

A CA Approach to Collecting Meaningful Metrics to Manage Service Levels

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Executive Summary

Challenge

Metrics are at the core of any IT service management initiative. They are used for everything from specifying benchmarks and demonstrating IT operational performance to influencing tactical and strategic IT management decisions.

There are shortcomings in the way IT metrics for service management are implemented today. Some are the result of longstanding IT habits, while others are due to the usual lag time between the emergence of alternative technologies and the replacement of existing implementations.

Today, most organizations using IT metrics for service management rely on proprietary agent-based technologies to collect data. This approach presents the daunting challenge of managing the overhead and costs associated with supporting agents across a plethora of operating platforms, applications and systems with constantly changing releases and version updates. Added to this challenge is the burden of maintaining multiple agents for the same resource.

Opportunity

To meet these challenges, CA recommends decoupling metric data collection from systems-specific nuances. Doing so minimizes overhead while eliminating costs associated with maintaining distributed agents. This technical brief presents recommendations for metric collection and describes best practices to support effective service delivery and service level management.

Benefits

Significant benefits can be realized by re-using the rich set of pre-existing data stored in the management solutions most IT service environments have in place. Given the value of existing metric stores, managing and distributing data collection agents solely for service metrics purposes does not represent effective use of IT service provider resources. Adopting the strategy to leverage existing metric data stores provides the dual benefits of preventing data duplication and eliminating the associated processing overheads.

We encourage a focus on business benefit requirements for IT service metrics as you review the various mechanisms for supplying the data. We recommend that a large percentage of metric requirements be met with generic processes and utilities that are reusable and more easily adaptable for diverse business needs. Customized and proprietary data collection methods should become the exception, limited to specialized metering requirements.

Collecting Meaningful IT Service Metrics

The need for metrics is driven by the desire to deliver and demonstrate high quality service. The type of metrics collected is driven by the business and IT requirements for service reporting and Key Performance Indicators (KPIs). Ultimately, metrics collection and aggregation provide input into key business decisions such as how to equitably allocate costs associated with IT.

Some metric collection has taken a “tail wagging the dog” approach with an emphasis on quantity of metrics instead of on tactical and strategic service management goals. Having the right balance between overall purpose and the cost and efforts expended in data collection is critical in choosing what is measured and the appropriate level of granularity needed for successful IT service metering.

Metrics and Service Management

Service metrics represent the KPIs of an IT service. They are based on measurable attributes of the associated process, network, system, application, server or storage components that support the service. For example, the availability of a service may be dependent on the combined availability of various underlying components as well as a minimum volume of transactions processed by an application.

The basic requirement of any collected metric is that it be derived from performance and availability attributes of the specified target. Extended metrics will rely on more sophisticated attributes related to resource usage, transactions, and process efficiency. Still other metrics specify indicators that are more representative of business processes and operations. CA's Unicenter® Network and Systems Management (Unicenter NSM) and Unicenter® Service Metric Analysis (Unicenter SMA) products address requirements associated with performance and availability attributes.

The technical infrastructure required to measure and collect metric data varies widely depending on the characteristics of the metrics and the availability of supporting data. There are dependencies on how the measured resource is instrumented and how the information can be collected. The complexity, effort and “cost of collection” required to maintain such an infrastructure in a dynamic environment is another important element.

Use of standards, best practices and effective integration are important considerations for successful and maintainable IT service metering. Standards based instrumentation capabilities (protocols) in today's IT resources are often based on SNMP and/or WBEM (Web-Based Enterprise Management standards, which include Windows Management Instrumentation or WMI). Such standards define how metric data is modeled and named and how the information can be accessed by a data collector. Many vendors of applications, devices and operating systems use one or more of these standards to enable remote management and monitoring. In addition, there are additional standard protocols like ICMP (Internet Control Message Protocol, which utilizes “pings”), HTTP, remote shells and others that may be used to provide instrumentation for probing and collecting services related metrics.

There is also a wide range of special and proprietary metric collection implementations that exist. These range from special instrumentation agents closely tied to monitored resources, to using scripts and/or operating system commands to expose metric data.

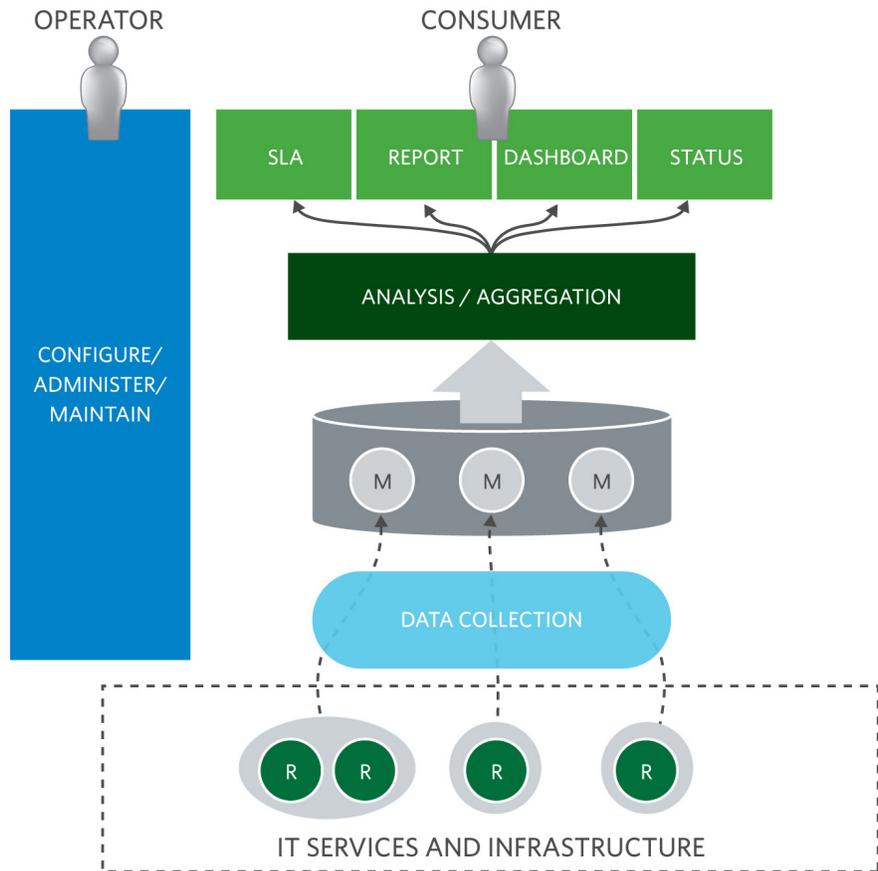
Metric Collection Model

Figure A below depicts a Metric Collection Model for collecting, measuring and consuming service management metrics.

FIGURE A

Business user requirements drive the identification, management, collection and aggregation of service metrics.

METRIC COLLECTION MODEL



The following points will help you understand the model:

- At the bottom of the figure are measurable resources (depicted by “Rs” in circles) in the IT services infrastructure. These are accessible using a specific protocol or API (represented by the striped background pattern surrounding the resources). This level is often implemented by an agent software component.
- The data collection function is accomplished using methods compliant with the resource specific API provided by the agent. Data collected is stored in the management database.
- Metrics are modeled and mapped into a single or multiple measurable resources, depicted as “Ms” in the model above.
- Analysis and aggregation functions use the metric model and data to feed Service Level Agreements (SLAs), reports, dashboards and status screens to the metrics Consumers.
- The Operator configures, administers and maintains all technical aspects of this process.

A CA Service Level Management Solution Approach

CA's Service Level Management (SLM) solution is a key element of the CA Enterprise IT Management (EITM) initiative and comprises Unicenter® Service Assure, Unicenter Service Metric Analysis (Unicenter SMA), Unicenter® Service Accounting, and Unicenter® Service Catalog. Current plans call for replacing Unicenter Service Assure and Unicenter SMA with an upcoming product release of CA SLA Manager.

The CA SLM solution offers IT service providers the ability to manage service requests through an actionable service catalog, publish cost metrics and quality attributes for offered services, and track provided services for consumption/chargeback and compliance with agreed SLA targets.

Unicenter Service Assure and Unicenter Service Accounting have relied on a shared component for service metric data collection for SLA enforcement and service cost chargeback respectively. Unicenter SMA employs a parallel metric data collection infrastructure that is carried forward in the future CA SLA Manager product.

Eliminating Data Collection Overhead

To reduce the overhead associated with common data collection implementations that use proprietary agents, substitute those agents with mechanisms supplied by applications and operating systems vendors or with agents based on standards. This non-proprietary approach helps minimize support overhead as well as speed deployment since it reduces much of the upfront architectural planning and detailed configuration efforts required with agent-based implementations.

To minimize the maintenance and cost of metrics collection, and to maximize the quality of service delivery, CA recommends using standards and best practices supported by operating system, component and application vendors to access metric data. This also includes using bulk import and automation where available instead of maintaining individual discrete data collections. Moving forward, CA will increasingly act on this recommendation over providing and utilizing proprietary agent technology.

Service Metrics Data Collection

Unicenter Service Metric Analysis utilizes service metrics collected by non-proprietary agents, as recommended in discussions above. With Unicenter SMA, the data collection function (referred to in Figure 1 above) receives data from distributed data importers and collectors (DC Servers and DC Hubs). Data is aggregated during the data collection function and is then stored in a shared management data repository. The DC Hub is essentially a data collector that utilizes standard interfaces for out-of-the-box data collections. The DC Server is responsible for data collection from one or more DC Hubs and other data imports. Scalability and load balancing is enhanced by the ability to leverage multiple DC Hubs and DC Servers. Data transfer in the data collection process uses SOAP/HTTP transport protocols to enable data exchange across firewalls and proxy servers.

Unicenter SMA ships with native data collectors for availability and response time metrics for standard services (Ping, HTTP, SMTP, FTP, DNS, etc.) and generic SNMP metric data collection. Access to the Unicenter NSM common object repository (COrE) and Windows Management Instrumentation (WMI) Metrics are provided through corresponding gateway components, which automatically import the metric schema (metadata) from these two rich sources of service management information to the Unicenter SMA Metric browser UI for configuration and actual data collection. The Unicenter SMA Implementation Guide provides additional detail.

In support of our recommendation to leverage metrics from application and operating system vendors, the forthcoming CA SLA Manager product will benefit from using the Windows Perfmon importer component and discontinuing use of the WMI data collector and gateway currently used in Unicenter SMA.

To embrace the non-proprietary approach described previously, CA SLA Manager will include enhanced Unicenter NSM COrE integration.

Unicenter SMA Data Collection Considerations

With the import capabilities of Unicenter SMA, as well as its integration with other CA products, IT organizations are well-positioned to act on the recommendations previously described.

Creating specialized data importers, as is currently done with Unicenter SMA, will continue to be supported with the forthcoming CA SLA Manager. Current plans also call for providing additional database importers and expanding the scope of supported data formats. As a result, the Standard Data Importers' list is expected to expand to meet the growing needs of our customers by allowing for more out-of-the-box importers that are preconfigured for well known applications and service data targets.

According to current plans, the Service Meter common component will be discontinued with the introduction of CA SLA Manager. This component, which has served as a common component in Unicenter Service Catalog, Unicenter Service Accounting and Unicenter Service Assure, provided proprietary agent collection that no longer represents the recommended approach. CA's recommendation is to evaluate all current use of the Service Meter component in light of ongoing maintenance and flexibility.

CA's currently proposed direction is to leverage imports from a combination of applicable CA agents and management solutions, operating systems utilities such as Perform for Windows and SAR for Linux/UNIX for process/performance related metrics and application logs.

Since the importers currently rely on file based data transfer mechanisms, the data source has the responsibility of delivering collected data at scheduled intervals to a file location on the DC Server or to an accessible drive share. The CA recommendation is to use OS based or third party data transfer and scheduling mechanisms to facilitate reliable file transfer to the DC Server.

Table A contains a list of data targets currently supported by the Service Meter component and the recommended alternative Unicenter SMA and CA SLA Manager data collection methods.

TABLE A: RECOMMENDED ALTERNATIVES TO SERVICE METER DATA COLLECTORS

| SERVICE METER COMPONENT DATA TARGETS | UNICENTER SMA R11.1 RECOMMENDED ALTERNATIVES | CA SLA MANAGER REPLACEMENTS |
|--|--|---|
| <p>Unicenter® Service Desk (DBAgent)</p> | <p>Generic File Importer</p> <ul style="list-style-type: none"> • Use scripts to extract data from Unicenter Service Desk into ASCII files to import using File Importers | <p>CA Service Desk Connector</p> <p>SQL DB Importer provides extensibility</p> <p>Out-of-the-box CA SLA Manager will provide importer for the following metric:</p> <ul style="list-style-type: none"> • Open Requests per Request Area and Priority • Number of Requests per Request Area and Priority that violate SLA • Number of Unassigned Requests per Request Area and Priority • Number of Requests per Request Area and Priority that has been open for n days • Request creation rate per Request Area and Priority <p>Custom Importers can be created by defining a proper SQL to query the CA Service Desk tables.</p> |
| <p>Microsoft Exchange/Windows Server Applications</p> | <ul style="list-style-type: none"> • Out-of-the-box SNMP metrics for Unicenter Exchange System Agent • Custom SNMP metrics can be created based on Unicenter Exchange System Agent MIB • Custom WMI metrics can be created based on Microsoft Exchange System WMI instrumentation | <p>Windows Perfmon and SQL DB Importer</p> <p>Out-of-the-box CA SLA Manager provides and importer to import any Windows Perfmon counters. This Importer requires Windows Perfmon to store counter data in a SQL Server Staging database). The Importer will import any Perfmon counters configured on target Windows systems stored in the staging database.</p> <p>Microsoft Exchange and many other Microsoft and third party Windows applications expose and provide counters through Windows Perfmon.</p> <ul style="list-style-type: none"> - Custom Importers can be created (either file or database based) to support alternative access to Windows Perfmon counter data. - Custom importers can be created to import data from Unicenter Exchange Management |

| SERVICE METER COMPONENT DATA TARGETS | UNICENTER SMA R11.1 RECOMMENDED ALTERNATIVES | CA SLA MANAGER REPLACEMENTS |
|--------------------------------------|--|---|
| <p>Systems Agents</p> | <ul style="list-style-type: none"> • Out-of-the-box SNMP Metrics; OS Log Importers (File & XML) • Unicenter Systems Performance Agents Importer Remote Monitoring Importer • Out-of-the-box SNMP metrics • Custom SNMP metrics defined using SNMP metric wizard, XML import or configuration files • Out-of-the-box Unicenter System Performance Data Importer • Out-of-the-box Unicenter Remote Monitoring Data Importer | <p>Same as with Unicenter SMA r11.1 with added option with Perfmon File and SQL Importers</p> <p>Various alternatives exists:</p> <ul style="list-style-type: none"> • Out-of-the-box Windows Perfmon importer • Custom file of database importers |
| <p>OS Process</p> | <ul style="list-style-type: none"> • Out-of-the-box SNMP Metrics • OS Log File Importers (File and XML) • Unicenter System Performance Agent Importer • Unicenter Remote Monitoring Importer • Custom File Importer for Operating Systems performance data files Unix/Linux SAR | <p>Same as with Unicenter SMA r11.1 with added option with Perfmon File and SQL Importers</p> |
| <p>Web Servers</p> | <ul style="list-style-type: none"> • CA SQM Integration (CA Wily Customer Experience Manager™ (CEM) and CA Wily Introscope™) • File Importer (HTTPD log files) • CA Wily Introscope; BRTA; • Out-of-the-box service test data collector (http/https metrics) | <p>Same as with Unicenter SMA r11.1 with added option with Perfmon File and SQL Importers</p> <p>Various alternatives exists for metrics not commented specifically:</p> <ul style="list-style-type: none"> • Out-of-the-box Windows Perfmon Importer (IIS) • Custom Importer for prepared Apache HTTPD logs and/or tools • CA Wily Introscope and SQM integration with CA SLA Manager • CA Wily CEM and SQM integration with SLA Manager |
| <p>Business Application</p> | <ul style="list-style-type: none"> • CA SQM Integration (CA Wily Introscope and CA Wily CEM) • Unicenter Application Agents | <p>Same as with Unicenter SMA r11.1</p> <ul style="list-style-type: none"> • Custom file or database importers |

| SERVICE METER COMPONENT DATA TARGETS | UNICENTER SMA R11.1 RECOMMENDED ALTERNATIVES | CA SLA MANAGER REPLACEMENTS |
|--------------------------------------|---|---|
| Access Agent | <ul style="list-style-type: none"> CA SQM Integration Unicenter SMA r11.1 PathAgent | Same as with Unicenter SMA r11.1 |
| Cisco Device | <ul style="list-style-type: none"> Unicenter® Network and Systems Management (NSM) Out-of-the-box SNMP metrics for Cisco Custom SNMP metrics for Cisco devices Unicenter System Performance Management importer | Same as with Unicenter SMA r11.1 |
| Database Performance | Unicenter® DB Performance Manager | Planned (CA SLA Manager r12) <ul style="list-style-type: none"> Custom database importer |
| Data Mediation | Available for Unicenter Service Accounting data only | |

SECTION 3: BENEFITS

Streamlining Data Collection in Support of SLM

The data collection process can be simplified by using the CA recommended approach for non-proprietary data collection. Leveraging existing metric data stores prevents data duplication and eliminates the associated processing overheads.

We believe that a large percentage of metric requirements will be met with generic processes and utilities that are reusable and more easily adaptable for diverse business needs. As a result, customized and proprietary data collection methods should become the exception and used only when absolutely necessary.

SECTION 4: CONCLUSIONS

The future direction is to streamline data collection for use by forthcoming releases within CA's SLM solution by using CA SLA Manager data collectors and importers, which are based on Unicenter SMA technology, and eliminating the Service Meter common component. Doing so will leverage data imports from native agents, OS log files, databases and other data sources and address the previously discussed maintenance and cost challenges of a proprietary agent-based approach.

We recommend that current implementations utilize data imports of metric data by adopting Unicenter SMA to best support migration to the CA SLA Manager data collection infrastructure that is on our roadmap. Usage related metrics for Unicenter Service Accounting should be implemented through Data Mediation, its data transform and import utility. The CA SLM solution will streamline data collection of service metrics and rely on service and usage data provided by external applications and operating systems. Subsequent data transformation and import for service quality will rely on data importers in the upcoming CA SLA Manager product. Financial KPIs will rely on Data Mediation. Customers are urged to ensure that current implementations follow this strategy to reduce time and efforts expended on future migration and eliminate the support and maintenance overheads associated with multiple data collection technologies.

To learn more about the CA Service Level Management solution, visit ca.com/us/eitm.

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