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Transforming the Information Infrastructure: Build, Manage, Optimize.

FALL 2011

Capacity Planning in a Dynamic Data Center/Private Cloud Environment

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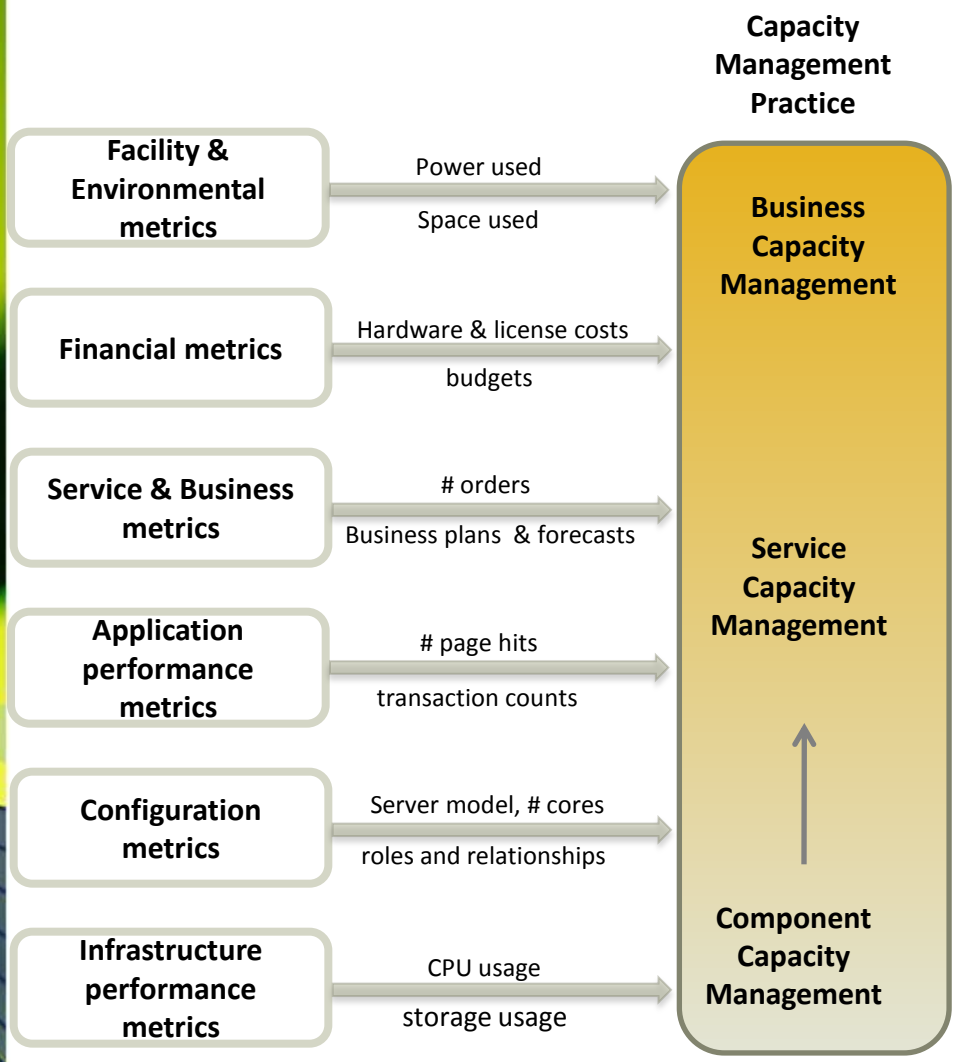
Capacity Management Inputs



We want to link business activity to resource utilisation, thereby enabling effective IT decision making.

Capacity Management Process

For Each Model

Define Infrastructure
- Select any servers/virtual machines in to be modeled

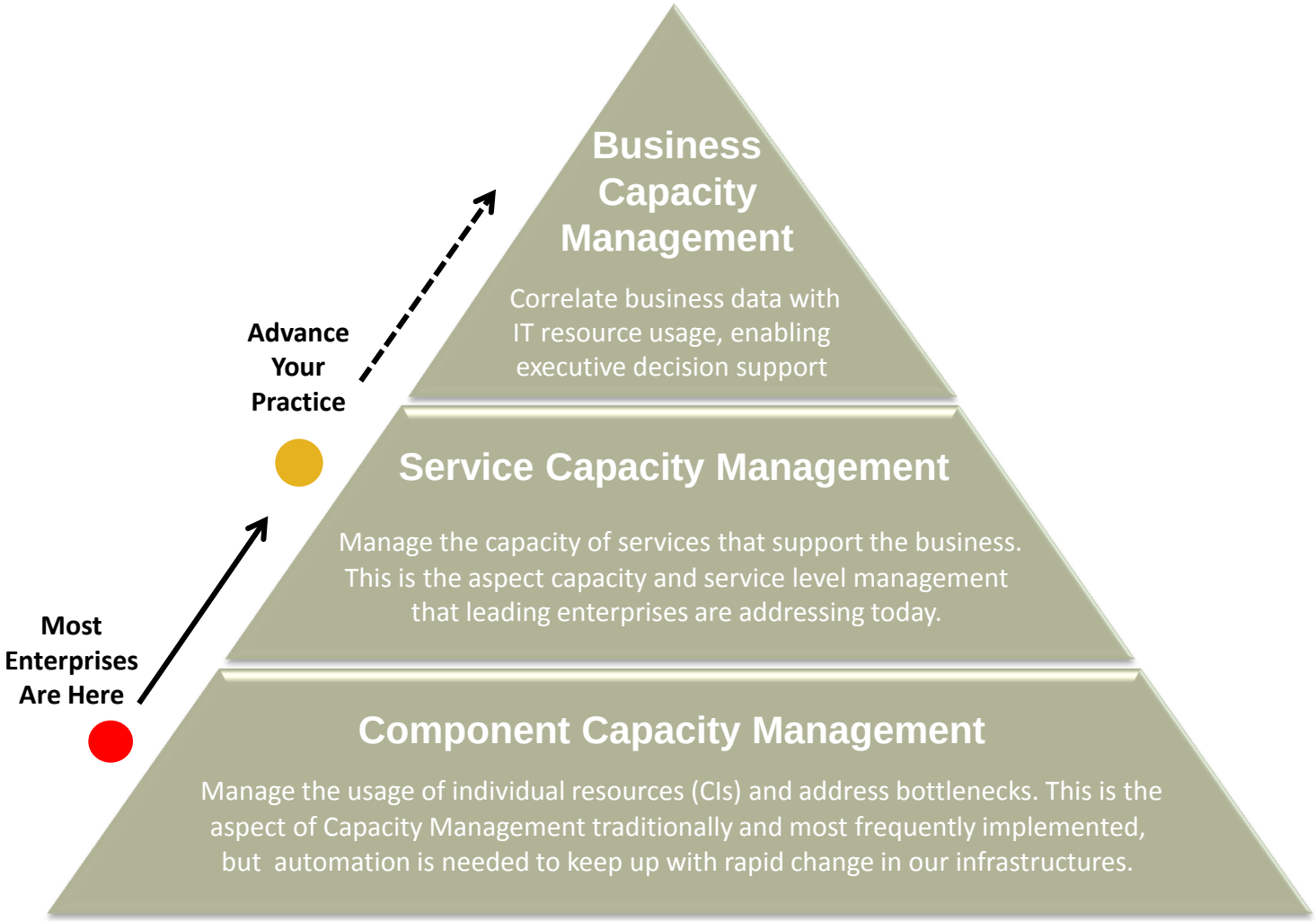
Create Model (Data Center)
- Subset of infrastructure to be treated as a unit

Select Baseline Interval
- Query Data Manager to find appropriate baseline data for modeling

Execute 'What-If' Scenarios
- Using CM wizards to define workload growth, hardware refresh, etc.

Analyse Results
- Review output, export reports

Capacity Management Pyramid



Drivers for Predictive Analytics

Initiatives

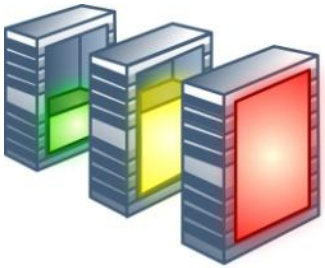
- Mergers & Acquisitions
- Data Center Moves
- Business Continuity
- Cloud Computing
- Green IT

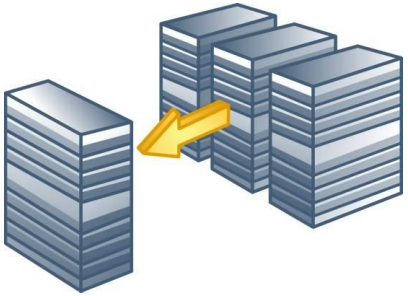
Processes

- Service Delivery
- Capacity Planning
- Application Performance Management
- ITIL Best Practices

Projects

- Server Consolidation
- Virtualization Migration (P2V, V2P, V2V)
- Test-to-Production





Key Focus Areas

Data Center Efficiencies

Optimize for Performance Lower Costs

- Maximize performance of existing physical and virtual infrastructure to reduce the cost and need for additional IT resources and over-provisioning

Deliver Service Levels

Mitigate Risk of Business Change

- Accurate forecasts for IT resource requirements to support the business: merger & acquisition, transaction volumes, business services and growth

Align IT with Business

Mitigate Risk of Infrastructure change

- Predict cost v. performance scenarios for consolidation, virtualization or hardware refresh initiatives on application rollouts and service delivery

Data Center Efficiencies

Optimize for Performance
Lower Costs

Increase Utilization of Existing Hardware
- Identify areas for consolidation and cost savings
- Cost vs. Performance scenarios for best need & value

Optimize Virtual Environments
- Automatic placement of VMs
- Distribution of workloads to VMs and hosts
- Elimination of VM Sprawl

Predictive planning and performance of platform migrations
- P2V, V2P, V2V

Reduces CapEx & OpEx
- Hardware, software, power, etc.

Insight for internal cloud initiatives and advanced virtualization initiatives

Green IT
- Energy needs for power, cooling
- Reduced carbon footprint

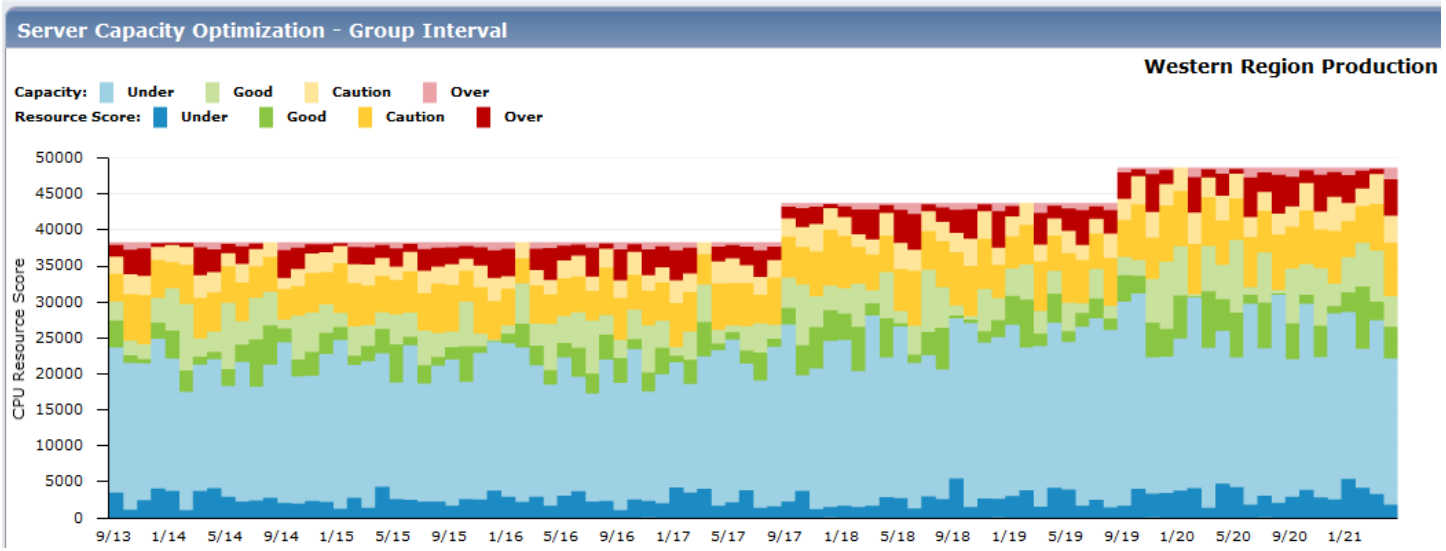
Example – Retail:
Data Collection and Normalization

Infrastructure

- 50K + Servers (Physical and Virtual)
- Total of 12 different monitoring repositories

Problem

- 75 hours per month to collect and normalize data
  - Manual collection process error prone
- Were unable to provide cross platform/application level reporting



Deliver Service Levels

Mitigate Risk of Business Change

Deliver IT Transparency to applicable stakeholders

— Predict and communicate the effects of business demand on IT resources

— Extend IT resource planning horizons

Manage business performance

— Deliver services levels at lower costs

— Predict performance of infrastructure options for application portfolio managers

Manage risk

— Confidently and efficiently bring new services on-line

— Account for seasonality in workloads

— Effectively plan for Disaster Recovery

Mergers & Acquisitions

— Plan IT resource demands

— Effectively plan to support increased demand

— Identify areas to streamline I&O

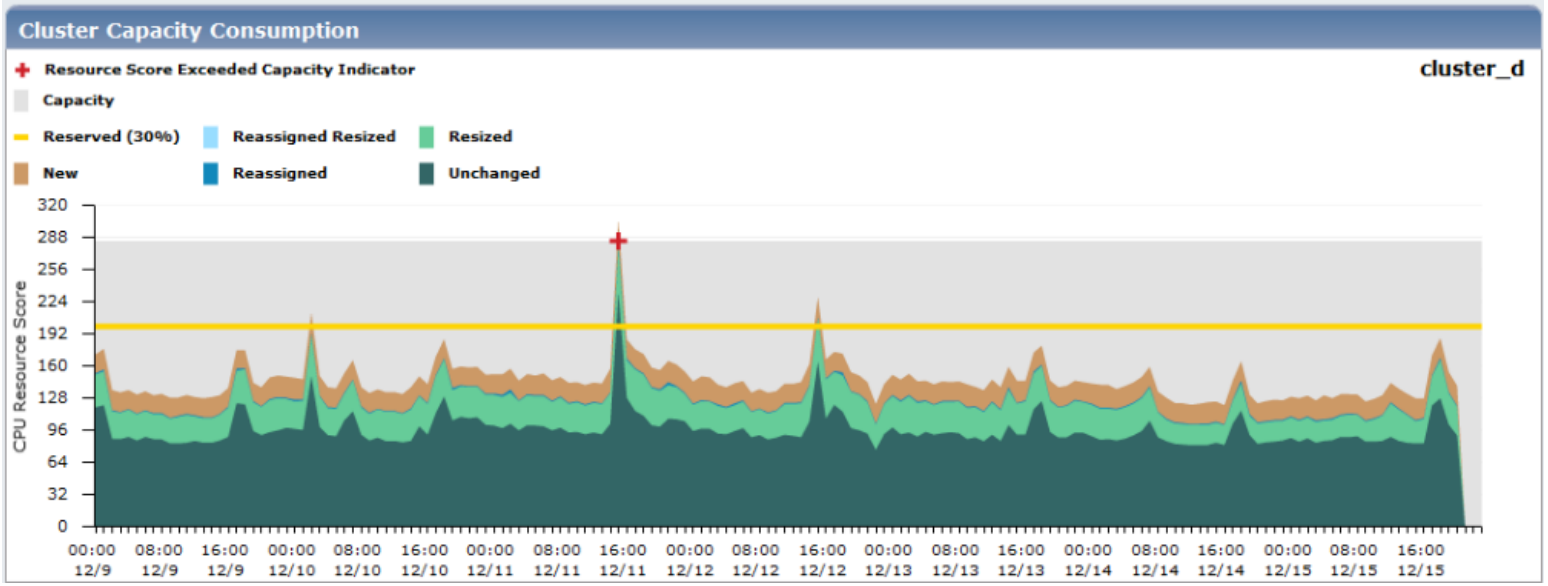
Example – Telecommunications: Effect of Business Demand

Infrastructure

- Applications spanning multiple platforms
- Multiple usage and performance repositories

Problem

- Promotions held throughout the year causing sharp increases in workloads
- Application responsible for order delivery typically fell down
- Required refunds or promotion extension periods



Align IT with Business

Mitigate Risk of Infrastructure change

Virtualization

- Predict how workloads will effect performance of IT resources consumed
- Provide automatic placement of workloads to VMs and clusters for business continuity

Data Center Consolidation

- Understand what resources are consumed by lines of business and how they are provisioned
- Identify areas for consolidation while maintaining SLAs

Hardware Upgrades

- Predict the performance of various hosting or hardware options for the application portfolio managers / lines of business.

New Application Rollouts

- Determine current and projected utilization of existing infrastructure including CPUs, memory, disk and other metrics when new applications are deployed.

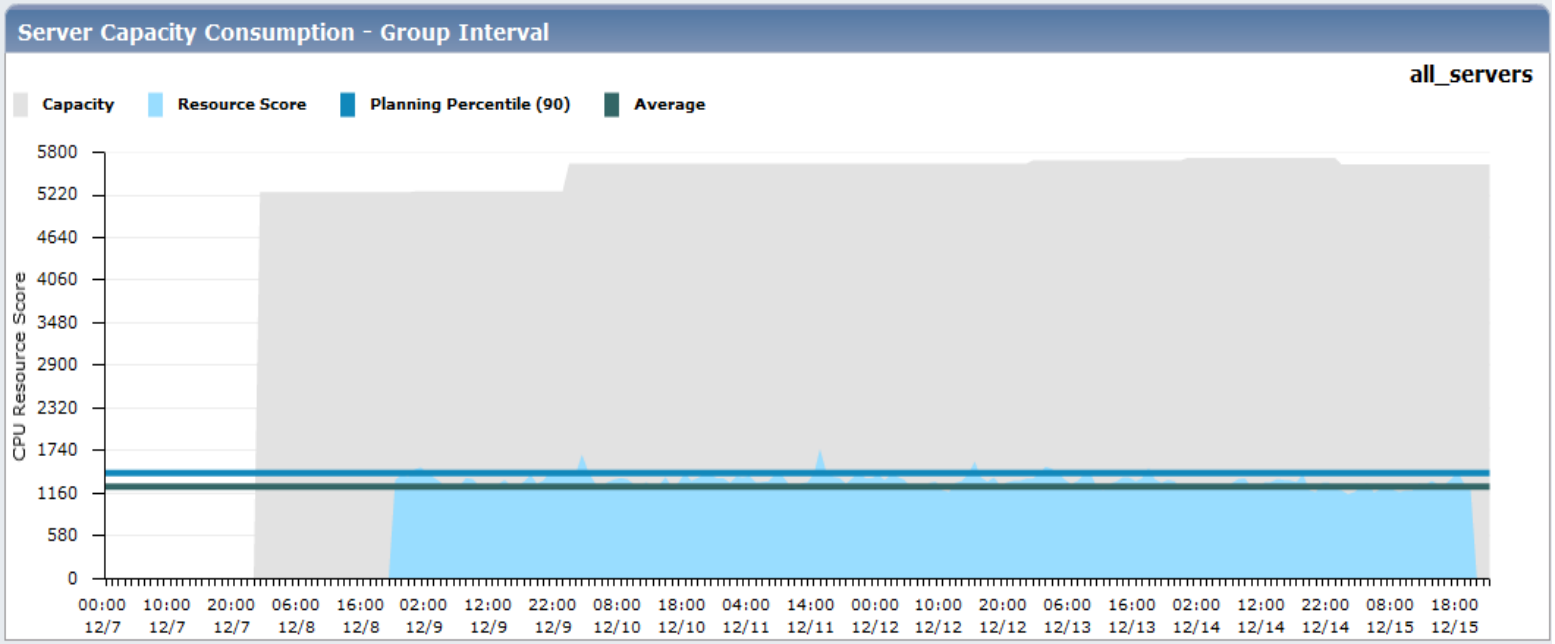
Example – Oil and Gas:
Hardware Refresh - Virtualization

Infrastructure

- Anticipating a $12M+ Price tag for new hardware
- Transitioning mid-tier applications to virtual platforms

Problem

- Historical performance issues with virtualization projects
  - Unable to contain server sprawl issue
  - Expansion required build out of a new data center



Review

Metrics

- Utilization of resources and services recorded in CDB?
- Right level of data being captured and recorded?
- SLAs policed and SLM notified of breaches?
- Reports produced at right level and on time?
- Capacity Models produced and accepted by management?

Critical Success Factors

- Accurate forecasts
- Understanding of current and future technology
- Demonstrating cost-effectiveness
- Knowledge of business plans and the ability to incorporate in the Capacity Plan
- Intuitive Solutions/Tools

In Summary

- Many companies do not have formal Capacity Management methodologies and are not able to realize benefits of virtualization without modifying processes/approach
- A gap analysis will help best align a company's Capacity Management process
- Capacity Management is not done in isolation – Capacity Management relies upon other ITSM processes and also is relied upon by those same ITSM processes
- Ongoing improvement of Capacity Management not only makes CM better, but all of IT and ITSM and the business as well

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