Problem Determination & Capacity Planning for Virtual Environments

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Pulse Comes to You

Optimizing the World’s Infrastructure
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Challenges with Managing a Virtual Environment

How do I plan capacity needs to incorporate future consumers?

My cloud is running out of capacity – how can I optimize the environment to free up space?

How do I ensure compliance to business policies?

How do I isolate problems across my virtualized server, storage & network environment?

How do I prevent resource bottlenecks?

How do I demonstrate capacity improvements for upgrading our infrastructure?
Evolving capabilities to address key challenges

Visibility

- Integrated, contextual visualization across virtual & physical server, storage & network environments
- Information to bridge cross – IT communication
- Integrated change history for problem isolation

Control

- What if analysis & reports
- Standardization with modeling, incorporating IT & Business Rules
- Optimization plans
- Simulation
- Results reporting

Automation

- More frequent optimization through policy automation
- Self learned models

Optimizing the World’s Infrastructure
Physical & Virtual Storage & Network Problems

Storage Problems
• Data store issues
  – May be caused by insufficient space - # of VMs, storage usage growth, changes in configuration
• Storage Latency/response time issues
  – May be caused by too many VMs associated to same LUN (Volume), HBA bottlenecks, backend storage issues (disk, etc.)

Network Problems
• Network response time problem
  – May be caused by too many VMs sharing NICs without necessary throughput capacity, changes in configuration
• Network connection problem
  – May be caused by unavailability of connection to physical network (physical switch / port)
List of storage problems (situations) associated with sapm-netapp1a_nfs datastore.

Netapp NAS volume associated with sapm-netapp1a_nfs datastore.

List of changes associated with sapm-netapp1a_nfs datastore.

List of datastores of Austin_Prod Cluster.

Real-time or historical graph for Netapp volume associated with sapm-netapp1a_nfs datastore.
Launch in context to ITM VMware VI agent datastore workspaces for additional details and problem resolution.

Could also launch in context to Storage Productivity Center Console.
Solution Components

Dashboard
Capacity Analysis & Reports

Base Components

- **Server & desktop**
  - ITM hypervisor agents, Cisco UCS agent, guest OS agents & desktop agents

- **Storage**
  - NetApp Agent and/or Storage Productivity Center Agent

- **Network**
  - Network Agent or Tivoli Network Manager integration

Extended Solution Components

- Tivoli Application Dependency & Discovery Manager
- Storage Productivity Center
- Tivoli Network Manager
Analytics & Reporting – Available today with ITM for Virtual Servers v6.2.3

- Manage Risks
  - Are any resources overloaded? When will physical resources reach their limits?
  - Have there been any significant changes in my environment between two weeks?

- Planning & Scheduling
  - What if I want to add 100 more virtual machines to my existing environment?
  - How many more VMs can I add to this existing environment?

- Optimization of Operations
  - Right size virtual machines
  - Identify trends for workload balancing
When will physical resources reach the breaking point?
Have there been significant (20%) changes in performance in the last week?

![Image of VMware VI Host Servers Weekly Comparison]

This report compares key metrics of host servers from week to week. If there is a significant change in value from one week to another, that field is highlighted.
How many more workloads can I place in this cluster or host? What-if I need to add X VMs of X size?
Workload Performance Trends
How well used are resources in the environment?
Analytics for Optimization Recommendation

- Manage Risks
  - Compliance with technical and business policies (colocation/anti colocation)

- Planning & Scheduling
  - What if I add new types of infrastructure to the environment? What if I upgrade my hypervisor?

- Optimization of Operations
  - Recommendations to reduce infrastructure (rightsizing, consolidation, placement) and energy costs
Recommendation Capabilities

- Performance Data
- Benchmarking Data
- Custom Tags
- Correlation Groups
- Business & IT Policies

Optimization Plans

- Recommendations – what to place where
  - Goals – minimize systems/balance utilization/ upgrade hardware/hypervisor
- Simulation – what will it save?
- Policies - automation

Report – Recommendation Results
Rules editing

Rules to guide the optimization - may be pre-packaged or authored

Recommendation Generation

Input:

- Colocation/Anti-colocation Rules
  - Rule 1: Do not mix Systems with High and Bursty CPU demand
  - Rule 2: Exclusion between (ANL_PLACEMENT_SET.V.CPU_UTIL_TYPE EQ H) AND (ANL_PLACEMENT_SET.V.CPU_VAR EQ H) and (ANL_PLACEMENT_SET.V.CPU_UTIL_TYPE EQ L)

- Boundary Rules
  - Rule 1: Do not mix DB2 servers with others
    - Condition 1: If (ANL_PLACEMENT_SET.V.APPLICATION EQ IBM DB2 Universal Database) Then (Boundary Eq

- Utilization Rules
  - Rule 1: Use 20% for growth on MQ servers
    - Condition 1: If (ANL_PLACEMENT_SET.V.APPLICATION EQ WebSphere MQ) Then (target.utilization LEQ 80)
Consolidated 14 servers to 6
Where to go for more information

- **ISM Connect Cloud/Virtualization Management**
  - Whitepaper – Capacity & Performance Management Reports
  - Youtube playlist – Capacity Analysis Reports & Cognos Reporting Drag & Drop capabilities

- **Get involved in our Beta**
  - Contact Gary Forghetti gforghet@us.ibm.com