Towards a Service Management Information Base

Martin Sailer
Munich Network Management Team
IBM PhD Student Symposium, December 2005
Motivation
Web Hosting Service at the Leibniz Supercomputing Center

Challenges

- Share service management information across departments
- Current MIBs are service agnostic, how to establish service view?
  - Which management information is required?
  - How do services relate to resources?

⇒ Comprehensive service management repository is required
Requirements
Along the Service Lifecycle

Service Design and Launch

- Identify end-to-end service delivery path (technical resources, service topology)
- Determine relevant service/component quality parameters
- Set up Service Level Agreement (SLA) and create service instance

⇒ Establish Service MIB definition

Service Usage Phase

- Monitor service quality parameters, review SLAs
- Determine root cause of service faults
- Report to customers
Requirements
On a service management repository

Specification of Service Attributes
- Alignment with provider’s information needs
- Account for all management areas (FCAPS)
- Cover whole service lifecycle
- Span multiple administrative domains

Formalization of service-resource dependencies
- Express complex dependencies (e.g., quality degradations)
- Means to map information from network and systems management MIBs to service information
- Independent from particular implementation/technologies
Related Work

Web Services Distributed Mgmt.
- Only few service management attributes
- Does not take into account service resource dependencies

Shared Information/Data Model
- Sound modeling framework
- Shows deficits regarding definition of common service attributes/templates

Common Information Model
- Focuses on low-level services (e.g., time service)
- Offers association classes to express dependencies

Internet Information Model
- Used by the vast amount of network management tools
- Rigid, data-centric modeling approach
Approach

Towards a Service Management Information Base

Service

Composed of

Components

Described by

Service Parameters

Described by

SMIB

Map onto

SISL

Component Parameters

Described by

Component Parameters
**Approach**

Specification of Service Attributes

---

**Use-case based approach**

- **Strong trend towards process-orientation**
  - Process-oriented frameworks provide guidance for deploying IT service management processes
  - Processes contain specification of service management tasks

⇒ Derive service management information needs from process framework (IT Infrastructure Library)
Approach
SLM Process vs. SLM Attributes

- Service Level Management Process deals with planning, monitoring and reviewing of Service Level Agreements (SLAs)
- Required Service Management Information includes:
  - Service Level Objectives and Objective Thresholds
  - Consequences for not meeting Objectives
  - Number of SLA Breaches

Service Level Management

Analyse and review service performance against SLA

Number of service targets met

... ServiceLevelObjectives ObjectiveThresholds NumberOfSLABreaches ...

...
Approach
Formalization of service-resource dependencies

Service Information Specification Language (SISL)
- Declarative language to specify aggregation of component data into service management data
- Specification of data types, sources, delivery triggers
- Features predefined functions and constraints

Proof of Concept
- Monitoring Architecture to compose service management data according to SISL specification
Conclusion and Further Work

Summary

- Common service attributes and service resource dependencies are a prerequisite for service management
- CIM and SID can be utilized as modelling frameworks
- IT Infrastructure Library provides use-cases for deriving common service management information
- Declarative language based approach to formalization of service resource dependencies (SISL)

Further Work

- Current work mainly dealt with incident management, will be extended towards other ITIL processes
- Further Work on SISL will target more complex scenarios