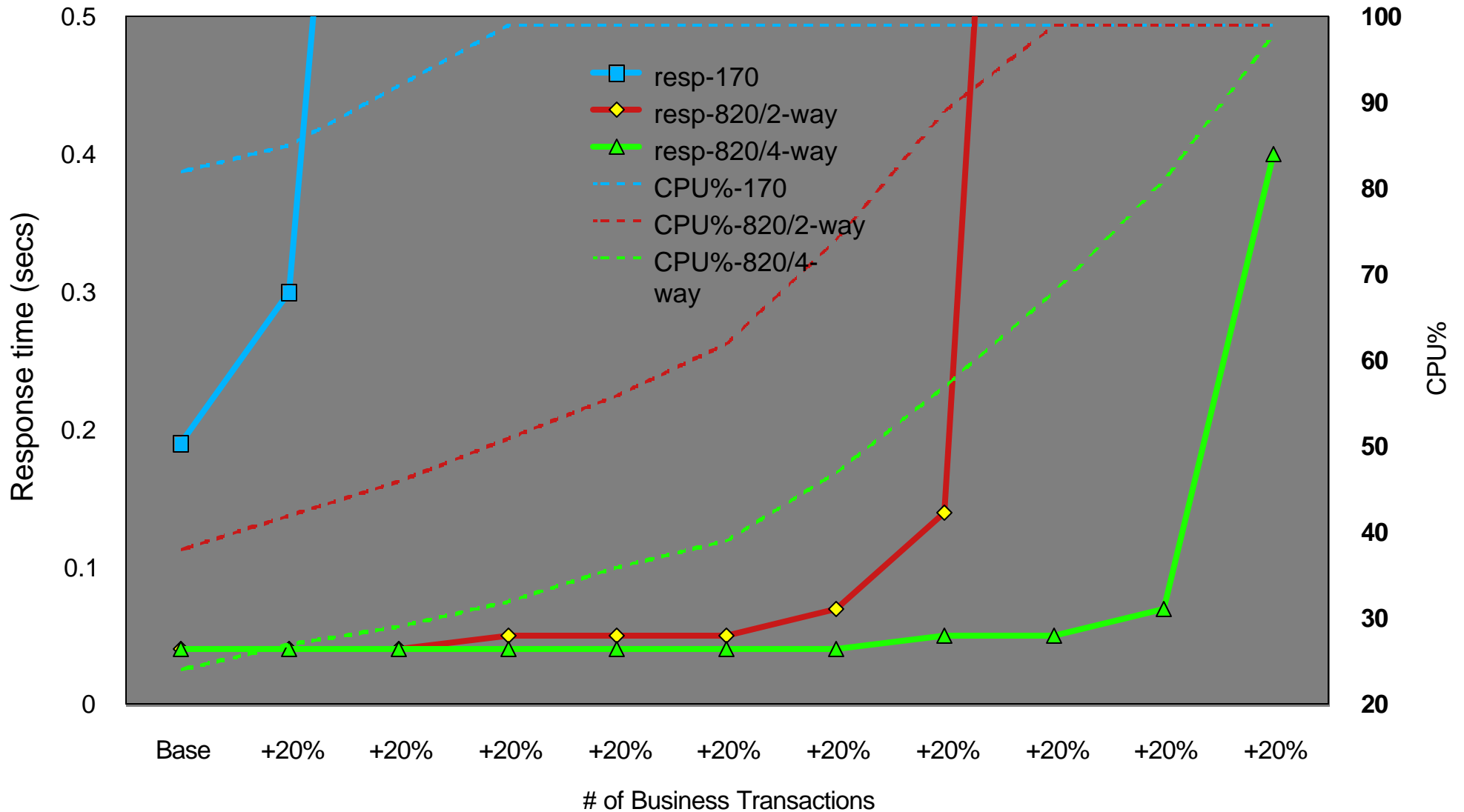
Selection of Option 8 (=Transfer), presents the "Transfer PATROL Model " Screen.

Modelling from here "as usual" with
- BEST/1 (up to V5R1) or
- BMC Patrol Predict for iSeries (V4R5 and later)

Modelling the WebSphere workload

- ▶ Validating the measured workload
- ▶ Comparing measured with predicted
- ▶ Calibrating the results
- ▶ Combining WebSphere with other workloads
- ▶ Growing the workload to represent more users, higher and future demand
- ▶ Graphing the results with various hardware options and present to customer

WebSphere Application Modelling results



Notes: WebSphere Application modelling results

This chart shows the changes in two variables

Average Response Time (left y-axis)

CPU Utilization (right y-axis)

of the three Computer Configurations in the example:

Model 170/2-way (Total CPW=1090 Interactive CPW=70)

Model 820/2-way (Total CPW=2350 Interactive CPW=240)

Model 820/4-way (Total CPW=3700 Interactive CPW=560)

Other variables from the various Predict Reports may be plotted to highlight the impact of the growth plan on the configuration options.

Summary

- ▶ **Use WLE as Sizing tool** to propose new WebSphere servers and applications
 - ▶ is easy to use and quick to provide results
 - ▶ does not provide response times, nor transactions - is focused on CPU use
 - ▶ allows to combine multiple workloads
 - ▶ allows to explore different implementation options and tuning parameters
- ▶ **Use a Capacity Planning tool** to extrapolate current workloads into the future
 - ▶ takes measurement data from iSeries performance collections
 - ▶ needs definition and count of business transactions
 - ▶ allows to extrapolate response times and number of business transactions
 - ▶ shows CPU, memory, disk and other bottlenecks
 - ▶ allows easy prediction of growth and use of other hardware options

Questions ?

WebSphere Application Server Performance *References*

WebSphere Application Server for iSeries™ Performance Considerations

■ **WebSphere 5.0 and WebSphere 5.0 Express**

- <http://www-1.ibm.com/servers/eserver/series/software/websphere/wsappserver/product/performancews50.html>

■ **WebSphere 4.0**

- <http://www-1.ibm.com/servers/eserver/series/software/websphere/wsappserver/product/performanceAE40.html>

■ **WebSphere 3.5.x**

- <http://www-1.ibm.com/servers/eserver/series/software/websphere/wsappserver/product/performanceAE35.html>

iSeries Performance Capabilities Reference

■ **V5R2**

- <http://ca-web.rchland.ibm.com/perform/perfguideup/V5R21PerfGuide/V5R21PerfGuide.pdf>
- <http://ca-web.rchland.ibm.com/perform/perfguideup/v5r2perfguide/v5r2perfguide.pdf>

■ **V5R1**

- <http://ca-web.rchland.ibm.com/perform/perfguideup/v5r1perfguide/v5r1perfguide.pdf>

WebSphere Application Server - Performance Home Page

- <http://www-3.ibm.com/software/webservers/appserv/performance.html>

Appendix