IBM Tivoli Performance Modeler for z/OS V2.1 delivers edit capability and enhanced capacity planning to help manage IBM @server zSeries and System/390

Overview
IBM Tivoli® Performance Modeler for z/OS® V2.1 is a PC-based performance modeling and capacity planning tool that runs on Windows®. It can be as portable as your PC or laptop. IBM Tivoli Performance Modeler for z/OS is designed for system management on the zSeries® and System/390® (S/390®).

With growing operating system complexity and the huge impact of responding to workloads, basic Central Processor Unit (CPU) utilization is no longer enough. IBM Tivoli Performance Modeler for z/OS can model:

• Number and speed of CPUs
• Disk I/O response times
• Paging rates (auxiliary and expanded memory paging)
• Logical partitioning (LPAR) definitions and parameter changes

New in this version:

• Multiple image modeling capability — this feature allows you to create models for up to 10 images on the same processor and model the performance within multiple logical partitions (LPARs). With V1 of IBM Tivoli Performance Modeler for z/OS, you could only model the performance of a single image (LPAR #1) at one time. All other LPARs were modeled as a constant amount of capacity (MIPs) being consumed. This feature also allows you to see the interaction between the multiple LPARs based on the LPAR weighting factors assigned to each LPAR.

• Workload and LPAR editing — the new edit feature, available from the main menu, gives you the ability to cut and paste workloads or LPAR definitions from one model to another. The ability to select a workload (or LPAR) in one model and cut or copy it into another model makes it easy to move work between images, and then model the impact on performance. This can be especially helpful when evaluating workloads moving within a Sysplex.

• Enhanced CPU support — support for modeling of processors with up to 32 physical CPUs (V1 supported a maximum of 20 CPUs). This enables modeling support for zSeries z990 Models A08, B16, C24, and D32.

Key prerequisites

• Any PC that runs Windows 98, Windows 2000, Windows NT®, or Windows XP (recommended 300 MHz, or greater)
• IBM z/OS Resource Measurement Facility (RMF™), or equivalent software (such as CMF MONITOR from BMC Software)
• Excel or Lotus® 1-2-3® spreadsheet

At a glance
IBM Tivoli Performance Modeler for z/OS V2.1 is a PC-based capacity planning and performance modeling tool for OS/390® or z/OS-based mainframe computers that helps:

• Optimize mainframe system resource
• Deliver optimum service for customer/user satisfaction
• Enter a proactive mode of planning or predicting:
  - Additional or new workloads
  - Future upgrades and other long-term system capacity requirements
• Gather and report on day-to-day workload data
• Model “what-if” versus actual scenarios
• Provide multiple image modeling capability
• Workload and LPAR editing

Planned availability date
August 15, 2003
IBM Tivoli Performance Modeler for z/OS V2.1 helps you plan for acceptable levels of computing while managing your IT costs. You define your acceptable limits on response times, level of workloads, and service available to the end user using:

- Tracking and reporting function: Capture and report resource usage, including historical charts for trend analysis.
- Workload characterization and priority: You decide the level of aggregation for data reporting.
- End-to-end performance modeling that spans zSeries and System/390.
- Modeling input data manually entered or captured from other tools (RMF, CMF).
- Fast, efficient simulation techniques.
- An easy-to-use interface with a clear link between the data you input and the resulting reports.

Bottom line: Good data can help you make better decisions.

Additional characteristics of IBM Tivoli Performance Modeler for z/OS V2.1 include:

- Installs easily and can be up and running in minutes
- Allows all zSeries and S/390 model simulations to run on a PC
- Helps the user review the impact of workload changes in the current S/390 environment and on future processor types
- Examines “what if” scenarios without the expense of running actual scenarios
- Helps predict the impact of hardware and software changes accuracy
- Indicates current processor utilization against processor capacity
- Helps predict when increased processor capacity will be required
- Provides integration with spreadsheet tools such as Lotus 1-2-3 and Microsoft Excel

Performance management

By definition, a system is out of capacity when it can no longer meet the service commitments made to the end users. To properly predict when capacity needs to be increased, any capacity planning tool must be able to predict — or model — the impact of change on end-user performance. Multitier platforms and reliance on Internet, intranets, and extranets makes prediction very difficult. If they are to help, capacity planning tools must consider all of the components in the delivery of service. Systems programmers or operations professionals can use capacity planning — or performance modeling — tools to simulate the actual performance behavior of the mainframe computer. They can predict the output of these complex mainframe systems and also the impact of changing hardware or software. With this data, you can manage your zSeries or S/390 proactively.

After building and calibrating a baseline model, all results will be compared to that baseline. Changing configuration definitions is relatively simple.

Simulation versus analytic models

IBM Tivoli Performance Modeler for z/OS V2.1 creates a simulation model that can easily be modified to reflect changes in the operating system when they occur.

Modeling techniques generally fall into one of two categories — simulation or analytic. In some cases, hybrid models have been developed which use combinations of both techniques. The differences between these techniques are as follows. Analytic models consist of mathematical equations that describe the processes being modeled. Analytic models are used when the processes being modeled are well understood and can be described as mathematical expressions. Simulation models rely on running the actual process being modeled, but in a simplified form. Since these processes take place over time, simulation requires running (simulating) these processes over and over in order to reach a steady state that mimics the real process.

Analytic models typically are, by their nature, fast to run and require less processing power than simulation. Analytic models execute a number of mathematical equations and can run in seconds or less. Computer-based simulators must execute lots of instructions in order to simulate one point in time. Since simulators must model a period of time, many iterations must take place before the results are meaningful. This means simulators can run for an extended amount of real time, and can use a larger amount of computer resources compared to analytic models. Simulators are used today to predict complex processes where analytic equations are not suitable. Some examples of these simulators are models that are used to predict weather and the presence of oil deposits. These models require large amounts of computer resources, but produce results that are not attainable with analytic techniques.

In the early days of mainframe computers, operating systems were simpler than they are today. Over time, features have been added and operating system complexity has grown. Older analytic models, which were developed to predict computer performance, have found it difficult to keep up with the changing nature and complexity of today’s systems. Analytic models use mathematical equations that represent the actual events being modeled. Changing the internals of an analytic model means changing these equations, which can be difficult to do. As computing systems grow more complicated, it can become increasingly more difficult to derive queuing equations that can accurately model these systems.

IBM Tivoli Performance Modeler for z/OS V2.1 creates simulation models and therefore has a distinct advantage over products that use analytic models when staying current with system changes. Simulation models rely on programming (not queuing equations) to model the actual systems. It is typically much easier to reprogram the simulator to account for system changes than it is to generate new queuing equations. Simulators can be easily reprogrammed to model changes in the operating system as they occur.

Model input and output

IBM Tivoli Performance Modeler for z/OS V2.1 can model a wide variety of hardware and software changes.

It is a powerful tool that can help you analyze “what-if” scenarios. For example, it can model the effects of:

- Hardware configuration changes
- Changing LPAR parameters, including the number of logical CPUs per LPAR and any weighting factors
- Changing the growth rate of workloads

The input definitions are specified on three easy-to-understand screens:

- Configuration screen
- Workload activity screen
- LPAR definition screen

As you build and calibrate your capacity planning model, you can capture numeric or text data. If you accumulate weekly reports, several weekly reports can be merged to produce a monthly report, and so on.

An output metric is the performance of each workload modeled:

- For online workloads — the average response time (in seconds)
- For batch workloads — the average elapsed time

Graphing workload performance

While the simulator is running, you can see a graphical picture of workload performance. You can choose up to 4 workloads from a panel of 20 workloads to display in a continuously updated line graph.

**Section 508 of the U.S. Rehabilitation Act**

IBM Tivoli Performance Modeler for z/OS V2.1 is capable, as of August 1, 2003, when used in accordance with IBM’s associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it.

**Value Unit based pricing**

Value Unit based pricing will help to align the prices of these products to the principle of the PSLC pricing curve which provides for a lower price per MSU (millions of service units per hour) for larger capacities.

There is also a price benefit when you grow your capacity. Additional capacity will be based on the number of Value Units (MSUs) you have already installed. For example, additional capacity will not be priced starting at the base with a higher price per unit but on the capacity that is already installed.

For IBM Tivoli Performance Modeler for z/OS V2.1, the Value Units are derived based on the total MSUs of the System/370™, S/390, and zSeries based systems running OS/390, z/OS, and z/OS.e that are to be modeled by this software.

Note that Value Units of a given product cannot be exchanged/interchanged/aggregated with Value Units of another product.

**IPLA and Subscription and Support considerations**

IPLA licenses can be transferred from one machine to another within, but not limited to an enterprise. You may aggregate the capacity for all the processors the product is operated on to achieve a more economic price. This will result in a single Proof of Entitlement. It is your responsibility to manage the distribution of Value Units within the limits of the entitlement of the product license.

Subscription and Support must cover the same capacity as the product license entitlement. Subscription and Support will be available in the country in which the agreement is made.

**Product positioning**

IBM Tivoli Performance Modeler for z/OS V2.1 is complementary to IBM Tivoli Decision Support for OS/390, which provides a central repository for easy access to enterprise-wide IT information for performance reporting, capacity management, service level management, and accounting.

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Training is available, or will be available, for many IBM Tivoli® products. Education is offered through IBM Learning Services and through IBM Tivoli Software Authorized Training Providers.

For current information on IBM Tivoli software education, visit the IBM Tivoli Software Education home page at:


or call 888-746-3331.

Current schedule information for IBM Tivoli training is available on the Tivoli Software Education Schedules page at:


Offering information

Product information will be available on day of announcement through the Offering Information Web site at:

http://www.ibm.com/common/ssi

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Displayable softcopy publications: The following publications are provided in English in displayable softcopy form. The displayable manuals are part of the basic machine-readable material CD-ROM.

- IBM Tivoli Performance Modeler for z/OS® User’s Guide and Reference
- License Information Booklet

These displayable manuals are provided in both BookManager® and Adobe Acrobat PDF formats. The manuals can be used with the BookManager READ licensed programs or Adobe Acrobat in any of the supported environments. Terms and conditions for use of the machine-readable files are shipped with the files.

Technical information

Specified operating environment

Hardware requirements

Hardware requirements for IBM Tivoli Performance Modeler for z/OS V2.1 are:

- Any IBM mainframe system capable of running one of the required MVS™ operating systems
- A PC capable of running one of the supported Windows® versions; 300 MHz, or greater, recommended

IBM Tivoli Performance Modeler for z/OS V2.1 also supports the following zSeries® z990 hardware: 2084-A08, 2084-B16, 2084-C24, and 2084-D32.

Software requirements

On the mainframe system to be configured:

- One of the following MVS operating systems:
  - z/OS (5694-A01)
  - z/OS.e (5655-G52)
  - OS/390® (5647-A01)
- IBM z/OS Resource Measurement Facility (RMF™) or
  CMF MONITOR from BMC Software

On the workstation machine on which the tool will run:

- One of the following supported Windows versions:
  - Windows 98
  - Windows 2000
  - Windows NT®
  - Windows XP

- One of the following spreadsheet products to graph modeling:
  - Excel
  - Lotus® 1-2-3®

Planning information

Packaging

IBM Tivoli Performance Modeler for z/OS V2.1 is distributed with:

- International Program License Agreement (Z125-3301)
- CD-ROM
Security, auditability, and control

IBM Tivoli Performance Modeler for z/OS V2.1 uses the security and auditability features of the operating system software.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

The product in this announcement has one charge unit — Value Units. The Value Units are derived based on the total MSUs of the System/370™, S/390, and zSeries based systems running OS/390, z/OS, and z/OS.e that are to be modeled by this software.

Value Unit Exhibit VUE007

<table>
<thead>
<tr>
<th>MSUs minimum</th>
<th>MSUs maximum</th>
<th>Value Units/MSU</th>
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<tr>
<td>Base</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Tier A</td>
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<tr>
<td>Tier B</td>
<td>46</td>
<td>175</td>
</tr>
<tr>
<td>Tier C</td>
<td>176</td>
<td>315</td>
</tr>
<tr>
<td>Tier D</td>
<td>316+</td>
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</table>

Value Units for non-MSU-based S/390® processors:

<table>
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<tr>
<th>Hardware</th>
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<td>MP3000 H70</td>
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<td>ESL Models</td>
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Translation from MSUs to Value Units

<table>
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<tr>
<th>MSUs</th>
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<td>Tier B</td>
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<td>Tier C</td>
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<tr>
<td>Tier D</td>
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Ordering example: The total number of Value Units is calculated according to the following example.

<table>
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<tr>
<th>Quantity</th>
<th>Feature number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Value Unit</td>
<td>3962</td>
</tr>
<tr>
<td>250 Value Units</td>
<td>3963</td>
</tr>
</tbody>
</table>

When calculating the total number of Value Units, the sum is to be rounded up to the next integer.

Example: In the above ordering example, for the product running on a machine with 1,500 MSUs requiring 344 Value Units, order feature number 3962, quantity 94, and feature number 3963, quantity 1.

Value Units for IBM 9672 Processors will be based upon the full capacity of these systems. This is applicable to all S/390-based systems that are measured on MSU capacity. Information on MSU capacities can be found in the IBM System/370, System/390®, and zSeries Machine Exhibit, Z125-3901.

Value Units for zSeries will be based upon full MSU capacity as defined in the Machine Exhibits.

There will be a tool available that provides support for transforming the MSU-based capacities of S/390 systems to new Value Units by calculating the applicable number of Value Units for a given number of MSUs.

Current licensees

Current licensees with active maintenance or subscription will receive instructions on how to order the new version.

New licensees

Orders for new licenses will be accepted now.

Shipment will begin on the planned availability date.

Basic license

To order, specify the program number, feature number 9001 for asset registration, and the one-time charge (OTC) feature number. Also specify the feature number of the desired distribution medium.

To suppress shipment of media, select the license-only option in CFSW.

IBM Tivoli Performance Modeler for z/OS V2.1 is eligible for On Off Capacity on Demand (OOCoD). To order OOCoD, specify the OTC feature number for MSU Day Authorizations. For more information on OOCoD, refer to Software Announcement 203-202, dated August 12, 2003.

Translation from MSUs to Value Units

<table>
<thead>
<tr>
<th>MSUs</th>
<th>Value Units/MSU</th>
<th>Value Units</th>
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</thead>
<tbody>
<tr>
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Total 1,500 Value Units

343.50
IBM Tivoli Performance Modeler for z/OS V2.1

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<td>250 Value Units</td>
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<td>Per 1 On Off Capacity On Demand</td>
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<tr>
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<tr>
<td>Temporary Use Charge</td>
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* Note: On Off Capacity On Demand will be available September 12, 2003.

** Note: MSU Registration will be available September 12, 2003.

** Terms and conditions

** Licensing:** IBM International Program License Agreement. Proofs of Entitlement (PoEs) are required for all authorized use.

These products are licensed under the IBM Program License Agreement (IPLA), and the associated Agreement for Acquisition of Support, and the Addendum for Support (Z125-6883) which provides for support with ongoing access to releases and versions of the program. These programs have a one-time license charge for use of the program and an ongoing recurring charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours) as well as access to updates, releases, and versions of the program as long as support is in effect. S/390 and IBM OS/390 use this support.

** Limited warranty applies:** Yes

** Warranty:** This program has warranty for a minimum of one year from acquisition from IBM or authorized Business Partner. The warranty provided to the customer, for at least one year from acquisition, is access to databases (read Web sites) for program information, FAQs, including any known fixes to defects, which the customer can download or obtain otherwise and install at their leisure.

** Program support:** Subscription and Support includes telephone assistance (voice support for defects during normal business hours) as well as access to updates,
releases, and versions of the program as long as support is in effect. Customers will be notified of discontinuance of support with 12 months notice. If you require additional support from IBM, including an extension of support beyond the discontinuance date, contact your IBM Representative or Business Partner. This extension may be available for a fee.

Money-back guarantee: If for any reason you are dissatisfied with the Program, return it within 30 days from the invoice date, to the party (either IBM or its reseller) from whom you acquired it, for a refund. This applies only to your first acquisition of the Program.

Copy and use on home/portable computer: No
Volume orders (IVO): No
Passport Advantage® applies: No

Usage restriction: Yes
Usage is limited to the quantity of Value Units licensed.

Software Maintenance applies: No
IBM Operational Support Services — Support Line: Yes
AIX®/UNIX® Upgrade Protection applies: No
Entitled upgrade for current AIX/UNIX upgrade protection licensees: No
iSeries® Software Subscription applies: No
Variable charges apply: No
Educational allowance available: Yes, 15% education allowance applies to qualified education institution customers.

| Prices |
|-----------------|-----------------|-----------------|
| Description | Program number | OTC feature number | OTC |
| IBM Tivoli Performance Modeler for z/OS V2.1 | 5698-A18 | 3962 | $ 1,650 |
| 1 Value Unit | 3963 | 412,500 |
| 250 Value Units | | |
| MSU Day Authorizations: | | |
| Per 1 On Off Capacity On Demand Temporary Use Charge | 3964 | 7 |
| Per 250 On Off Capacity On Demand Temporary Use Charge | 3965 | 1,750 |

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