Service Management for Service Providers

Sanil Nambiar
Senior IT Specialist, Tivoli Netcool solutions
Agenda

☑️ Service Assurance

☑️ Scope

☑️ What is there to be assured?

☑️ Getting there from here

☑️ Get all the events
☑️ Get the performance
☑️ Discover the components and their relationships
☑️ Process automations
☑️ Marry events to the service model

☑️ Reference Architectures
☑️ Conclusion
Addressing the Assurance Challenge

**Network & Service Assurance Challenges**

1. Inability to offer guaranteed SLAs, differentiated service to business customers

2. Inability to link resource level issues to service and customer level impacts

3. Lack of standardized operations processes across the various silos

4. High degree of manual processes, lack of proactive management and lack of automated testing

5. Lack of accurate network topology for troubleshooting

6. Limitations of incumbent service assurance systems to handle next-gen complexity

**Customer Expectations**

- **Service** ALWAYS ON & EASY to USE
- **FAST ACCESS** to services
- Get a dial tone EVERY TIME
- NEVER miss a call
- GREAT video and CRYSTAL CLEAR voice quality
- FAST channel selection
- RICH content available on-demand
- EFFICIENT customer service

**User Experience**

- FAST ACCESS to services
- NEVER miss a call
- RICH content available on-demand
- EFFICIENT customer service

**Next Generation Network**

- IP
- MPLS
- Ethernet
- DWDM
- xDSL
- WiMax
- 3G

**Unified Communications**
Scope of Assurance

**Key Assurance Process**

- Continuous resource status and performance monitoring to proactively detect possible failures. (Fault Management)
- Collection of performance data and analyzes them to identify potential problems and resolve them without impact to the customer. (Performance Management/QOS)
- Perform Resource and Service Testing. (Test Management, shared with Fulfillment)
- Manages the SLAs and reports service performance to the customer. (Service Management)
- It receives trouble reports from the customer, informs the customer of the trouble status, and ensures restoration and repair, as well as a delighted customer. (Trouble Management)
- Effectively manage the Network change (Change Management)

**Telco Desired End Goal**

- An automated Service Assurance process, where the operators are only managing the exceptions

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**TMF eTOM Process Map**

**TMF Telecommunications Application Map**
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Service Assurance - What is out there to be Assured?

<table>
<thead>
<tr>
<th>Services</th>
<th>Access</th>
<th>Aggregation</th>
<th>Core</th>
<th>Content OSS/BSS</th>
</tr>
</thead>
</table>
| **Fixed** | Triple Play  
- Voice  
- Broadband  
- IPTV / VoD  
Other  
- Gaming, etc. | Physical  
- Copper Wire  
- Fiber  
- PSTN Switch | Broadband  
- DSLAM  
- xDSL | PSTN | Internet |
| **Mobile** | Quad Play  
- Mobility  
- Voice  
- Broadband  
- IPTV / VoD  
Other  
- Presence, etc. | Physical  
- Radio Area Net.  
- BTS/BCS | Broadband  
- GPRS  
- EDGE  
- 3G | | |
| **Cable** | Triple Play  
- TV  
- Broadband  
- VoIP  
Other  
- PPV, etc. | Physical  
- HFC Coax | Broadband  
- CMTS  
- Packetcable  
Cablelabs | | |

**ThirdParties**

**Client**

**Physical**  
- Copper Wire  
- Fiber  
- PSTN Switch

**Broadband**  
- DSLAM  
- xDSL

**Mobile**  
- Radio Area Net.  
- BTS/BCS

**Optical**

**MetroEthernet**

**NGN**

**VoIP**

**VoD**

**Game**

**P2P**

**TV**

**ISP**

**Internet**

**STOP**

**START**
How to Assure? – Best Practices

- **Assure** from the User Point-of-View
  - Measure User Experience and Service Level
  - Build User/Service oriented views

- **Assure** to Add Business Value
  - Prioritize issues based in $ value
  - Integrate with high business value databases

- **Assure** where High Costs are Involved
  - Focus in high $ spending areas
  - Avoid Field Services overhead
  - Use Assurance to manage SLAs/SLOs

- **Assure** by Integrating with Processes
  - Feedback important information to managers

- **Assure** with end-to-end Convergent Service Views
  - IT + Network
    - eg.: is the service up and being billed?
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Business Priorities

Increase Revenue
Reduce OPEX

Focus in Highest Revenue Customers
Prioritize Issues based on Highest Business Impact
Focus in Higher Costs (Labor / Infrastructure)
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**Assure by Integrating with Processes**
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- Service Assurance
  - Scope
  - What is there to be assured?

- Getting there
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  - Discover the components and their relationships
  - Instantiate the service model - add the business layer
  - Marry events to the service model

- Reference Architectures
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Before and After

**BEFORE**
Correlation between groups takes place on the phone, this is expensive

**AFTER**
Leveraging service model, path awareness and service path modeling the cross silo correlation gets done first and the isolated fault sent to the correct group for further action.
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Event management and Enrichment

- **Centralize Events** – Simple Return on Investment case
  - It’s cheaper to have 5 operators watching the same console than having 5 operators watching 5 different consoles
- **Why Events?**
  - **Free**
    - Don’t have to be polled for
      - No load on device
      - No load on network
      - No load on poller
  - **Asynchronous**
    - No waiting for polling cycle to catch up to the fault
- **Enrich Events with resource, service, and customer information**
- **Create the fewest and best trouble tickets possible**
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Resource Performance Management

- Performance Management
  - Capacity Planning, Operations, Customers
- Point performance
- Point to Point performance
  - Transaction monitors
  - Synthetic transactions
- Performance along a path
  - Application path, Service path
  - SOA
- Real Time Transaction reporting – managing to goals
Service Visibility is Key

• Visibility to the complete path of the transaction is key to maintaining high service levels
• Understanding the performance of the services AND the health of the underlying resources is key to quickly isolating and correcting problems
• Relating services to business process completes the picture
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Discovery of Resources and dependencies

• What applications are on what servers and how they connect to and depend on each other
• How do they connect to the Network?
  – Where everything connects to everything
  – What is the network topology? – Layer 1,2 and 3
  – Map events to network Topology, Topology based RCA
  – Optimal network inventory – Topology reconciliation
• Build your service model on top of the resource model you discovered
Discovered resource to Service models

- Providing visibility into application topology and availability to end users and business users
- Always cumbersome due to complex dependencies between the components making up the application
- Problems with availability are frequently caused by changes made to components supporting delivery of the application; identifying and tracking this change is essential to service quality
- Automated service model building
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Process Automation Use-Cases

- Change Management process:
  - Create Change Request (CR)
  - Identify impacted Configuration Items
  - Approve & Schedule CR
  - Implement CR
  - Verify CR is successful
  - Close CR

Rule-based Ticket Enrichment:
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## Network failure RCA & Service Level Correlation

<table>
<thead>
<tr>
<th>Node</th>
<th>Customer</th>
<th>Count</th>
<th>AlertGroup</th>
<th>NmosCauseType</th>
<th>AdvCorCauseType</th>
<th>LastOccurrence</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.256.4.202</td>
<td>Justin Kendall (257)515-8266, <a href="mailto:jkendall@salesforce.com">jkendall@salesforce.com</a></td>
<td>1</td>
<td>Generic Link Status</td>
<td>Root Cause</td>
<td>5/24/07 5:07:23 PM</td>
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Network Failure RCA & Service Level Correlation (part 2)

Cache Servers instance is marginal (yellow) due to ‘Percentage-of child status dependency’ (i.e. if > 30% children in Critical State, then status is marginal, if > 70% children in Critical State, status is critical).

Parent Service Critical due to ‘Worst Child’ dependency (i.e. if any children are critical, this service is also critical).

Problem is service affecting (The + icon)

Drilldown to service affecting events

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Problem is service affecting (The + icon)

Drilldown to service affecting events

http://example.com/080/RawEvents_535

<table>
<thead>
<tr>
<th>Node</th>
<th>Summary</th>
<th>AlertKey</th>
<th>Class</th>
<th>Manager</th>
<th>Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td>123245.3-1</td>
<td>Service Down</td>
<td></td>
<td></td>
<td></td>
<td></td>
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STOP TALKING INNOVATION.

START DOING IT.
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IBM’s interpretation of TAM for Service Management

- **Fulfillment Service Assurance Billing**
- **OSS/BSS Integration**
- **Infrastructure Data Probes**
- **Session Data Probes**
- **Fault Management**
- **Performance Management**
- **Security Management**
- **Signaling Analysis**
- **Transaction Analysis**
- **Service Level Management**
- **Service Impact**
- **Service Modeling**
- **Service Dashboards**
- **Service Quality Monitoring**
- **Service Desk**
- **Change Management**
- **Discovery**

**Service Assurance – Reference Architecture**

- **Product Overlays**
  - **WebSphere Portal**
  - **TPM, WESB, WBS Fabric & WebSphere Process Server**
  - **IBM Partners**
  - **Proviso Service Assure**
  - **TNSQMS, TEP, WBM**

**IBM Partners**

**Change Management**

- **Incident**
- **Trouble Ticket**
- **Root Cause**

**Discovery**

- **ITNM, TADDM**

**Fault Management**

- **Proviso, Network Assure, ITM w/ TDW, Omnibus, Impact**

**Performance Management**

- **ISS, TIM, TFIM, TAM, TSOM**

**Security Management**

- **CMDB, Maximo Asset + IBM Partners**

**Signaling Analysis**

- **IBM Partners**

**Transaction Analysis**

- **ITUAM, TPM, WESB, WBS Fabric and WebSphere Process Server + IBM partners**

**WebSphere Portal**

- **Server based -> Launch into TEP, TBSM**
IBM Tivoli’s integrated portfolio covering wireless, wireline, IP, and IT domains enables end-to-end management of all elements supporting legacy and next generation service delivery (e.g., IMS, fixed-mobile convergence).

- Vallent acquisition adds complementary service quality and network performance management
- Broad coverage for visibility into all network layers
- Scalability to handle growing complexity
- Modular deployment to provide immediate, incremental value
- Integration capabilities to leverage existing investments
Tivoli Incremental Progression to Integrated Service Assurance

- **Incident and Problem Management**
  - Add automated linkage to trouble tickets from/to event infrastructure
  - e.g. SRM

- **SLA Management**
  - Visualize and report on conformance to customer SLAs
  - e.g. TNSQM

- **Customer Experience Management**
  - Further narrows problems to individuals with high capacity services
  - e.g. TNSQM

- **Business Correlation**
  - Add Customer and Business context allowing better prioritization
  - e.g. Impact

- **Real Time Status Monitoring**
  - Narrows the issue to particular service impacted by over subscription
  - e.g. TBSM

- **Event Correlation & RCA**
  - Enable root cause analysis linking discovered network to live faults
  - e.g. OMNibus, ITNM

- **Event Correlation**
  - Alert on threshold violations for operator action
  - e.g. OMNibus

- **Business Correlation**
  - Identifies Enterprise customers impacted by degradation
  - e.g. Impact

- **Network Performance Management**
  - Analyse utilisation and forward capability of infrastructure
  - e.g. Proviso, TNPMW

- **Discovery**
  - Discover entire infrastructure including topology
  - e.g. ITNM, TADDM
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Everybody has plenty of management already

• Customers call and complain
• Partners call and complain
• Internal customers call and complain
• Really smart people take a long time to diagnose and troubleshoot when they should be building stuff
• If your operation is small enough you can rely on really smart people with pagers until you burn them out
• This results in two things
  – reliance on oral tradition
  – Cowboy change management
• As the organization gets bigger
  – Some things are always broken
  – Other things take a really long time to fix
Conclusion

• Service management is a bottom up thing – skip a step and regret it
  – Get all the events
  – Get all the performance
  – Discover how things connect to and depend on each other
  – Instantiate the service model
  – Process Automation
  – Add the business significance
• Manage with big picture knowledge
• Open fewer, smarter trouble tickets
• User fewer, lower end people to open them and work them
THANK YOU