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Capacity Management Analytics on System z

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Capacity Management Analytics on System z is about predicting business demand and preparing to meet it successfully

Key Takeaways

- 1. Addressing Cloud, Big Data and Mobile business requirements requires on-going capacity management
- 2. Good capacity management will increase efficiency and decrease costs by making sure no unexpected workloads impact business and SLAs
- 3. Capacity management solution on System z using business analytics provides increased flexibility and productivity



Capacity Management includes different components that provide detailed targeted information



 Translates business needs and plans into requirements for services and IT infrastructure

 Management, control and prediction of end-to-end performance and capacity of workloads

 Management, control and prediction of performance, utilization and capacity of IT technology

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A Phone Company Scenario





A Phone Company Scenario.....continued

Phone XYZ When B.C.M. is involved. \$ 0.50 \$1.50 * User migration from peak -> off-peak. * High usage drops to Normal. * Low usage increases to Normal HIGH * Free up capacity for more demand. * ALL USING EXISTING INFRASTRYCTUR VOICE NORMAL MSY TEXT Low DISK CPU S.C.M PEAK C.C.M OFF - PEAK



Capacity Management Analytics: Understand how current system is running

Immediate Insights to System Performance

- Scorecards
- Dashboards
- Reports



*Many customers does this today in some shape or form

How are we doing? IBM System z Forum



Capacity Management Analytics: Use data to figure out future usage

Forecast to Plan & Allocate Resources

- What-If Analysis
- Predictive Analysis



***Not** many customers do this today



Collection Engine (TDSz) Predictive Engine (SPSS) Reporting Engine (Cognos) Reporting Report / Presentation layer Cognos • Federated data model **SPSS** Use beyond Capacity **Correlate & Forecast** Management Granularity / Statistical • Forecasting / Prediction Extract, Categorize, Store **TDSz** Application performance model • Correlation of data / relationships Measure SLA compliance Use beyond Capacity Management Quantify increased IT resource consumption or abnormal spikes Compare trends to pinpoint where consumption increased Converts raw data into business-Capacity relevant information Basis for mainframe accounting Management IBM System z Forum

IBM solution capabilities work together



Core Architecture

IBM Capacity Analytics – Core Architecture



Tivoli Decision Support for z/OS



Reporting Starter Kit

- Reduce report working set size
- Users can drill-down to lower level detail
- Customize frequency of data updates
- User selectable data window view 1 day or 1 year of data
- Moves the paradigm away from static reporting to a self service model
- Provides exec level dashboard on delivery against SLAs

Standard Predictive Model: Inventory: LPAR Configuration

CEC: Processor Complex(s) CEC: Processor Complex(s) with LPAR information CICS: File Usage CICS: Program Usage CICS: Subsystem Overview CPU: CPU Utilization - CEC Level CPU: CPU Utilization - LPAR/System Level CPU: CPU Utilization - Service Class Level CPU: Daily CPU Usage by LPAR with FORECAST CPU: Monthly Usage by LPAR with FORECAST

> DB2 - CPU Utilization Details DB2 - Package(s) Overview DB2 - Plan(s) Overview DB2 - Subsystem(s) Details DB2 - Utilization Overview

I/O: Channel Utilization I/O: DASD IO Performance S

Storage: CSA/ECSA/SQA/ESQA Utilization

TDSz: Data Collection by System TDSz: Data Collection Currency TDSz: Installed Components

zLinux – CPU Usage by System zLinux – Memory by System zLinux – Paging by System zLinux – # Processes by System zLinux – # Users by System

Exception Detection LPAR MIPS Usage Control Chart Simple Exception Detection Chart

Reporting with Cognos BI can show today and help predict future usage



Reporting with Cognos BI – Advanced Filtering



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An example: Processors view / Drill through

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Other Reports: Statistical Exception & Trend Detection System



Other Reports: Statistical Exception & Trend Detection System



Other Reports: Statistical Exception & Trend Detection System



Time Series Model with SPSS – See impact over time



Show business impact of growth over time



* Actual and Prediction on same chart

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Multiple Distribution Methods



Exploit accounting to see cost impact from Capacity Management activities

Know what IT Costs with TDSz and SmartCloud Cost Manager for System z



IBM.

From Dedicated Systems, Storage, Applications . . .



Advantage:

 More simple to account for with a spreadsheet – one machine, one workload, and one cost center

Challenges – Resources are highly underutilized which means:

- Paying more for hardware and software
- Unnecessarily high energy costs
- Using more real estate than required
- More assets that are harder to track, manage, and maintain
- Inflexible to varying peak in demand

... to Shared Virtualized Environments



Advantages:

Dilemma solved with SCCM!!

- Better utilization of existing resources so future investments can be deferred
- More cost effective hardware, software, energy, staff, and floor space
- More responsive to differing peak loads

Challenges:

- How to allocate costs
- Prove to the users they're getting what they deserve

Three variables to the equation



All three questions help align IT spending with business priorities



IBM DB2 Analytics Accelerator Do things you could never do before!

What is it?

 A high performance appliance that integrates Netezza technology with zEnterprise technology, to deliver dramatically faster business analysis

What does it do?

- -Speeds complex queries
- -Lowers the cost of long term storage
- -Minimizes latency
- -Improves security and reduces risk
- -Complements existing investments IBM System z Forum



TADz - Key value to z/OS Operations Management

- z/OS products and applications are SHARED by many users and business units.
 - Managing this shared environment relies on educated guesswork unless you have automated tools and up-to-date knowledge bases to continually understand z/OS software usage
 - TADz helps customers avoid possible large revenue loses due to unexpected outages
 - TADz shows exactly where products & applications are deployed and which jobs/userids are using them. This enables better software upgrade planning, change control and reduced support
 - Plan and verify **Disaster Recovery** systems have the necessary product libraries replicated to support business critical applications.
- Many z/OS customers have older SW versions and inherited systems
 - In order to effectively manage inherited/merged environments it is critical to understand product usage
 - Reduce support costs and software license costs by consolidating environments
 - Planning and smoothing migrations is greatly assisted by inspecting product usage with TADz's interactive web reporting.











