BMC Capacity Optimization - Best Practice Webinar
Network Capacity Management with BCO

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BMC Capacity Optimization - Best Practice Webinar
Managing Network Capacity using BCO 9.5

Speakers:
Sudheer Apte, Product Development Architect, BCO
Riccardo Casero, Moviri

Panelists:
Giuseppe Nardiello, Product Manager, BCO
Giorgio Gasparini, Customer Support, BCO
Mike Paska, Customer Support, BCO
Mike West, Product Development Architect, BCO
Renato Bonomini, Moviri
Davide Brunelli, Moviri
Agenda

- BCO Introduction
- Network Capacity Management – General Approach
- Use cases
- Moviri Add-ons for BCO
- References
## BMC Capacity Optimization

### Product Differentiators

<table>
<thead>
<tr>
<th>Differentiator</th>
<th>Why does it matter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides capacity visibility for <strong>all Data Center components</strong>: physical, mainframe, virtual and cloud, databases, storage, networks <em>and more</em></td>
<td>Enterprise-wide</td>
</tr>
<tr>
<td>Manages <strong>virtually any system</strong> by means of OOTB/custom connectors (ETLs) to management tools or low-footprint direct data collection</td>
<td>Zero impact</td>
</tr>
<tr>
<td>Provides comprehensive <strong>predictive analytics, by-exception reporting</strong> and <strong>automated notification</strong> of potential capacity issues</td>
<td>Proactive</td>
</tr>
<tr>
<td>Integrates <strong>Configuration Management tools</strong> and supports <strong>correlation wrt business KPIs</strong> to estimate capacity needs wrt expected demand</td>
<td>Service-oriented &amp; Business-Aware</td>
</tr>
<tr>
<td>Provides automated <strong>chargeback reporting</strong> by Service/Tenant based on flexible cost models (e.g. fixed, allocation and utilization-based)</td>
<td>Cost Visibility</td>
</tr>
</tbody>
</table>

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BMC Capacity Optimization

High-level architecture

- Capacity Manager
- Cloud Admin
- Storage Admin
- Operation Mgr
- Service Manager
- Service Owner
- IT Financial Manager
- Business Owner

Discovery
- CMDB
- CLM

Web Interface (with OOTB and customizable views)
- Predictive Analytics
- Capacity DB
- Automated Reporting

Data Integration
- Performance Metrics
- Business KPIs
- Configuration Metrics
- Events
- Financial Metrics
- Facility Metrics

Data Collectors
- Physical/Virtual/Clouds
- Databases & Middleware
- Applications
- Storage
- Networks
- Data Center Facilities
- Business Drivers

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Elements of Network Capacity Management > Component level

Network Links
- Bandwidth Utilization
- Link Performances

Legend
- Network Devices
  - (Routers, Switches, Firewall...)
- Intra-location Link (LAN)
- Inter-location Link (WAN)

Location and sub location
- (Datacenters, Rooms, PoPs...)

Server or Appliance

Network Devices
- CPU
- Memory
- Interfaces
- Ports

Datacenter A
Access
Core
Edge

Datacenter B
Access
Core
Edge

Internet or IP WAN
Elements of Network Capacity Management
> Service & Business level

**Links by ToS/Application**
- Bandwidth Utilization
- Link Performances

**Business Metrics**
- # Users / Customers
- # of Transactions
- Equipment costs

**Legend**
- Network Devices (Routers, Switches, Firewall...)
- Intra-location Link (LAN)
- Inter-location Link (WAN)
- Location and sub location (Datacenters, Rooms, PoPs...)
- Server or Appliance
- DC to User traffic (17%*)
- DC to DC traffic (7%*)
- Traffic within DC (76%*)

Network Capacity Management Maturity Model

<table>
<thead>
<tr>
<th>Capabilities and Benefits</th>
<th>Level</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business aware capacity management</td>
<td>Business</td>
<td>Number of Customers/Users</td>
</tr>
<tr>
<td>Network cost optimization</td>
<td></td>
<td>HW costs</td>
</tr>
<tr>
<td>Business what-if analysis</td>
<td></td>
<td>Marketing plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customer experience metrics</td>
</tr>
<tr>
<td>• Identification and quantification of most bandwidth intensive applications</td>
<td>Service</td>
<td>Bandwidth by Application/Service/ToS</td>
</tr>
<tr>
<td>• Inputs for traffic prioritization/shaping</td>
<td></td>
<td>Service/application metrics</td>
</tr>
<tr>
<td>• Measurement of network performance and QoS requirements meets.</td>
<td></td>
<td>Packet Loss, Jitter, Delay</td>
</tr>
<tr>
<td>• Service aware capacity management</td>
<td></td>
<td>SLA</td>
</tr>
<tr>
<td>• Service what-if analysis</td>
<td></td>
<td>(level 3 &gt; 7 ISO OSI)</td>
</tr>
<tr>
<td>• Comprehensive view of network component utilization</td>
<td>Component</td>
<td>WAN/Links</td>
</tr>
<tr>
<td>• Proactive alerting based on trending</td>
<td></td>
<td>Bandwidth utilization</td>
</tr>
<tr>
<td>• Anomalies detection</td>
<td></td>
<td>Network Performance</td>
</tr>
<tr>
<td>• Capacity plans driven by informed decisions</td>
<td></td>
<td>(level 1 &gt; 2 ISO OSI)</td>
</tr>
<tr>
<td>• Component what-if analysis</td>
<td></td>
<td>Network Devices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CPU, Memory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Backplane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Interfaces occupation</td>
</tr>
</tbody>
</table>
Network Capacity Management with BCO

The logical architecture

- **Core Analytics**
- **Advanced Views**
- **Report Templates**
- **Moviri Integration**

**Network Monitoring Tools**
- HP NNMi
- entity
- Other sources

- **Network Links**
- **Network Devices**
- **Links by ToS**

**Monitoring and Governance Tools**
- Application
- Business Metric
- Other sources

**CMIS**

**BCO**

**Network View**

**Core Analytics and Reporting**
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Use Cases - Overview

- **Component**
  - Assess utilized capacity and prevent resource saturation
  - Check overall network health and extend the holistic view of IT
  - Support the provisioning process

- **Service**
  - Assess the impact of different ToS
  - Simulate the introduction of a new service
  - Analyze dependency between Network and IT metrics

- **Business**
  - Analyze dependency between Network and Business metrics
  - Report/Plan Capacity in Business terms
  - Show-back/Charge-back Network costs

**BMC Capacity Optimization**
- Core Analytics
- Moviri Integration
- Advanced Views
- Report Templates

**CMIS**
Component Level
> Tracking WAN/LAN links capacity

- Control traffic of top utilized links over variable time-frames
- Assess and compare daily and weekly profiles
- Spot bandwidth saturation and receive alerts based on (complex) conditions
- Visually correlate traffic and Network events, support Problem Mgmt.
Component Level

> Tracking Virtualized Devices capacity

- Assess the operational status of Virtualized devices
- Monitor and control the status of the implemented services, such as Port Channels and VLANs
- Aggregate and Rank resource utilization across different datacenters
Component Level
> Check datacenter network health

- Access all observed devices from one panel
- Sort by criticality
- Quickly filter by many dimensions: type-vendor-model, role, location, BCO domain
- All critical capacity aspects in one row: ports availability, bandwidth usage, network errors, cpu/memory-backplane
- Drill-down to specific device for in-depth analysis
Component Level
> Preventing bandwidth saturation for links

- Forecast future link utilization to predict when user-definable threshold will be breached
- Employ different granularity and statistics according to company requirements
- Adopt linear models or consider series seasonality

- Exploit algorithms able to detect shifts in usage behavior (last-ramp)
- Set proactive policies that alert before saturation is expected to occur
Component Level
> Preventing saturation of port slots on devices

- On the basis of historical allocation of ports the View estimates slots exhaustion
- New slots or additional devices can be therefore provisioned in advance
- Usual filters are available to perform the assessment
Component Level
> Check WAN links health in geographical maps

- Complement geographical maps of network with traffic information driven by usage data
- Custom highlighting rules

- Status of links and location can also be driven by trends or forecasted level of utilization
- Use map as entry point for drilling down to specific network elements
Component Level
> Extend the holistic view of IT

- Include network aggregated indexes in executive general datacenter/service health Views

- Drill-down to network dedicated overview page within the executive View
Component Level
> Support the provisioning process

- Select datacenter, location and other dimension of interest
- View overall ports occupancy for the selected criteria
- Find a candidate device on the basis of its residual capacity
Service Level
> Assess the impact of different ToS

- Assess the weight of each single type of service (Data, VoIP...) on the overall link utilization

- Analyze each type of service individually or from an aggregated perspective

- Combine ToS and geographical information for in-depth performance analysis

- Quickly spot what and where may be the cause of possible breaches of SLAs
Service Level
> Simulate the introduction of a new service

Suppose to offload VoIP traffic from a set of links and aggregate it on a single dedicated VoIP link.
Service Level

> Analyze dependencies between Network and IT

- Visually assess the impact of events and IT performance outages over network utilization

- Correlate Network and Application data to estimate application capacity and identify bottlenecks
Correlation analyses allow to evaluate the relation between resource consumption and served users.

Series comparisons enable to identify the most impacted links.

Number of supported users can be estimated by extrapolating the relation on an increasing number of users and comparing resulting utilization to the set limit.
Business Level > Include network costs in show-back/charge-back process

1 - Resource usage and configuration data are loaded into BCO CDB

+ Network usage
  - Performance & Business KPIs

+ Network topology
  - Service & Item Configuration

2 - Service unit costs and cost allocation models are configured

3 - Generate (automatically or on-demand):
   a) cost accounting analyses;
   b) chargeback plans;
   c) cost allocation scenarios simulations

Chargeback Engine

ETL Engine

Analytics & Reporting Engine

CDB

Core Analytics

IT Financial Mgr

ITService Mgr

IT Ops Mgr
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Moviri Add-ons for BCO

References
Moviri Integration for BCO – Entuity

- **BCO versions** 9.0.01 > 9.5.01
- **Entuity versions** EYE2012 > Entuity 14
- **Requirement**: setup of an export job from Entuity Server(s) to an external MySQL Database
  - Deployments with multiple Entuity Servers are supported
- **Collected information**
  - Entuity hierarchical organization of devices is replicated into BCO domains
  - Supported devices: routers, switches, firewalls, load-balancers
  - Device configuration parameters
  - CPU, Memory and Backplane-related performance metrics
  - Ports traffic and error rates
Moviri Integration for BCO – HP NNMi

- **BCO versions:** 9.0.01 > 9.5.01
- **NNMi version:** 9.10 with «Performance for Metrics» i Smart Plug In (iSPI)
- **Requirement:** setup of CSV Export Process on NNMi server
  - It periodically dumps information collected by the iSPI on csv files within specified directory on NNMi server
  - ETL takes care of files access and purging
- **Collected information**
  - Device configuration parameters
  - CPU, Memory and Backplane-related performance metrics
  - Ports traffic and error rates
Moviri Integration for BCO – Network View

- **Moviri Network View** is a BCO View
- Shipped together with Moviri Integrations for BCO – Entuity & HP NNMi
- Can be deployed as a standalone add-on view
- Metrics underlying the View
  - Natively loaded from Entuity & NNMi
  - Optionally loaded by other custom/generic integration
- **Licensing**
  - Moviri Integration for BCO licenses per company: Connector (either NNMi or Entuity) + Network View
Conclusions: Network Capacity Management with BCO and Moviri

- BCO is the enterprise Capacity Management suite that supports the holistic approach to the modern datacenter challenges.

- BCO provides the complete mix of out-of-the-box capabilities and extensibility to implement Network Capacity Management on all levels:
  - Component
  - Service
  - Business

- “Moviri Integration for BCO” add-ons are key pieces in fulfilling the goal.

- These add-ons have been developed out of Moviri’s experience on the field (150+ projects rolled out worldwide), leveraging 10+ years of experience.
Useful links/information for BCO Customers

- More information on Moviri:
  - http://www.moviri.com/

- Take a tour: http://www.youtube.com/watch?v=H9gqABttH9Y

- BMC Capacity Optimization:
  http://www.bmc.com/products/offering/capacity-management.html

- Capacity Management Communities
  - https://communities.bmc.com/community/bmcdn/service_assurance/capacity_management

- Previous Best Practices series webinars
  - https://communities.bmc.com/docs/DOC-21645
Thanks for attending... and ... completing the survey!