GL01: Capcity Planning:
PATROL for iSeries - Predict

February 2003

ITSO iSeries Technical Forum

Introduction

With V5R1 and previous releases, Performance Tools for iSeries, 5722-PT1, included display and printed reports of collected performance data, management of that data as database files, plus the BEST/1 Capacity Planning tool. BEST/1 is not supported in V5R2.

Patrol for iSeries - Predict from BMC is an alternative tool for doing capacity planning for iSeries that was available since the third quarter of 2002. The "create model" component runs on iSeries under OS/400 V4R4 or later.

Patrol for iSeries - Predict is a separately priced product produced and support by BMC Software, Inc. Patrol for iSeries - Predict functions and user interface are based upon corresponding Predict for UNIX and NT operating systems products from BMC Software, Inc..

Note: IBM's web based tool, Workload Estimator, or BEST/1 running on V5R1 can be used for new workloads such as Domino or WebSphere or to evaluate upgrades on i270, i820, i830, and the i840 servers. Workload Estimator is has been updated with 890 support. It includes recommendations for incremental processor capacity enabling customers to take advantage of the Capacity Upgrade on Demand options on iSeries.

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Agenda

- Introductions

- PATROL for iSeries Predict

  ► Evolution

  ► Business Value

  ► Architecture

  ► Comparisons between Best/1 and PATROL
    – Improvements
    – Limitations

  ► Supported Releases

- Product

  ► PATROL Analyze on the iSeries walk-through

  ► Launching the PATROL Console on Windows

  ► Understanding the Interface

- Hands-on Lab Exercises

Agenda

This is a 3-4 hour session which will introduce you to the fundamentals of PATROL for iSeries - Predict.

At the end of the presentation you will be able to work with a PATROL for iSeries - Predict model on the PCs that have been set up for the lab exercises.

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PATROL for iSeries - Predict

- What it is …

  - ► New Capacity Planning product for the iSeries

  - ► Similar function to withdrawn BEST/1 for the iSeries

  - ► Utilizes new easy-to-use GUI running on Windows

  - ► Uses IBM Performance Data to build models on iSeries

PATROL for iSeries - Predict

The PATROL for iSeries - Predict software answers "What if...?" questions that you may need answered overcome current performance problems and plan for expected capacity needs in the future.

You can work interactively through GUI on the PC with Predict to see how configuration and workload changes affect system performance. Predict calculates response times. After you evaluate the results, you can obtain performance statistics in a variety of reports or charts through the Predict Console. If you want, you can use Predict HTML support to place Predict reports on the World Wide Web.

Performance data from Collection Services is used as the basis of creating mathematical models Predict. This is the same basic performance data used by PM/400 and Performance Tools for iSeries, and is part of OS/400. Collection Services is enabled through iSeries Navigator.

Customers will continue to use the existing Performance Tools for iSeries licensed program product (5722-PT1) to analyze or print performance reports.

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How it Evolved . . .

- IBM partnership with BGS Systems in 1991

  - ► BGS developed "BEST/1 for the AS/400" for
    - Capacity Planning Functions
    - Configuration & Optimization

  - ► BMC acquired BGS Systems in 1998
    - Existing IBM contract continued until end of support for V5R1

- IBM/BMC negotiated reseller agreement for new Capacity Planning Product in 2002

  - ► BMC developed PATROL for iSeries – Predict
    - Same BEST/1 development team
      - iSeries Capacity Planning & Performance Specialists for over a decade

How it Evolved . . .

PATROL for iSeries - Predict is a software product developed and marketed by BMC Software Inc. The product is also available through IBM and its Business partners.

IBM entered a partnership with BGS Systems more than ten years ago — 1991 to be exact. BGS developed "BEST/1 for the AS/400" to provide capacity planning functions as well as configuration and optimization methodologies. Then, in 1998, BMC acquired BGS Systems, and so BMC now continues support for the existing IBM contract in regard to BEST/1 until IBM ends its support for V5R1.

In 2002, BMC developers (more or less the same development team that had created and supported BEST/1) built PATROL for iSeries – Predict. The important thing to note is that this new iSeries capacity planning and performance tool was produced by specialists who have been doing this stuff for more than a decade.

IBM and BMC have negotiated a reseller agreement for the new capacity planning product so that it can be ordered from All IBM iSeries channels and BMC channels. (FYI for our IBM Business Partners, PATROL Predict will be supported by the iSeries Configurator.) And, regardless of whom you order it from, BMC will provide one year of warranty and support. After that initial period, technical support and maintenance renewals will be available through BMC.

You can access the BMC Software web site at **http://www.bmc.com** or contact BMC Software Inc. at:

BMC Software Inc.

2101 City West Blvd.

Houston TX 77042-2827

USA

Tel: 713 918 8800

     800 841 2031

Fax:713 918 8000

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Supported Releases

- PATROL for iSeries - Predict

  - ► Runs on V4R4 and Higher

  - ► Processes Data From V4R2 and Higher

  - ► Processes Older Data IF
    - – Converted to the V4R2 level

- BEST/1 for the iSeries

  - ► Performance data must be converted to the most recent release

Supported Releases

The "create model" component (Analyze) runs on iSeries systems with OS/400 V4R4 or later.

Predict supports the QAPMccc database files (also used by Performance Tools - 5722-PT1) from iSeries systems with V4R2 and later for input to creating the model. Data from earlier versions can also be used provided they are converted to be compatible with V4R2 Performance database files. This is an excellent advantage of iSeries users who are running multiple OS/400 releases in separate logical partitions. Compare this approach to performance data for BEST/1 which must be converted to the same release as the BEST/1 product.

Product Ordering/Support

- Ordering PATROL for iSeries - Predict (5620-FIF)

  ► Ordered from
    - All iSeries Channels
    - The iSeries Configurator
    - All BMC Channels

  ► Packaging
    - One year warranty and one year support are included
    - Support and maintenance renewals available through BMC

- Licensing

  ► Required for each managed iSeries-AS/400 (Serial Number)

- Technical Support

  ► BMC will assume all levels of support
    - IBM routes call to BMC

Product Ordering/Support

While Predict is sold and supported by BMC, IBM will support the sale of the product through the iSeries Configurator as 5622-FIF, enabling customers to order the product through IBM and its Business Partners.

The price of a PATROL for iSeries - Predict license includes a 1-year service and support warranty.

A license from BMC is required for
- each PC on which the Predict modeling is performed and
- each iSeries System serial number whose performance data is used to create a model.

All technical support including defect support is provided by BMC. Calls to IBM for support will be directed to contact BMC Support personnel.

If you want to be registered to receive e-mail providing important Patrol for iSeries - Predict information, register at this BMC web site:
- http://www.bmc.com/register/subscribe.cfm

Fixes will be made available on the support web site:
- http://www.bmc.com/support_home

To obtain the Patrol-Predict software, IBMers can access an internal web site at System Sales in the iSeries Sales Kit:
- http://w3-1.ibm.com/sales/systems/ibmsm.nsf/docnames/ipatrol

For IBMers who wish use the product for "Non-Fee" activity, you should go to the IBM Internal website at:
- http://w3-1.ibm.com/sales/systems/ibmsm.nsf/mainframeset?readform&geo=AM&cdoc=ipatrol

Country-specifc BMC support example:
- Brazil
- Tel: 0800-177-262, Fax: (+55) 11-3443-6072
- Email: brazil_support@bmc.com
- Hours: 9:00am - 6:00pm

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Product Ordering/Support -2

While Predict is sold and supported by BMC, IBM will support the sale of the product through the iSeries Configurator as 5622-FIF, enabling
Note: If you are an IBM representative or IBM Business Partner there is a Geographical contact to obtain this software. Contact:

- US: Steve Miedema at miedema@us.ibm.com
- Asia Pacific: Pony Ma at ponyma@cn.ibm.com
- EMEA: Petter Sommerfelt at PETTERS@uk.ibm.com

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List Prices

Description	Price	Options
PATROL for iSeries (AS/400) - Predict Unit of Measure: AS/400-P05 Number of Units: 1 This is a box ship only delivery.	$ 350.00	▶ Buy Now
PATROL for iSeries (AS/400) - Predict Unit of Measure: AS/400-P10 Number of Units: 1 This is a box ship only delivery.	$ 700.00	▶ Buy Now
PATROL for iSeries (AS/400) - Predict Unit of Measure: AS/400-P20 Number of Units: 1 This is a box ship only delivery.	$ 2,000.00	▶ Buy Now
PATROL for iSeries (AS/400) - Predict Unit of Measure: AS/400-P30 Number of Units: 1 This is a box ship only delivery.	$ 4,000.00	▶ Buy Now
PATROL for iSeries (AS/400) - Predict Unit of Measure: AS/400-P40 Number of Units: 1 This is a box ship only delivery.	$ 6,000.00	▶ Buy Now
PATROL for iSeries (AS/400) - Predict Unit of Measure: AS/400-P50 Number of Units: 1 This is a box ship only delivery.	$ 8,000.00	▶ Buy Now

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IBM

List Prices

Prices for BMC licenses to build Predict models from iSeries Performance data are based on Software tier levels.

You need a license for each iSeries machine for which performance data is to be processed by Predict.

BEST/1 vs PATROL for iSeries - Predict

- BEST/1 and PATROL – Predict are Different
  - ► PATROL does not have some of BEST/1's limitations
  - ► PATROL does not have some of BEST/1's capabilities

BEST/1 vs PATROL for iSeries - Predict

While the overall functionality of PATROL for iSeries - Predict and BEST/1 is similar, there are some functions that were available in BEST/1 that have not been included in Predict (yet!). Similarly, there are capabilities in Predict that were not available on BEST/1.

The next few chart will identify some of the key features of PATROL for iSeries - Predict.

PATROL for iSeries - Predict

- GUI console on Windows allows enhanced ease-of-use

- Wizards to create new model objects/components

- Available Task Pad(s) for typical tasks

- HTML formatted Reports that can be published to the web

- Many MORE reports, divided into 7 report groups

- Integrated graphing of predicted results

- Easy-to-change System Configurations

- Logical Partition Support
  - ▶ Dedicated Processors
  - ▶ Variable interactive performance for logical partitions

- Able to process performance data from multiple releases

- Multiple Computers in a single model

PATROL for iSeries - Predict

The creation of models representing computers is performed on the iSeries through "an Analyze" function which is a character-based 5250-interface.

- - Predictive modeling is performed through a GUI console on a PC using Windows.
- - Predict affords easy-to-use wizards for the creation/modification of model components. Taskpads and tree-like interface for navigation of functions makes the product quite easy to use.
- - Provides a choice of Reports and Graphs representing computer model components as well as results of predictive modeling performed.
- - A key feature is that a single Predict model can represent multiple iSeries computers and/or partitions.
- - Workloads may be defined to represent dependencies on other workloads, like client/server environments.
- - Interactive CPW capacity in a partition an be specified independent of the number of processors assigned to the partition.

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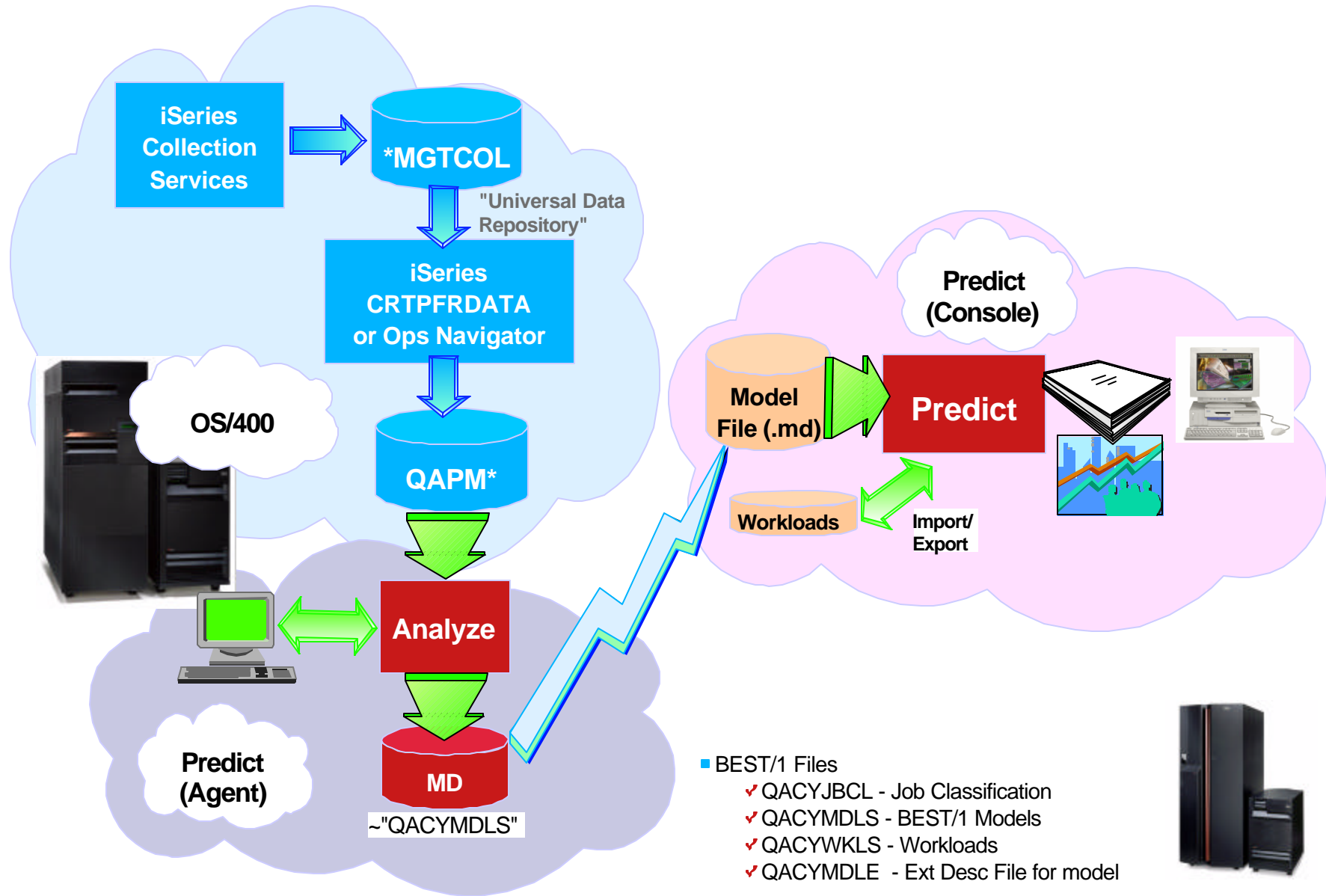# PATROL for iSeries - Predict

- Two components:

  - ► Analyze component (on the iSeries)
    - − Creates model (Collection Services or STRPRFMON)
      - • Job Classifications similar to BEST/1
        - ◆ Additionally Supports "Multi-Category" Job Classifications
    - − Transfers the model to the Predict component

- Predict component (on Windows)

  - ► Performs "What-if" modeling

PATROL for iSeries - Predict

Collection Services used for collecting performance data, used by PM/400 and Performance Tools for iSeries, is part of OS/400, and enabled through iSeries Navigator. Customers will continue to use the existing Performance Tools for iSeries licensed program product (5722-PT1) to analyze or print performance reports.

PATROL for iSeries - Predict

iSeries Collection Services → *MGTCOL "Universal Data Repository"

iSeries CRTPFRDATA or Ops Navigator

QAPM*

OS/400

Analyze

Predict (Agent)

MD ~"QACYMDLS"

Predict (Console)

Model File (.md) → Predict

Workloads → Import/Export

- BEST/1 Files
  - ✔ QACYJBCL - Job Classification
  - ✔ QACYMDLS - BEST/1 Models
  - ✔ QACYWKLS - Workloads
  - ✔ QACYMDLE - Ext Desc File for model

PATROL for iSeries - Predict

Overview of the Modeling Process

PATROL for iSeries (AS/400) - Predict enables you to create a capacity planning model on an AS/400, transfer the model to a PC, and run "what-if" capacity planning scenarios using the model on the PC.

The following tasks enable you to create a capacity planning model on the AS/400 and transfer the model to the PC.

(1) Collect performance data on the iSeries or AS/400. If you are currently collecting AS/400 performance data on a regular basis, use that performance data. Only one instance of the Performance Monitor is allowed to run at any single time.

(2) Start PATROL on the AS/400.

(3) Create a model file by creating or reusing a Job Classification member and specifying Performance Data, a model name, and a destination (on the iSeries or AS/400).

(4) Transfer the model file from the iSeries or AS/400 to the PC or make it accessible from the PC by copying into the IFS (on the iSeries or AS/400).

PATROL for iSeries - Predict

- Current limitations in the first release…

  - ► Will NOT have
    - Modeling of separate memory storage pools
    - Full RAID modeling detail
    - Explicit modeling of IOPs and IOAs
    - Release level or application type performance adjustments
    - Configuration checks, correction, or recommendations
    - Individual communications object modeling
    - Batch Job modeling
    - Modeling of CISC servers
      - CISC-to-RISC adjustment factors

PATROL for iSeries - Predict

There are some considerations regarding the first release of Predict for iSeries. A short list of planned future enhancements. (By the way, IBM will be working on this list of additional features in the order in which you see them on this chart.)

At the present, Predict for iSeries does not model IOPs and IOAs — even though the iSeries platform depends heavily on them. For example, if your application is working many separate processes, there are many secondary servers supporting the more basic tasks like I/O. But, for now, Predict for iSeries does not model each individual server IOP. Instead, it simply assumes a certain type and certain service time for each IOP.

Predict for iSeries does not model separate storage pools. Instead, it simply assumes a default value — you cannot [yet] create your own memory pool. Nor does it support the concept of RAID sets [yet]. With this first release of Predict all the disk lines each disk is treated as if it had its own IOP/IOA. In a future release of Predict for iSeries, you can look forward to improved RAID predictions and modeling.

Nor does Predict for iSeries [yet] accomplish batch job modeling. For instance, if you have a batch job that runs in 12 hours overnight, you might be interested in knowing what would happen if you ran it in eight hours or four hours. Ironically, the predecessor BMC product did model workloads of type *BATCHJOB, so this is one minor area where BEST/1 had a piece of functionality that Predict for iSeries does not [yet] enjoy.

Any benefits that might accrue to resource utilization as the result of new OS/400 release levels is not currently modeled in Predict for iSeries. You can expect this in a future Predict release. However, we have not had any significant OS/400 release level based performance benefits since V3R7.

Predict does not offer validation against a particular iSeries configuration.

Also, because Predict does not support CISC systems, there is no CISC-to-RISC migration support. Neither is there any capability to support any OS release-based performance enhancements.

Communications object modeling (TCP/IP) is not available yet, either.

PATROL for iSeries - Predict

- Characteristics...

  ► GUI interface for Modeling
    – An easy-to-navigate product for the novice user
    – Task Pads

  ► Simple Hardware table
    – Not Complicated
    – Not Time-consuming to maintain
    – Will not prevents model evaluations when information is inconsistent or missing

PATROL for iSeries - Predict

The creation of models that represent computers is performed on the iSeries server through ANALYZE, a character-based 5250-interface.

Predictive modeling is performed through a GUI console on a Windows-based PC. Predict affords easy-to-use wizards and taskpads, as well as a tree-like interface for easy navigation between various functions. As mentioned, Predict provides a choice of reports and graphs that represent the different computer model components as well as the results of the predictive modeling that has been performed. These reports are grouped in to seven different categories (or perspectives), and as you will see, can be published over the Web, should you need to make these available to your executives for their perusal... or should you need to look at them remotely.

One last feature that is worth mentioning early in this presentation is that the hardware tables that support the Predict modeling and report generation do not restrict the functions of the modeling process. In BEST/1, a very strong dependence hardware table enforced exactly what models you could upgrade to.

- For example, you could not change a model 820 to a 270. This might seem, at first glance, a prudent restriction since IBM does not allow you to "upgrade" downward. However, some of our iSeries customers and Business Partners may have found this inability to "upgrade downward" to be a challenge since it is certainly feasible to add a smaller, auxiliary iSeries server in order to offload an application from a larger system. If you want to, you can model downward. Be aware, though, that it is your responsibility to determine if there really is an 820-to-270 upgrade path that is reasonable for your circumstances.

PATROL for iSeries - Predict (on iSeries)

PATROL for iSeries - Predict (on iSeries)

Within the context of the Predict product, a "model" represents performance data and configuration information that has been selected to perform capacity planning analysis. The creation of the model is performed through a 5250 interface.

Predict offers many options when creating models and performing predictive modeling. This section of the presentation will introduce a simple use of the "model creation" part of the product as it which runs on an iSeries server (through a 5250-based interface). You will also be able to see how to download the model to a PC for analysis.

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"Analyze" Component

- Runs on iSeries

  - ► Creates Model
    - – Used by PATROL for iSeries - Predict
      - "What if ...?" Analysis

  - ► 5250-command to start PATROL:
    - – STRPTRL
      - PATROL Object Library (PTRLDTALIB)
      - Performance Data Library (PFRDTALIB)

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"Analyze" Component

To use iSeries Predict on the AS/400, you must first start PATROL. From the OS/400 command line, type:

- STRPTRL PTRLDTALIB (lib1) PFRDTALIB (lib2)
    - The STRPTRL command uses two parameters:

The PTRLDTALIB parameter specifies the PATROL data library where models and job classifications are located. This parameter defaults to *CURLIB.

The PFRDTALIB parameter specifies the performance data library where performance data is located. This parameter defaults to QMPGDATA.

The PATROL for iSeries (AS/400) - Predict main menu is displayed.

PATROL Main Menu

- Option 1 - Create PATROL Model from Performance Data

- Option 10 - displays the Work with PATROL Models panel
  - ► Copy/Delete/Rename and Transfer Models (to streamfile)

- Option 20 - work with saved Job Classifications

- Option 30 - work with Product Control Files
  - ► License Key - Serial Number of iSeries Model for data to be modeled

- Option 50 - Information on PATROL

```
         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
```

PATROL 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.

About PATROL ....

- Selecting option 50 from the main menu displays a secondary menu providing more information about PATROL for iSeries (AS/400) – Predict:

```
                    About PATROL for iSeries (AS/400) - Predict

    PATROL for iSeries (AS/400) - Predict is a performance analysis and
    capacity planning solution for the iSeries and AS/400.  Comprehensive
    response time analysis and predictive modeling capabilities are provided
    using standard OS/400 performance data.  "What-if" analysis capabilities
    reveal the impact of changes (e.g. load, configuration, users).

    Select one of the following:

         1. Benefits
         2. Components
         3. Basic steps
         4. Creating a PATROL model
         5. Differences between PATROL - Predict and BEST/1

        51. About PATROL for iSeries (AS/400) - Perform
        52. About PATROL for iSeries (AS/400) Knowledge Modules

    Selection
    F3=Exit   F12=Cancel
```

About PATROL ....

1. **Benefits**
   - Outlines when you would use the PATROL for iSeries - Predict and the benefits.

2. **Components**
   - Present a summary of the two major components of the Product:
     - <u>Analyze</u> component runs under OS/400 to process existing performance data from Collection Services or STRPFRMON. This data is used to create a capacity planning model, which is then moved to or accessed from the Predict component.
   -
     - <u>Predict </u>component is an application that runs on a Microsoft Windows-based PC. Using the model file produced by Analyze, Predict
     - can produce both graphs and reports on current and future system performance and workload activity. Predict can produce these graphs and reports for either a single or multiple system environment.

3. **Basic steps**
   - Presents an overview of the Basic Steps involved in using Predict.
     - Collect performance data
     - Create a model file
     - Transfer the model file to the PC
     - Review/evaluate the model (on the PC)
     - View reports or graphs (on the PC)
     - Do "what-ifs" analysis

4. **Creating a PATROL model**
   - Explains how to create a PATROL model using iSeries data

5. **Differences between PATROL - Predict and BEST/1**
   - Overview of the key differences between PATROL and BEST/1

51. **About PATROL for iSeries (AS/400) - Perform**
   - Provides information on the Performance Analyzer Product available through BMC for the iSeries

52. **About PATROL for iSeries (AS/400) Knowledge Modules**
   - Provides information on the Knowledge Tools available through BMC for the iSeries.

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Basic Modeling Steps

- Collect performance data (on the iSeries or AS/400)

  - ► If you are currently collecting AS/400 performance data on a regular basis, use that performance data. Only one instance of the Performance Monitor is allowed to run at any single time.

- Create a model file by creating or reusing a Job Classification member, specifying Performance Data, a model name and destination (on the AS/400)

- Transfer the model file to the PC or make it accessible from the PC by copying into the IFS (on the iSeries or AS/400)

- Read and evaluate the model (on the PC)

- View reports or graphs (on the PC)

- Do "what-ifs" by changing the system configuration or workloads

Basic Modeling Steps

The following tasks enable you to create a capacity planning model on the AS/400. The related topics describe how to perform these tasks.

- Select the library member that contains the STRPFRMON or Collection Services performance data.
- Specify the time interval for the model.
- Select the workloads for the model by creating or reusing a Job Classification member.
- Create a model file by specifying a model name and a destination (on the AS/400 or iSeries).
-

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Create Model

- Option 1 on the main menu displays essentially the same series of panels which were displayed when executing the BEST/1 product, starting with the following panel:

```
                    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 . . . . . . . . . . .   Q087235905    Name, F4 for list
  Library  . . . . . . . . . .   QMPGDATA      Name


Start time . . . . . . . . . .   *SLTHOUR      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

This screen is rather intuitive. You will specify the following:

The required performance data set based on which 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 you define an hour-long time period of performance data.
  - *SLTITV allows you to select the first and last interval from a list.

Select Performance Data Period

- After a Performance Data set is selected, pressing enter displays the option to select a subset of the data to based on which the model is to be built:

```
Select Hour-long Period

 Library  . . . . . . . :   QMPGDATA      Performance member . . :   Q087235905

 Type option, press Enter.  Select an hour-long period representative of your
   peak processing activity.  Each time period is the sum of a one-hour
   performance monitor data collection.  The time stamp shown is that of the
   last interval in the time period.
   1=Select

                    End        ----Transaction----   --CPU Util---   I/Os per Sec
  Opt   Date        Time        Count   Rsp Time   Total   Inter   Sync    Async
   1    03/29/02   02:30:00        50        .4       6       0      36       22
        03/29/02   02:15:00        33        .5       6       0      30       14
        03/29/02   02:45:00        82        .5       6       0      35       21
        03/29/02   03:00:00        82        .5       6       0      38       24
        03/29/02   01:59:59        55        .0       6       0      26       10
        03/29/02   01:45:00       274        .1       6       0      27        8
        03/29/02   01:30:00       274        .1       5       0      27        7
        03/29/02   03:15:00        71        .5       5       0      31       19
                                                                       More...
  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
  Hour-long periods are sorted by total CPU utilization
```

Select Performance Data Period

This is a screen you will want to understand carefully. You have to select an interval. And, be very careful to select the right interval — the right measurement. Let's say the "Monday" measurement is important because it is the highest peak in the week. And, then, within Monday, you might want to select the time period between 10 and 12 noon because that is the peak load within the peak day. You do not want to model something that is inappropriate or irrelevant. You do not want to model an 8-hour period of time when you have valleys and peaks within that workload that will render its data useless. It is very important to take the right peak time out of the measurement data and to extrapolate it. This is the screen where you make all that happen. In our example here, we are taking several intervals.

Notice that only the first and last intervals may be selected. The time stamp shown on this screen is that of the last interval within the time period. By default (*SLTHOUR), the data will be presented in hour-long periods in descending sort sequence by CPU utilization. However, the data may also be sorted in sequence by interval, count, response time, total CPU utilization, or total I/O time. The PF keys that determine these alternative sort sequences are F15 through F19, respectively (as shown on this screen capture).

Classify Jobs

- Specify how the jobs in the Performance Data collection are to be classified in to workloads:

```
                    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
```

Classify Jobs

The next screen you will see is the "Classify Jobs" screen. You can use the default job classifications, classify jobs into workloads, or use existing job classifications.

If you use the defaults, the jobs will be categorized into four workloads (which you have already become familiar with in the reports reviewed earlier in this presentation: interactive, non-interactive, CLIENTAC4, and QDEFAULT.

If you choose to classify your jobs, manually, into workloads (which is option "2" on the "Classify Jobs" screen), you will be given a secondary screen in order to specify the particular job classification category you are interested in. Your choices will include: user ID, job type, job name, account code, job number, subsystem, pool, control unit, comm line, functional area, or multiple category. [NOTE: Multiple category is the only option that I is new with Predict. All the other categories just mentioned were available with BEST/1.]

If you choose to use existing job classifications, you can select from job classifications that you have previously created and saved. Therefore, this may not be an option you can take advantage of the first time you are using this capacity planning tool.

Multi-Category Classification

```
                         Edit Job Classifications

  Enter workload names and category values which are assigned to each workload,
    press Enter.  Jobs with unassigned values become part of workload QDEFAULT.


                                            Account
Workload      User ID     Job Type     Job Name      Code       Subsystem
INTER01       USER01      *INTERACTV
INTER01                                                         SALES
BATCH01                                ENDOFDAY                 SPECBTC




  F3=Exit   F4
  F12=Cancel
```

```
                         Edit Job Classifications

    Enter workload names and category values which are assigned to each workload,
      press Enter.  Jobs with unassigned values become part of workload QDEFAULT.


                            Control
  Workload      Pool         Unit       Comm Line     Job Number
  INTER01        03        _____     _____     _____
  INTER01       ___        _____     _____     _____
  BATCH01       ___        _____     _____     _____

                                                                   Bottom

  F3=Exit   F4=Prompt    F6=Insert line    F11=Display more categories
  F12=Cancel
```

- eg: INTER01
  - ✔ All Interactive Jobs for User USER01 running in Pool #03
  - ✔ All jobs in Subsystem SALES

Multi-Category Classification

Classify jobs into workloads based on the multiple category selections:

- User ID
- Job type
- Job name
- Account code
- Subsystem
- Pool
- Control unit
- Comm line
- Job number

When you create a workload using multiple values, note the following:

Each row represents a workload assignment, which include jobs having attributes matching the specified values for the category-columns (When more than one condition exists on the same line for a workload, all conditions must be met for a job to be included in the workload - the column values are logically ANDed together to form a single selection condition for the workload).

Enter a workload name and enter values for one or more of the nine (9) category-columns

More than one row can be used to define a workload. A job that meets any of the conditions is included in the workload. Each row is treated as a separate selection condition (the rows for a workload are logically ORed together).

When a job can satisfy the conditions of more than one row, the row entered first (higher on the panel when entered) takes precedence.

Add/insert rows using the F6 keys.

Confirm Model Creation

- After saving the job classification member, the Confirm Creation of PATROL Model panel is displayed:

- Use F6 to Transfer model to streamfile

```
                    Confirm Creation of PATROL Model


  Type choices, press Enter.

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


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


     Job name . . . . . . . . . . .   CRTPTRLMDL     Name, *JOBD
     Job description  . . . . . . .   QDFTJOBD       Name, *NONE, *USRPRF
       Library  . . . . . . . . . .    *LIBL         Name, *LIBL, *CURLIB

  F6=Specify transfer information    F12=Cancel
```

Confirm Model Creation

After the iSeries jobs in a performance dataset are classified into workloads, the classification details may be saved for reuse or modification. You must specify a classification name and an iSeries library to save it in.

The job classification is saved as a member in the physical file PTRLJBCL in the specified iSeries library.

Finally, you reconfirm the creation of the Predict model. You can choose to provide specifications (by pressing F6) to save/transfer the model as a PC file of type .md too, either on the iSeries Integrated File System (IFS) or is to be transferred to a PC, then you will use the F6 PF key to specify both the details of the system and the directory which is to receive the model.

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Model Transfer

- **Pressing F6 displays the Transfer PATROL Model panel:**

```
                        Transfer PATROL Model
   Model  . . . . . . :    TESTMODEL
     Library  . . . . :      CAPACITY
   Text . . . . . . . :    ITSO Model


 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  . . . . . . . .    10.11.12.13


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

 F3=Exit    F12=Cancel
```

*IFS

*FRCV

Model Transfer

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.

[NOTE: If the "File Receiver" program (*FRCV) is used to transfer the model to a PC, either at the point that the model is created or at a later time, the model name will be truncated to 8-characters.]

PATROL for iSeries - Predict
(on Windows PC)

PATROL for iSeries - Predict (on Windows PC)

This section of the presentation will illustrate the simple usage of the predictive modeling component that runs on the PC.

Prior to using PATROL for iSeries — Predict to perform capacity planning, you should not only have installed the product on your PC, but you must obtain and install an appropriate licensing file (bgsproducts.cntl) from BMC Software, Inc.

The default location to install this control file for the Windows console is C:\Program Files\BMC Software\Patrol3\BEST1\NTC\local\setup

PATROL Central Console

- Microsoft Management Console (MMC) with the PATROL Predict module provides capability to assess the current performance of your enterprise and to plan for growth - PATROL for iSeries (AS/400).
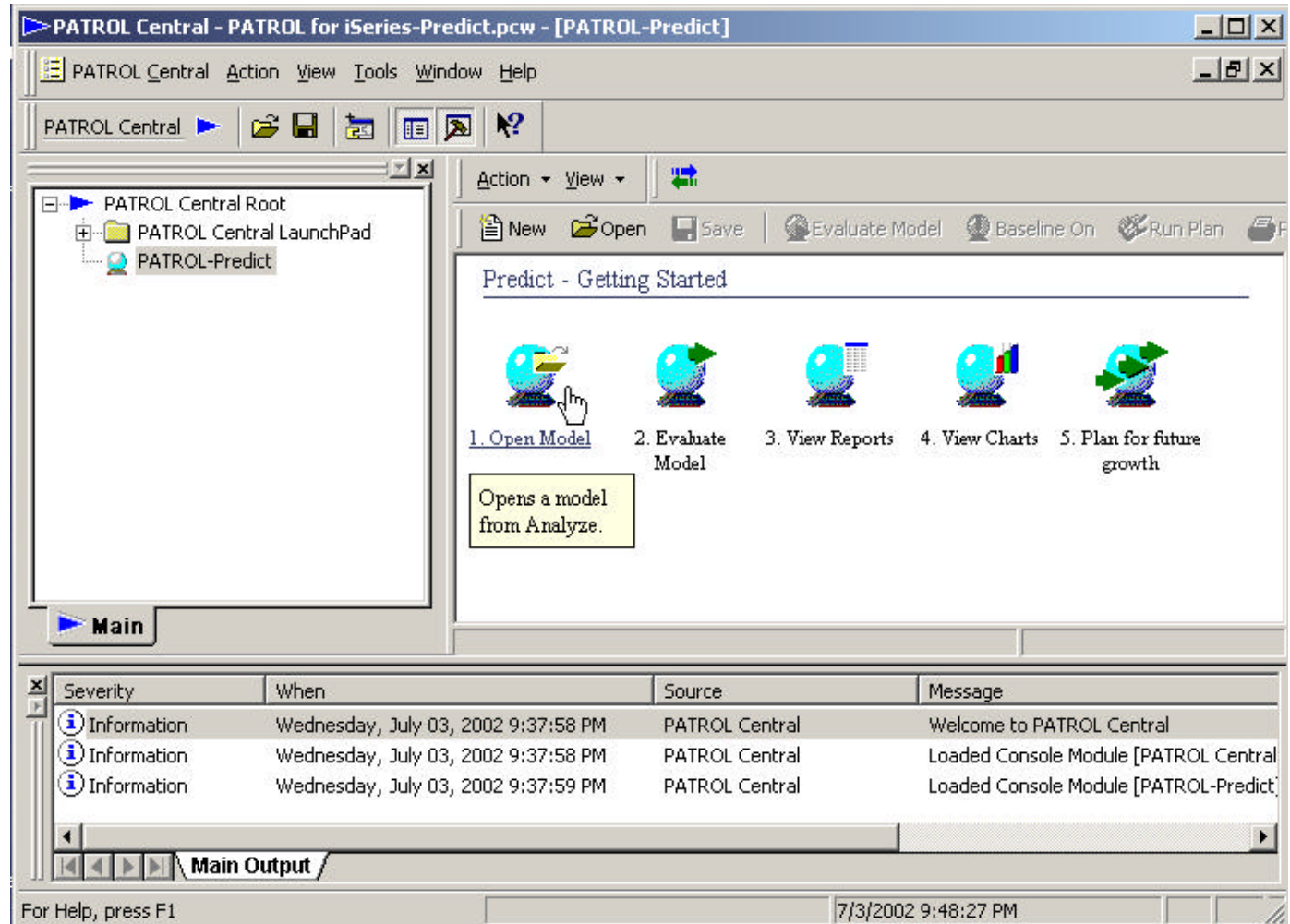
PATROL Central Console

PATROL Central is a management console using Microsoft Management Console (MMC) functions to provide a single, consistent interface for running applications called console modules. You use different console modules for different functionality in PATROL Central. For example, the PATROL Predict console module provides capability to assess the current performance of your enterprise and to plan for growth - PATROL for iSeries (AS/400).

To add a console module

- From the main menu, choose PATROL Central => Add Console Module.
- Select the console module from the list.
- Click the Add button.
- Click the Close button.

Note: Adding a console module does not install its files on your machine. If a console module is not listed in the Available console modules list, you must install it before you can add it. You also need a license file on the PC console.

Start PATROL Predict by selecting the following:

Start->Programs

BMC PATROL

Perform

PATROL for iSeries Predict

When the PATROL Central 7.1 windows opens, double click on the PATROL-Predict icon in the navigation pane. This will open the Patrol Predict selection panel (Predict - Getting Started) in the results pane on the right. Maximize the PATROL Predict selection screen which will then fill the results pane.

PATROL Model Components

- **Model Components**
  - ► Network
  - ► Computers
  - ► Workloads
  - ► Transactions
  - ► Disks
  - ► Logical Volumes
  - ► Disk ASPs

- **Model Review Support**
  - ► Charts
  - ► Reports
  - ► (Growth) Plans

PATROL Central Root
- PATROL Central LaunchPad
- PATROL-Predict
  - CIRCUSREST
    - Network
    - Computers
      - RESORT
    - Workloads
      - CLIENTAC4
      - INTERACTIV
      - NONINTER
      - QDEFAULT
    - Transactions
    - Disks
    - Logical Volumes
      - RESORT : ASP1
    - Plans
    - Reports
    - Charts

► Main

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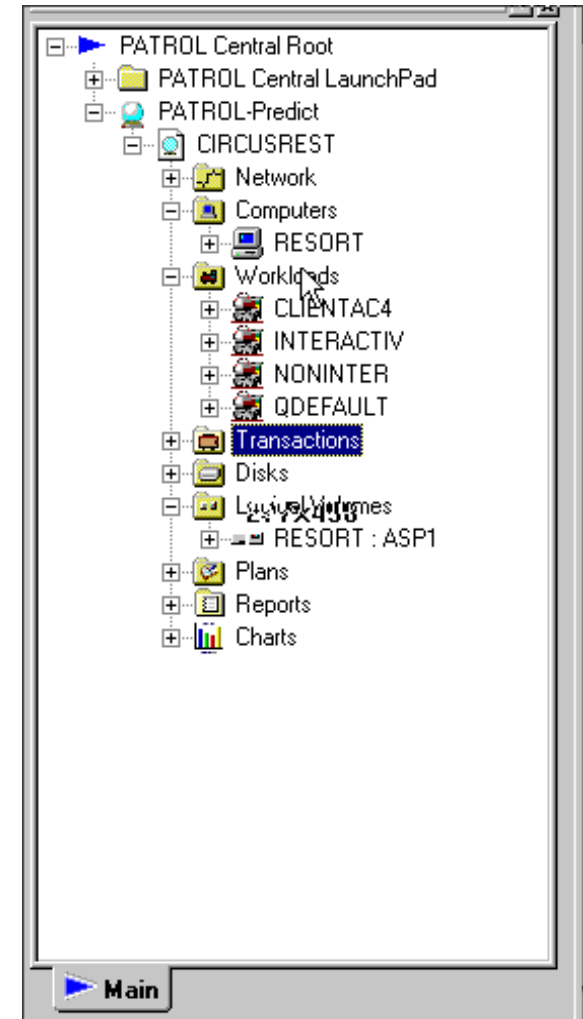
PATROL Model Components

The Predict model is represented in the .md file by a series of components. You can view and change the model characteristics by manipulating these components through their properties dialogs.

The Evaluation step produces a range of Reports under the categories of (number of reports shown in parenthesis) :

- Network (5)
- Computer (13)
- Workload (9)
- Transaction (7)
- Disk (3)
- Logical Volumes (ASPs) (3)
- Calibration Report (1)

The following graphic charts are also produced:

- CPU Utilization by Workload
- Disk Response Time
- Disk Utilization
- Transaction Relative Response Time
- Transaction Response Time Breakdown
- Transaction Response Time Overview
- Workload Response Time Breakdown
- Workload Response Time Overview
- Workload Relative Response Time

The growth scenarios is presented to the Predict model as a "Plan".

PATROL Reports

Analyze Interval: Thu Apr 18 14:30:00 2002 - Thu Apr 18 14:45:00 2002
Created on: Fri Sep 27 12:10:26 2002

Predict - Computer Statistics by Workload

Computer Workload	Operating System	Computer Count	CPU Utilization (%)	% Utilization out of	Queue Length	Direct Throughput (tran/hr)	Response Time (sec)	Total IO (req/sec)	Local IO (req/sec)	Remote IO (req/sec)	Page IO (req/sec)
TSCERPED	OS/400	1.00	86.44	100	6.84	100.91K !a	0.25				
CLIENTAC4 - Non-Inter			0.00		0.00	120.00	0.00	0.03	0.03	0.00	0.00
INTERACTIV - Interactive			7.49		0.15	1.11K !b	0.50	0.71	0.71	0.00	0.06
INTERACTIV - Non-Inter			0.26		0.01	62.75	0.30	0.05	0.10		0.00
NONINTER - Non-Inter			76.50		6.64	99.43K	0.24	163.06	163.06	0.00	0.70
QDEFAULT - Non-Inter			2.19		0.04	180.00	0.93	1.54	1.54	0.00	0.20

!a - There is a cutback in the computer throughput
!b - There is a cutback in the workload throughput

PATROL Reports

There are many choices of standard reports that are generated to represent both the model components, and the results of the predictive modeling process. These reports are generated in HTML format, which easily be imported in to word processing tools like Microsoft Word.

The simple report shown here is an example of "Computer Statistics by Workload." It shows the workloads generated using the following "default job classifications": CLIENTAC4, INTERACTIVE, NONINTERACTIVE, and QDEFAULT.

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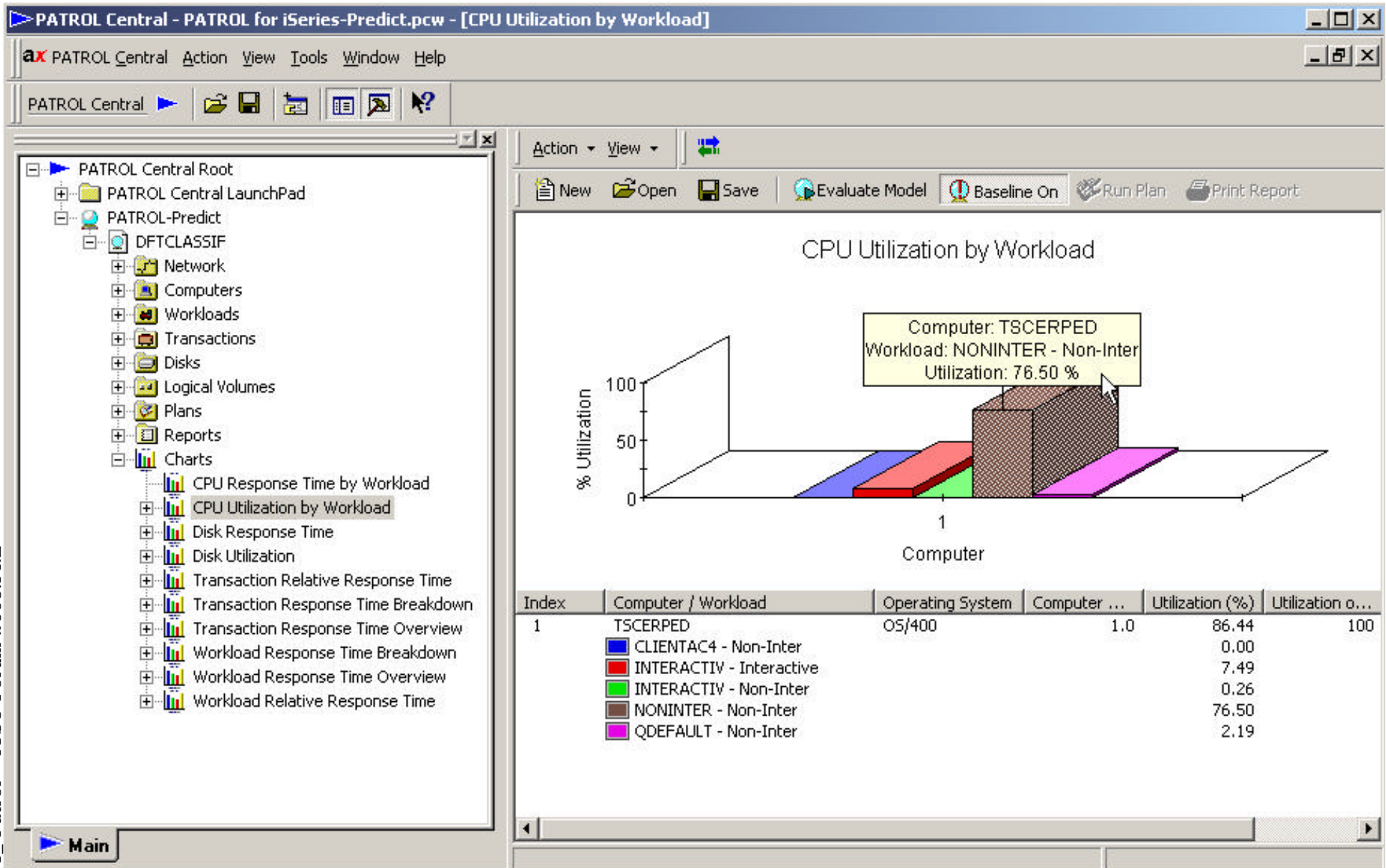
PATROL Charts

PATROL Charts

Here you can see two examples of a graphic that can be generated by Predict for iSeries. The graphs may be represented (2 or 3-dimensionally) as a bar chart, stacked bar chart, or a pie chart.

On this page, you are seeing "CPU Utilization by Workload." This report is displayed here in both its 3-D version.

This report demonstrates visually the sharing of the CPU resources by the various workloads being measured. You could view the results as a pie chart, overlay Stacked bar charts etc. If the reports being charts generated automatically for you are not defaulting to in the format you prefer, the charts can be modified.

PATROL Component Properties

PATROL Component Properties

Review the effect of configuration changes on the workload, by modifying the appropriate "Properties" information.

For example to review the effect of upgrading the current CPU (from a 170-2338 to an 820 2397-1524)

Double click on the Computer icon in the Navigation Pane to view the Properties Dialog

Select the Configuration tab

Click on the Browse button

select the required iSeries model and click on Apply/OK

Click on Evaluate

A new set of Reports will be generated reflecting the impact of the upgrade

Introduction to the Lab Exercises

Introduction to Lab Exercises - PC

You will now proceed with the Lab exercises designed to introduce you to some of the basic concepts and functions of PATROL for iSeries - Predict performed on the PC.

What's been done for you....

- PATROL for iSeries - Predict installed on PC

- iSeries Model ITSO_DEMO
  - ► Created on iSeries
    - – Using Default Job Classifications
  - ► Transferred to your PC
    - – C:\Program Files\BMC Software\Patrol3\BEST1\NTC\local\workarea
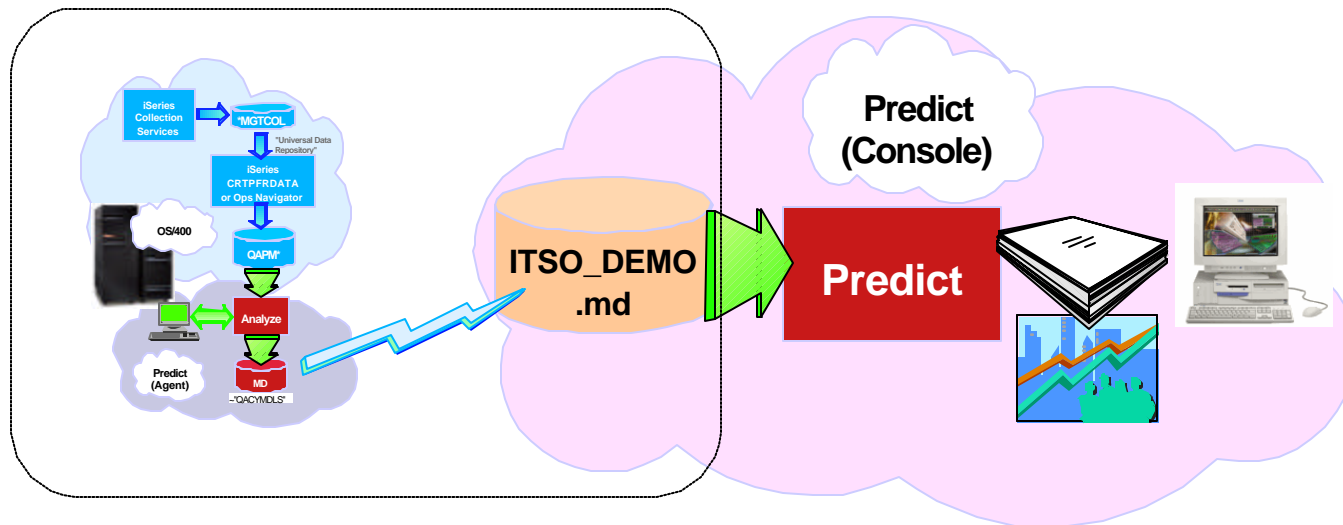
What's been done for you....

The Patrol for iSeries - Predict code has been installed on the PC.

An iSeries model (ITSO_DEMO) has already been created using on an iSeries system using the 5250 interface of PATROL for iSeries - Predict.

The model was created using the default job classifications. The workloads represented in the model are:

- CLIENTAC4
- INTERCTIV
- NONINTER
- QDEFAULT

The created model has been transferred to the default "workarea" sub directory.

What you will do ....

- Getting Started
  - ► Launch the Application
    - – Start>Programs>BMC PATROL> PATROL Central
  - ► Add the Predict Console Module

- Modeling
  - ► Open Model
    - – Review Configuration Components
      - Computer
        - ◆ Upgrade the CPU
      - Disks
    - – Grow Workload
      - Create Plan Scenario
      - Review Reports/Charts
    - – Add a New Workload
      - Repeat Workload Growth
      - Review Reports/Charts
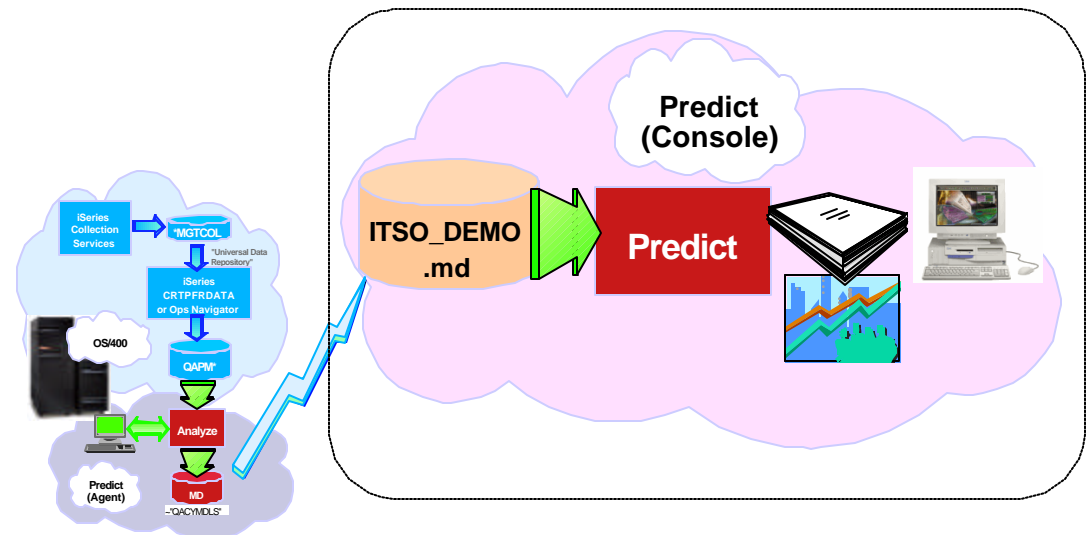
What you will do ....

You will need to add the Console module for the Predict code to the PATROL Central management console which uses Microsoft Management Console (MMC)

LAB-01 - You will initiate the application, configure the application, and begin utilizing its functionality in order to complete the other tasks/labs below.

LAB-02 - You will review a few of the Reports and Charts generated by the "evaluate" function (executed by you in the previous section!) of PATROL for iSeries - Predict.

LAB-03 - You will navigate the console functions to review the Computer Processor currently configured in the model, and investigate the effect on CPU Utilization and Response times that would result by upgrading the Processor.

LAB-04 - You will review the properties of the Disk configuration associated with the model.

LAB-05 - During this exercise, you will simulate effect of the upgrade to the iSeries model 820 you made in Lab 03.

LAB-06 - You will utilize the growth planner feature of PATROL for iSeries – Predict. You will be able to simulate the impact of workload growth on your computer configuration. You will create the growth scenario, evaluate the plan and review the resource utilization over the growth periods.

LAB-07 - You will review the HTML reports and assorted charts that are generated by PATROL for iSeries – Predict. You will manipulate the color, look, and feel of the charts.

LAB-08 - You will investigate the workload objects in the model and create a new workload, manipulate a workload, and save a workload for later use.

If you need to learn more ....

- iSeries Capacity Planning (S6295, AS95 in Europe)

  - ▶ 3-day course
    - Rochester, MN USA: February 17-19, 2003
    - Amsterdam, Netherlands: March 10 - 12, 2003
    - Montpelier, France: March 19 -21, 2003
    - Warsaw, Poland: June 3 - 5, 2003
    - Rochester, MN USA: June 17-19, 2003
    - xxxxxxx, Germany ????: May 13 - 15, 2003

  - ▶ Check the website for more details and dates
    - US > http://www-1.ibm.com/servers/eserver/iseries/education
    - Europe >
      http://www-5.ibm.com/services/learning/nl/ta-iris.nsf/(ExtCourseNr)/AS95

  - ▶ Prerequisites
    - iSeries Performance Analysis and Capacity Planning (S6095)
    - Or equivalent experience

IBM
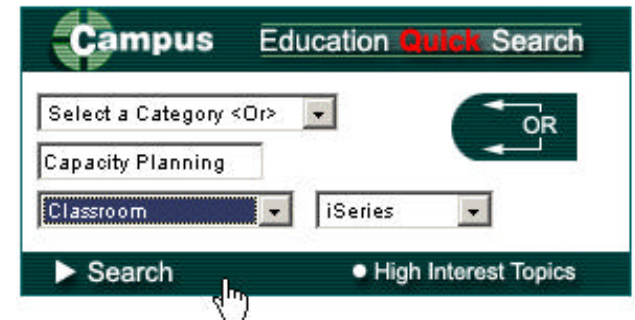
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Advanced Function Printing	ClusterProven	Host Publisher	MQSeries Integrator	PCOM	VisualAge for Java
AFP	CODE/400	HTTP Server for AS/400	Net.Commerce	PowerPC	VisualAge for RPG
AIX	DataGuide	IBM	Net.Data	PowerPC AS	WebSphere
AnyNet	DB2	IBM Logo	Netfinity	Print Service Facility	WebSphere Advanced Edition
Application Development	DB2 Extenders	IBM Network Station	NetView	pSeries	WebSphere Commerce Suite
APPN	DB2 UDB for AS/400	Information Warehouse	NUMA-Q	PSF	WebSphere Development Tools for AS/400
AS/400	DB2 Universal	Integrated Language Environment	OfficeVision	S/390	WebSphere Standard Edition
AS/400e	e-business logo	Intelligent Printer Data Stream	OS/2	San Francisco	Workpad
AT	e(logo) Server,	IPDS	Operating System/400	Screen Publisher	xSeries
BrioQuery	Enterprise Storage Server	iSeries	OS/400	SmoothStart	@server

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