CMG 2012 presentation:
Transforming Business Service Management
Total Recall....

Networked Business Applications

CMG - Toronto Canada

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Welcome to the 2nd Decade of the 21st Century….

Networked Business Applications

- Issues
  - Architecture has become much more complicated
  - End-user response times cannot be “predicted”
  - No way to measure or manage Service Levels
  - Big Dollar Solution haven’t worked
  - No Historical benchmarks
  - “Flying blind”
Impact on IT

- eBusiness raises expectations & requirements for computing services
- IT is being transformed from an enabling technology to a strategic component of the business process
- Increased emphasis on systems management solutions
- Optimal availability is required by customers
Technology will play the key role in success …

**Factors impacting organizations:**

1. Technology factors
2. People skills
3. Market factors
4. Macro-economic factors
5. Regulatory concerns
6. Globalization
7. Socio-economic factors
8. Environmental issues
9. Geopolitical factors

**IBM Global CEO Study**

- **Speed Value**
  - 90% view cloud as critical to their plans

- **Extended Reach**
  - 1 Billion
    - Smartphones and 1.2 billion mobile employees by 2014

- **Responsiveness**
  - 20B+
    - Intelligent business assets

- **New Insights**
  - 2.7ZB of digital content in 2012, up 50% from 2011
Businesses are facing unparalleled challenges

- **Velocity of change** drives the need for increased visibility into the application & IT infrastructure.
- **Monitoring IT resources alone** provides an incomplete view of application performance and makes problem isolation and resolution a complex, expensive task.
- **Lack of visibility** into end-user experience, component relationships and service levels in **dynamic environments**, such as cloud.
- **Performance and availability** issues for multi-platform composite applications.
- **Lack of drilldown capability** to find the root cause of problems.
- **Increased risk** of revenue loss and brand damage.

It’s what we don’t see that sinks ships.
Service Management for a Dynamic Infrastructure

- Business Services
  - Proactively Aligned
- Resource Monitoring
  - Reactively Aligned

- Domain-Specific Management
  - Dependency, Event & Performance Collection

- Consolidated Operations Management

- Business Service Management

- Enrichment & Operational Automation
Discovery - Provides 3 Key Benefits: Understand what you have

- Application Mapping with Dependencies
  - Agent-less and Credential-free
  - Discover interdependencies between Applications, middleware, servers and network components
Discovery - Provides 3 Key Benefits: Identify Changes

1) Select change history window to identify changed components in any application

2) Changed CIs are easily identified

3) View detailed history of the changes by attribute
Discovery - Provides 3 Key Benefits: Determine if it's compliant

- Compliance
  - Compare configuration to “reference master”
  - Compare to your standard policy

Comparing two instances of an Apache Web Server to the golden master

Values in red and blue are policy violations
IBM Tivoli Dynamic Infrastructure Monitoring and Management

A repeatable approach that senses and responds automatically with IT services to the changing needs of the business, resulting in high-performing applications

Use your first line of Defense: Response-Time Monitoring

**Robotic Monitoring:**
- Proactively find and correct problems before your users experience them!
- Both availability and response time monitoring
- Supports applications with protocol-level, GUI, or command-line playback and is monitoring **ALL THE TIME.**

**Real-user Monitoring:**
- Measure and report what real users are experiencing
- Demonstrate SLA compliance – robotic monitoring isn’t adequate for this!
- Isolate sporadic problems
- Works on HTTP/HTTPS session inline or as a TAP

Capture robotic and real transactions from clients
Cast as wide a net as possible – include hardware and software monitoring. Together they deliver a comprehensive end-to-end systems and solution.

- **Hardware Vendor Monitoring:**
  - Care and feeding” of hardware
  - Tell me what I have
  - Let me configure, install, and tweak it
  - Tell me if it’s working
  - Let me update it

- **Software Vendor Monitoring:**
  - Integrated visibility, control & automation across business and technology assets
  - See the business with real-time dashboards
  - Govern the business with integrated asset control solutions
  - Optimize the business with operational automated solutions
Agent or Agentless technology ??

- **Agentless technology is about cost of ownership**
  - Lower overhead cost on the server
  - Lower cost of agent maintenance
  - Faster speed of implementation
  - Less intrusive technology

- **Agent technology is about mission-critical**
  - Higher resiliency and availability
  - Better data availability, granularity and uniqueness
  - Automated and independent take actions
  - Real-time responsiveness to an incident
  - Lower overhead cost on the network
Setting Thresholds is now a science…

Setting a threshold, at times, seems like an “art” vs. a “science”. Visual Baselining presents historical data, to set a threshold, based on real systems management information - a science not guesswork.

– Can graphically tune threshold based on historical data to reduce false alerts
– More accurate alerts improve application availability and end-user satisfaction
– Better data for possible incident avoidance
– No need to run reports or do further research – it is just there!
– Works for Dynamic Thresholds…….
Monitoring and Analytics Approaches

Where we’ve been (broadly deployed)
- Monitoring physical resources in a single domain
- Analysis of historical data
- Static thresholds set by Administrator

Where we are (available capability)
- Monitoring service level health
- Streaming analytics of network data
- Dynamic baselining & simple forecasting
- Dynamical Thresholds using baseline info
- Multi-domain correlation

Where we’re going (technology in lab)
- Monitoring physical and logical resources
- Real-time analysis of data in motion across server, network, storage, application
- Advanced Predictive Behavior based on learning and data metric relationships
Analytics Insight: Problems are Apparent in Metric Relationships

- Engine temperature and engine revolutions normally move together. This is healthy system behaviour...

- When engine temperature deviates from engine revolutions, as would happen with coolant leak, this indicates a problem and an alert is generated.

- The alert is generated much sooner than waiting for engine temperature to exceed normal operational ranges.
Understand Virtualization Utilization and Trends

*Clarity where you are and where you are going for Virtual Environments from Consolidation to Cloud*

- Show Capacity vs. Allocated for Virtual Environment
- Supports "What-if?", "What-is?" and Current Trend Reports
- Plan for expected new commitments to manage total capacity
- Comprehensive Information that is easy to consume supports any Virtualization needs from Consolidation → Dynamic Cloud Allocation

**Ensure Application Availability**
- Are any resources overloaded? When will physical resources reach their limits?
- Have there been any significant changes in my environment?

**Optimize Resource Utilization**
- Right size virtual machines
- Identify trends for workload balancing
- Ensure business goals are met.

**Ensure Future Availability**
- Ensure supply can meet demand
- What if analysis based on average, peak or customer defined workloads.
Capacity Planning

- What-if Analysis
- Recommendations to optimize Workload
Service Management for a Dynamic Infrastructure

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Proactively Aligned

Consolidated Operations Management

Domain-Specific Management

Dependency, Event & Performance Collection

Resource Monitoring
Reactively Aligned

Network-topology-based “Root Cause” Analysis

- Automated discovery of network topology (devices and relationships)
- Applying topology knowledge precisely identifies the “root cause” of an outage
Utilize a “Manager of Managers”

Combined Web Views  Business Views  Operator Views

Information

Gateways

Enterprise Wide Events

Probes

Physical Plant  Transmission Layer  Network Layer  Application Layer

RDBMS  Oracle, DB2, MSSQL, etc.

Customer Care

Trouble Ticketing  Remedy, Peregrine, SCCD, Clarify

EMS  HP NNM  Z/VM  Security  ITM  SCOM

Operator Views

RDBMS

Oracle, DB2, MSSQL, etc.
Consolidated Operations Solves Visibility Challenges

Multiple Business Services

Service A  Service B  Service C  Service D  Service E  Service F  Service G  Service H

Operational Impact
Con Ops Visibility Spans the Gap
Is Critical Business being affected?

MTTR  OPEX  CAPEX  Customer  Revenue  Competitive

Multiple Operations Centers
NOC  NOC (n)  SOC  SOC (n)  Data Center  Data Center (n)  Line of Business  Line of Bus. (n)

Multiple Silos, Tools, Technology, Data, Vendors, Staff

Network  Network  Security  Security  Application  Application  Application  Application
Network  Network  Security  Security  System  System  System  System
Network  Network  Security  Security  Mainframe  Mainframe  Mainframe  Mainframe
Network  Network  Security  Security  Storage  Storage  Storage  Storage

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Enrichment & Operational Automation

Systems
Databases
Wireless
Network
Voice
Security
Mainframe
Storage
Business
Other
What does an operator need in order to take action?

**Emergency Operator scenario:**
- **EO:** Hello, emergency operator speaking. How can I help you?
- **Caller:** Help, I have an emergency. Come quickly. **CLICK!** (caller hangs up)

**IT Operator scenario:**

What is the problem with these scenarios?

*It is obvious that something is wrong but they do not have enough information to take action to resolve the problem.*
Con Ops Translates Data into Real Information

Same scenarios with a little more information…

**Emergency Operator scenario:**
- **EO:** Hello, emergency operator speaking. How can I help you?
- **Caller:** Help, I have an emergency. Come quickly.
- **EO:** What is your emergency?
- **Caller:** My house is on fire!
- **EO:** What is your address?
- **Caller:** 100 South Drive…
- **EO:** Is there anyone in the house?
- **Caller:** Yes, my two year old child is in the house.
- **EO:** Don’t worry, emergency services will be there in 3 minutes!

Use Help Desk escalation rules, Asset Data, SLA Data, Business Process Data, etc……

**IT Operator scenario:**

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Device Type</th>
<th>Device Location</th>
<th>Contact Details</th>
<th>SLA Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uggs INC</td>
<td>Cisco ASR 1000</td>
<td>AN, 3rd Floor, Rack 2</td>
<td>Russell Crowe : 777-0987</td>
<td>SLA: 2 min</td>
</tr>
</tbody>
</table>

Now we have provided “contextual” information needed to take action.
Budget challenges? - A Return on Investment analysis of Consolidated Operations

- Purchase and implementation of Consolidated Operations (investment) delivered a return of 625% (ROI).
- The savings achieved as a result of the implementation covered the original investment costs in less than six months (payback).

- Improving mean time to repair (MTTR) a device or system by 54%
- Reducing capital expenditure (capex) by an average of $1.3 million
- Consolidating network operations centers (NOCs) into fewer centers, reducing NOC expenses by 70% and resulting in $293,801 average annual savings

IDC studied telecommunications service providers, including mobile and fixed-line service providers, that have implemented Performance Management, Service Quality Management, and Network Fault Management from the IBM Tivoli Netcool suite of solutions. http://www.servicemanagementcenter.com/ExternalContent/WhitePapers/IBM/RBMS/36617/216533.pdf
Source: IDC
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Enrichment & Operational Automation
Now you can provide Business Service Context

Rapidly identify the service impact on business services, processes or transactions.

Pinpoint Service-impacting root cause.

LIC to Operation flow diagrams & details.
Service Measurement

SLA Rules
- Can be defined for:
  - Services
  - Applications
  - Devices
- 3 Types of SLAs
  - Instance
  - Cumulative
  - Violation Count

SLA Metrics
- Availability
- Downtime (MTTR)
- Penalties ($$$)
VISIBILITY

Bharti Infratel

Monitor 32K comms. towers, saving US$1.1M in diesel generator run hours, & reducing ~ 8.97 million lbs of CO2 emissions per year.

CONTROL

Czech Ministry

Control infrastructure through a single pane of glass, allowing five staff to monitor service across a geographically dispersed environment.

AUTOMATION

China Great Wall

Save US$8,600 in energy usage/yr, shortened provision & configuration times by 99%, increased hardware virtualiz. by 79%, and reducing server usage by 30%.