Master Guide
SAP IT Infrastructure Management

Target Audience

- Consultants
- Administators
- Others

CUSTOMER
Document version: 1.0 – 06/11/2012

Document History

 Caution

Before you start the implementation, make sure you have the latest version of this document. You can find the latest version at the following location: http://service.sap.com/instguides ▶ *SAP Components → SAP IT Infrastructure Management* ↵.

The following table provides an overview of the most important document changes.

Version	Date	Description
1.0	6/11/2012	New

Table of Contents

1 Getting Started

This Master Guide is the central starting point for the technical implementation of SAP IT Infrastructure Management. Use the Master Guide to get an overview of SAP IT Infrastructure Management, its software units, the installation, configuration, and operation procedure. The information is provided in a total of five guides: a Master Guide, Installation Guide, Configuration Guide, Security Guide, and Operation Guide.


Note

You can find the installation, operation, security, and configuration guides on SAP Service Marketplace at http://service.sap.com/instguides → *SAP Components* → *SAP IT Infrastructure Management*.

We strongly recommend that you use the documents available here. The guides are regularly updated.

1.1 Related Information

1.1.1 Planning Information

For more information about planning topics not covered in this guide, see the following content on SAP Service Marketplace:

Content	Location on SAP Service Marketplace
Latest versions of installation and upgrade guides	http://service.sap.com/instguides
General information about SAP IT Infrastructure Management	http://service.sap.com/solutionmanager → *Integrated Tools* → *SAP IT Infrastructure Management*

1.1.2 Further Useful Links

The following table lists further useful links on SAP Service Marketplace:

Content	Location on SAP Service Marketplace
Information about creating error messages	http://service.sap.com/messages
SAP Notes search	http://service.sap.com/notes
SAP Software Distribution Center (software download and ordering of software)	http://service.sap.com/swdc
SAP Online Knowledge Products (OKPs) – role-specific Learning Maps	http://service.sap.com/rkt

1.2 Important SAP Notes

You must read the following SAP Notes before you start the installation. These SAP Notes contain the most recent information on the installation, as well as corrections to the installation documentation. Make sure that you have the up-to-date version of each SAP Note, which you can find on SAP Service Marketplace at http://service.sap.com/notes.

SAP Note Number	Title	Description
1652552	Installing SAP IT Infrastructure Management	Information about the installation of SAP IT Infrastructure Management

2 SAP IT Infrastructure Management Overview

SAP IT Infrastructure Management constitutes a flexible, efficient, and powerful tool that supports the establishment of a process and service-oriented IT organization and helps to automate its operation. Wherever administrative and support functions are essential to convergent system and network operations, SAP IT Infrastructure Management ensures quick and sound results.
The successful implementation of computer-assisted inventory and network management requires more than just simply choosing the right hardware and software. The decisive factors hinge on strategic preplanning and preparation tailored to the company-specific environments, needs and realities, along with adequate training and accompanying qualified consultation on system effectiveness.
SAP IT Infrastructure Management proactively monitors the status, availability, and performance of a heterogeneous IT landscape. Of modular configuration, it can be exactingly adapted to customer requirements. SAP IT Infrastructure Management can be used by multiple administrators who share responsibility for a network.
In large and distributed network and system environments, management tasks are handled by local administrators, each of whom irresponsible for one portion of the network.
For this purpose, components and modules of SAP IT Infrastructure Management can also run for distributed management functions.

2.1 Base Kit

SAP IT Infrastructure Management is a proven, efficient, and powerful tool for monitoring and configuring system and network components off virtually all vendors. For the majority of companies today, not only do fixed and tangible assets as well as EDP components comprise their biggest assets, but network telephone (Voice over IP) has gained in popularity. Separate voice and data networks will soon become a thing of the past. The demand for personnel to manage them knows no bounds. Aggressive company planning no longer considers this to be an expensive overhead burden, but rather an indispensable capital investment to be integrated into their overall business strategy.

2.1.1 Basic Functions

2.1.1.1 System Variants

SAP IT Infrastructure Management consists primarily of interactive client applications and central servers (system services). All components are integrated within one uniform, common user interface and linked to the central database.
The client applications need to be logged on to the central server and are registered there. Thus, they are recognized by the other client applications. As many other processes as necessary are grouped around this core kernel to fulfill the respective tasks. Client applications run as Microsoft Windows or Web applications. Neither the Microsoft Windows applications nor the server have to run on only one computer, they can also be distributed throughout the network according to the given requirements. All applications, necessary to ensure basic functioning, are delivered together as one package – the base system.

Features

In this system, the following operational variants are distinguished:
SAP IT Infrastructure Management allows users to monitor 7500 nodes. Multiple system administrators can run the management system independently from their individual user interfaces.
SAP IT Infrastructure Management consists of distributed servers, suitably adapted to the size of a company's overall distributed network infrastructure. It consists of a central site server and distributed site servers for managing remote or subnets (sites). The central site server can manage the data volume from the decentralized site servers within a central database. The central database is also known as Configuration Management Database (CMDB).
The system administrators at the remote locations can independently monitor and manage their respective networks in their own management systems (site server).
The main advantage here is that the individual sites can work autonomously yet there is still a consolidation of the monitoring and information.
The site servers may only be used within one company and only within the designated multisite environment.

2.1.1.2 Function Modules

Function modules comprise the objects used by the central processes and applications.

Features

The following function modules are included in all system variants:

- Graphical user interface (graphical maps, Automap)

- Web Console
- NodeManager
- User/rights administration
- PolicyManager
- PerformanceManager
- EventManager
- Trap server, Syslog server
- ElementManager
- AutoDiscovery
- TopologyManager
- Protocol support
- MIB database with standard MIBs (rfcxxxx)
- MIB browser
- Product Specific Module (PSM)
- Database

Further modules can be integrated as needs dictate, the spectrum of applications is unlimited. For more information about such additional modules, refer to your product specialist.

2.1.2 System Environment

This solution is designed for the management of typical system and network environments in industry and government, usually consisting of:

- Active network components (for example, hubs, core switches, desktop switches, routers)
- The associated server (for example, Windows, Unix)
- Various terminals (for example, PCs, printers)
- Other components (for example, climate control monitoring systems, UPS systems)

Solutions for computing center operators and service providers need to be worked out with your technical representative.

Maximum Number of Nodes

Both variants are technically limited by license to a maximum of 7500 nodes per system or site server. This number can be increased with add-on node packages (of 2500 nodes each).
Since SAP IT Infrastructure Management performance is contingent upon the environment of the system on which it is installed, the following parameters can impact performance:

- Type, capacity, and number of processors
- Main memory capacity, swap file utilization
- Distributed installation of individual system processes (for example, database)
- Windows operating system
- Hard disk access speed

- Type and extent of active monitoring functions
- Type and extent of active statistical and archiving functions

For more information about dimensioning, see the specific documentation for each respective system.

2.1.3 User Levels

The principal function of user levels is to achieve a rough classification according to privileges.

Features

Users are initially classified into one of three user levels:

- *Superuser*
  Superusers have no restrictions at all.
- *User*
  Users have limited rights.
- *Operator*
  Operators have limited privileges along with no write-access to the database and the nodes. *Operators* work within pre-defined settings, which they are not able to modify. These restrictions are pre-defined and block access to specific functions of the individual program modules (for example, menus, buttons).

2.1.4 User Groups

Each user is in turn assigned to a user group. Users groups are freely expandable. Assign user groups to nodes in all product deployments.
Members of a group only have access to those nodes, which are allocated to their group. If no assignment is made, the *User* and *Operator* levels do not have access to the nodes.

2.1.5 User Profiles

A profile contains settings managed individually for each user to specify the following functions:

- Functions which are to be started and/or utilized when logging in
- Maps that are to be loaded
- Event filter configurations (and thus individual alerting reactions)
- Screen configurations (layout), window positions

You can also assign a profile or elements from it to multiple users. If, for example, *Operator* level users need to work with the same event filters but with different maps, you can readily configure this.

2.1.6 Node Groups

It can be difficult to focus on nodes within large networks. Therefore, you can assign nodes to various groups. Such allocations can also be made automatically to some extent.

Features

The following groups are already pre-defined:

- Function groups
  Classified according to node function (automatic node assignment).
- Cost centers
  Customer-relevant classification based on cost centers. User-definable names and descriptions and hierarchical assignment (nodes can be assigned manually).
- Custom groups
  Customer-relevant classification. User-definable names and descriptions and hierarchical assignment (nodes can be assigned manually).
- Departments
  Customer-relevant classification based on departments. User-definable names and descriptions and hierarchical assignment (nodes can be assigned manually).
- Locations
  Customer-relevant classification based on sites. User-definable names and descriptions and hierarchical assignment (nodes can be assigned manually).
- History groups
  Customer-relevant classification for statistics data via Web Console. User-definable names and descriptions (nodes can be assigned manually).
- Software groups
  Customer-relevant classification for inventory data via Web Console. User-definable names and descriptions.

You can modify the mentioned allocations and structure hierarchically to meet your own requirements. Do not confuse node groups with node classes. Node classes serve a technical function in the internal detecting and processing of nodes.

2.1.7 Limiting Authorization to Nodes

Configuration is made by assigning nodes to groups and these groups, in turn, to the user groups who will then have access to these systems based on their authorization levels as previously described.
To allow operators, for example, to have access to the status information of important nodes, such as routers or switches, a more privileged user (administrator) can configure the appropriate maps to contain these nodes. These maps are assigned to the respective user, in this case the *Operator* level, with the respective profile.

Now the nodes in these maps will also load, even though they are not assigned to the user in the user group. However, the user will not have access to these nodes. While the user can see the node status with the color-coded display and log information, access to them remains disabled.
Correspondingly, this function also exists at the user level. Users at the *Superuser* level always have access to all nodes and configurations.

2.1.8 Client Applications

Client applications, available as Windows or Web applications, represent the substantial functional foundation for running the management system. What is inherent to Web applications likewise applies to Windows applications: They do not necessarily have to run only on one computer, they can also be distributed throughout the network for respective needs.
Since these applications are autonomous programs, they can each be substituted or modified at any time. This has the advantage that subfunctions are largely independent of each other and the system can readily accommodate to new demands.
Client applications do not necessarily need to run all the time. Usually, they are started and logged on with the central server. After performing their tasks, they are terminated.
Computing resources are thus used in an optimal manner and the system is not unnecessarily loaded.
External applications are integrated in a completely transparent manner. The user interface is standardized so that similar dialog boxes and other standard features of the Windows interface are found throughout the system.
Applications that are not part of SAP IT Infrastructure Management, for example, printer administration programs and Web consoles, can likewise be launched from the network map or from the NodeManager module.

2.1.9 Database Structure

The database is the definitive supporting foundation of this solution, with the database server (DB Server) managing all its related data.

Features

The data is kept within the following types of databases:

- System database (CMDB)
  The CMDB stores all configurations that SAP IT Infrastructure Management requires for its own administration. It also stores all node-specific data, such as names, addresses, settings, and utilized protocols.
  With the Asset & Inventory module or the Configuration Management modules, additional functions are provided for the management of configuration items in conformity to the guidelines

of the IT Infrastructure Library (ITIL), including, for example, the administration of target versions and the harmonization of target and current versions.

- MIB database
  The MIB database is read-only for users. It contains all management properties as documented by the manufacturer for the individual network and system components and is centrally managed: Each update automatically loads the latest data. Since the MIB database can become very large, only the data relevant to each respective system environment are saved. This database is always based on Microsoft Jet Engine (Access database).
- History database
  The history database, filled and managed by the history server, is primarily for storing the events, performance, and statistics data polled from the network and system components (nodes). The data can also be compressed, archived, and exported or deleted according to user-definable settings.
- Archive database
  To relieve some of the burden on the history database, saved data, or data that have already been compressed are transferred to the archive database.

2.1.10 Normalized Data Model

The normalized data model is the core faculty and, at the same time, the ultimate basis for the operation of SAP IT Infrastructure Management. All proprietary properties of the system components (such as devices and applications) are recorded here, normalized and, in essence, reduced to one denominator. This information is filed in a constantly developing and expanding database.

2.1.10.1 Managed Objects and Their Properties

Managed Objects (MOs) are, for example, ports, interfaces, VLANs, processors, and power supplies of any number of network and system components (nodes). When detecting a node upon discovery detecting a node, the information read is assigned to this uniformly applied MO structure.
Properties specify the individual MO properties, for example, port duplex mode, the VLANID of VLAN segments, and processor type.
Since network component manufacturers have their own proprietary implementations, not only are the properties normalized but also the viable values. This normalization ensures the comparability of the data and forms the basis for all analytical functions.

2.1.10.2 Configuration Management Database (CMDB)

With Asset & Inventory Management and Configuration Management, the MO and property structure provides the basis for an optimally structured CMDB. All data, such as configuration items,

status values, and inventory data, are stored in the CMDB, compared to set target values, and their change history is controlled. The functions strictly adhere to the guidelines of the IT Infrastructure Library (ITIL).

2.2 Variable Defined Modules

SAP IT Infrastructure Management consists of a basic application. This base on product specific modules (PSMs). Identify and license the correct PSM modules because of the variety of the versions before you start the implementation. Define one free PSM in the basic delivery. If required, add as many PSMs as needed to your license.

2.2.1 Network Component Integration

Network components from various different manufacturers can be integrated with optional product specific modules (PSMs). PSMs contain the specific properties of these components and are specially created and maintained for each type of device.

2.2.1.1 Device Manager

To make operation as simple as possible, a graphical depiction of the device is put at your disposal. Functions are called up and configurations are made right within these graphic representations. A PSM contains the SNMP attributes, which specify the vendor-specific properties of the selected device type. It will automatically display its configurations and is adjusted for specific functions. You can choose between various different options for displaying values, respectively processing them. Using the standard functions, you can display values in tabular or graphical form and make configurations.

2.2.1.2 Product Integration

Integrate new network components, if a test system is available for development.
Each product integration can be realized within a period of roughly 6-12 weeks. Furthermore, modifications to product versions and/or new modules will be adapted within the shortest time frame possible and made available to the users.

Features

Because of the great variety of products, not all modules and types can be tested. Product specific modules (PSMs) for devices (network and system components), which are not included in the PSM

list, will be created new as required, if the MIB (in ASN.1 format) is accessible and a test device along with the relevant documentation has been made available.
The decision as to which product family a newly developed PSM should belong to, is made based on the MIB. If the bulk of the SNMP data can be managed from the same MIB, an existing PSM will be expanded.
If, however, a product is mapped for the most part in a new MIB tree, a new PSM will be developed, and needs to be licensed. In all cases, to make the final decision, after having analyzed the Browse Files, whether an existing PSM can be expanded or a new PSM needs to be developed.

2.2.1.3 Device Configuration (Provisioning)

SAP IT Infrastructure Management not only allows the monitoring of network components, but also the central administration of configuration parameters. Regardless of whether network-wide VLANs need to be set up or new firmware versions rolled out, the provisioning module puts the network administrator in an ideal position to manage and control these highly complex tasks.

Features

- Managing Configuration Versions
  In practice, the new module will first be used to manage configuration versions. The login parameters necessary for access such as login name, password, and so on, are filed in Authentication Sets and assigned to device groups.
  Everything else ensues automatically – controlled by the scheduler. The configuration information is read from the network components and stored in files. Each current file is compared to its previous version, any changes determined are logged. The familiar alarm functions can be set to respond to undesired changes.
- Software Distribution
  Saved configuration versions can be edited. You can do rewriting manually for an individual device or an entire device group, or the scheduler can control the process and thus provide automatic distribution. Processes which do not conclude are noted in the log. The same procedure is used for the release of new firmware versions, with the manufacturer-specific CLI commands for initiating the loading being unseated in each case. The current loading uses FTP.
- Configuration Macros
  While the basic CLI commands for configuration administration and software distribution for specific network components from different manufacturers are provided, you can create any number of your own configuration macros.
  The integrated macro editor serves in generating CLI macros applicable to products with CLI interfaces from different manufacturers. Extensive test functions provide valuable assistance in the development of new macro functions.

Macros can also be called up within a macro; there is no limit to the nesting level here. You can always reuse macros already created for special subtasks.

- Macro Parameters

  Macro parameters are placeholders within macro commands to either be replaced by the assigned values or queried from the user at runtime. The implemented functions are as follows:
  - Designation of a list with possible fixed values
  - Designation of a range in which the value should be
  - Parameter assignment for a required managed object
  - Property assignment for a required managed object
  - Variable assignment for a required managed object
  - Assignment of a global value definition
  - Designation of a time-date mapping
  - Designation of node information to be automatically assigned to the parameter
- Parameter Sets

  Parameter sets hold data used in the parameterizing of macros. They can be managed on a node-specific basis and require a certain product know-how.

  For example, the network planner can enter address ranges, VLAN IDs, VPN numbers, descriptions, and so on, and organize them into value containers.

  The macros will then supply the syntax-specific commands for the respective product components and assume the values at runtime. The goal is:
  - Consistent network and device configuration
  - Automated generation and provision (Provisioning)
  - Standardization and thus improved quality
  - Simplified planning of complete network configurations

2.2.1.4 Correlation Engine

In practice, critical nodes are monitored by monitoring different functional properties.
For network components (switches, routers), these functional properties are the following:

- Node status
- CPU utilization
- Memory usage
- Port status
- Port utilization

For servers, these functional properties are the following:

- Node status
- CPU utilization
- Memory usage

- Service status

These status and performance properties are monitored based on the identified managed objects. The detected status is assigned one of the seven status levels (normal to fatal). This can also be readily applied to performance values. In this case, status level is assigned to the exceeding or undercutting of thresholds. In the absence of correlation, SAP IT Infrastructure Management is to be set such that the highest level will always display as the status of the respective MO (for example, node).

Features

- Using a set of rules, the Correlation Engine can additionally calculate node status. Currently available are:
- Rules
  - Worse than
  - Worse than or equal to
  - Better than
  - Better than or equal to
  - Equal to
  - Not equal to
- Functions
  - Worst of
  - Best of
  - Average of

  Rules and functions refer to the status of assigned managed objects, their monitored properties respectively, and can be nested in any manner desired.
- The objective of correlation is avoiding being inundated by events. Used judiciously, many event messages can be avoided, compressed to only one single event message, which represents the status of the respective node.
- In complex IT infrastructures, thresholds are temporarily exceeded, a situation, which will not lead immediately to reactions, but they should persist for a longer period of time.
  The reasons for this are often complex interactions, which, while not lasting, alert messages tend to disrupt IT operations.
  For these reasons, SAP IT Infrastructure Management now gives you the option of ignoring x numbers of threshold exceedance. The x refers to the set polling cycle and number refers to consecutive polling cycles.

2.2.1.5 VLAN View Manager

VLAN View Manager is available for visualizing VLAN configurations with SAP IT Infrastructure Management. This function detects existing VLANs and displays the current configurations graphically.

Features

In the process, the ports of the various manufacturers' switch components are assigned to the VLANs as detected. In addition to standard configurations (IEEE 802.1q), the VLAN View Manager also supports proprietary VLAN configurations.
A prerequisite here calls for the availability of the respective network component's data (VLAN address tables) via SNMP.
The following functions are realized:

- VLAN by Name
- VLAN by Tag ID
- VLAN by Node
- VLAN by Class
- Nodes without VLANs
- VLAN Matrix

These functions are also available for use within the topology views, route tracing, and signal path analysis.

2.2.1.6 Visual Assisted Analysis

The visual assisted analysis (VAA) technology used by SAP IT Infrastructure Management stands for Visual Assisted Analysis, meaning a method, which supports the perceptive ability of the human eye in separating essential information from complex contexts.
This is something that today's state-of-the-art machines or programs are often not able to do, or can only do at disproportionately high cost.

Features

The simplest level of an analysis based on this VAA technology is the representation of the network topology. The physical connections detected with the integrated Topology Manager are depicted in an Automap.
This function can be expanded with further optional analysis function modules:

- VAA – Routing & Switching (graphical representation of Layer2/3-based networks)
- VAA – Virtual Networks (Visual analysis of VLAN Configuration, status, and performance of interfaces / ports)

- VAA – MPLS Networks (Visual analysis of MPLS Configuration, status, and performance of interfaces / ports)

2.2.1.7 Reporting

Reports are an important tool in company planning and analysis of data collected over the long term. As evidence of the extent to which contracted service levels have been honored, they are indispensable.

Features

- Reporting Console
  Beyond that, they also serve as the basis for use-based service accounting. Consequential prerequisites for reliable system reporting are the automatic generating and essential significance of reports as well as their central administration.
  The Reporting Console consolidates all these functions and properties in one central user interface and uses the CMDB as its basis.
- Various Output Formats
  The Reporting Console automates the production of high-quality, well-structured reports in any given format. Besides for the PDF standard with its inherent document security, the following output formats are also supported:
  - CSV
  - HTML
  - TIF
  - XML

  This degree of latitude allows flexible utilization of the data acquired. It can, for example, be further processed with Excel functions for presentation purposes or, as an XML file, form a general interface for any given reference resource.
- Report Standardization
  For the purpose of automating and simplifying operation, the system provides different preconfigured reports depending upon the type of information, for instance:
  - Performance
  - Availability
  - Response times

  Standardizing pursuant each type of information means that reports from different periods will then be comparable.
  To increase report distinctiveness and acceptance throughout the company, you can create, manage, and assign individual report designs.
- Central Reporting Management

All Reporting Console administration as well as report generation ensues flexibly and centrally through the Web GUI. Reports are generated in context to the current data; all filter options set are automatically taken into account.
Alternatively this can also be automated, whereby the desired report is then created for the active selection at the scheduler-controlled set times.
The result is a document in the selected format, containing both tabular as well as graphic information. Generated reports can also be sent automatically to selected email recipients or groups as wished.
For optimum performance when processing reports, SAP IT Infrastructure Management uses the Microsoft Reporting Services technology.

2.2.2 SAP IT Infrastructure Management in Distributed Environments

When administrators share responsibility for a network, SAP IT Infrastructure Management should be used as a multistation system. Multistation capability expands the capabilities of the base system by the following features:

- Central database
- Central polling function
- Independent GUI for each client workstation
- Multiclient capability that is, certain users/user groups can be assigned certain nodes

System administrators can use the management system from their own user interfaces independently of one another, if additional terminal server client licenses are acquired reflecting the total number of user workstations (concurrent users).

2.2.3 Central Monitoring Functions

To prevent the network from becoming additionally overloaded, it is not necessary to run the polling process (component monitoring) in the local user sessions. This function is taken over by the central polling function on SAP IT Infrastructure Management and the status results then made available to the client workstations.
Communication with the server transpires by local communication server or by directly accessing the central SAP IT Infrastructure Management system database.

2.2.3.1 Workstation/User Licenses

Operation transpires with Terminal Server Client software on any number of workstation computers within the network (pay attention: Windows Terminal Client function is not included in the scope of delivery).
The number of additionally required workstations for multistation operation is extended with administrator licenses pursuant the concurrent user model. One Administrator license must be acquired for each SAP IT Infrastructure Management workstation.
It is additionally possible to access status and statistics information via web browser (Internet Explorer 6.0 and higher); all that is required is a web client license.

2.2.3.2 System Data

SAP IT Infrastructure Management is limited to a maximum of 7500 nodes although has multistation capability. Node packages are also available to extend the number of nodes. Running on Windows 2000 Advanced Server (or higher), the performance capabilities of SAP IT Infrastructure Management are best suited to large networks managed by several different administrators and it comes with one administrator license.
System requirements:

- Windows 2000 Advanced Server, Windows 2003 Server
- one Microsoft Terminal Server license per workstation
- or: Citrix Meta Frame application server and client access license

2.2.3.3 Multi-User Performance

When running this mode, it can happen that multiple users are processing configuration tasks. To ensure that results do not overwrite each other, lock certain objects.
In practice, these are often related to configuration tasks within a graphical display (map). The hierarchy to be worked on will be locked for the duration of work. The other users will only have read access until it is unlocked.
Changes made are immediately viable in the local user sessions that is, they load automatically.
Node objects will also be blocked when manually editing. But because node data might also be modified by discovery processes or agents, no locking will occur in these cases.

2.2.3.4 Scaling

Increasing system performance can becomes necessary in large network operations. Initial recommendations for enhancing system performance would focus on application database separation or setting up multiprocessor systems.
If these measures are not enough, multiserver scaling is another option, whereby individual functions of SAP IT Infrastructure Management can be distributed among multiple servers as shown in the following example:

- Server 1
  - Base application
  - History server
  - Topology server
- Server 2
  - Database Server
  - MS-SQL Server

It is strongly recommended that scaling options should always be discussed beforehand with technical representatives.

2.2.4 SAP IT Infrastructure Management in Large Enviroments

In large and distributed network and system environments, management tasks are handled by local administrators, each responsible for one portion of the network.
These components and modules of SAP IT Infrastructure Management can also run on different server to provide distributed management functions.
Normally, the local administrator will use the local system to set up the necessary monitoring functions for the local system environment. The entire configuration, respectively the associated inventory and/or performance data, or just segments of it can be sent to the central database, the SAP IT Infrastructure Management CMDB, at set times.
Forward status information and/or important events to the central database.
Thus, as the remote configuration is known centrally, management functions can also take place centrally, depending upon authorization. This would be required in the following cases, for example:

- processing on-call services
- assisting with specific network problems
- backup upon failure of the local management station site servers (central site) are autarkic systems having the full functionality of each single component but the central server can additionally manage remote locations (site server) within one central database.

2.2.4.1 Function

The administrator of the site system determines which nodes and submaps (in the sense of part of a map) the central site may import. They are also tagged as released (shared), similar to the releasing of a directory in the Windows network.

Features

- Control imports by a scheduling mechanism. Importing of site data is usually performed on a daily basis. In the process, only changes from the previous status are transferred.
  The following data is sent:
  - released nodes and their configuration data
  - released submaps
  - current topology tree (with node references)
  - inventory data of imported nodes
  - performance data of imported nodes
  - availability data for imported nodes

  The following data is not sent:
  - associated files, for example background images
  - filter configurations
  - groups apart from function groups
  - user configurations
- The existing node/sub-map configurations are not synchronized, but instead completely overwritten. Changes thus have an impact subsequent each import. A link can be set up for imported hierarchies in the central site system, which can then be set as required in your own map tree.
- Alternatively, an imported hierarchy can also be copied and effectively made part of your own map, thus independent of the imported information. Node allocations will also remain intact in copied hierarchies.

> Note
> No data matching thus takes place in the current phase of the product implementation, although it is planned for later phases. Likewise, double node entries may also be generated upon importing. This can happen when the local discovery functions detect the same nodes (for example, backbone router switches), however it can be largely avoided by making the appropriate settings for the scan functions.

2.2.4.2 Forwarding Events

Forwarding events from the site system to the central site is likewise possible.

As limitations make sense here, tag the respective nodes accordingly. The event will then be displayed for the imported node.

2.2.4.3 Site Failure

The central site server can take over the monitoring (polling) of important nodes upon a site failure. These nodes must be identified accordingly.
This function can also be realized with the polling agent. Data is then transferred to the polling agent database.

2.2.5 Configuration Management Database

Configuration management can be thought of as the logical model of the IT infrastructure and comprises one or more physical Configuration Management Databases (CMDB). These databases in turn contain all data, the relevant configuration elements, which are necessary to provide the services. Developing and implementing a Service and Asset Configuration Management SACM policy forms the basis for the configuration management process.
All changes to service assets and CIs need to be authorized and controlled via the change process. Adherence to this policy is the critical key factor for any successful service management organization.

2.2.5.1 Automated Data Collection

There are the following main sources from which data can flow to the central database (CMDB):

- External Sources
  Data is collected automatically via links to external sources. For example, data from existing inventory tools can be imported to the database through the XML interface.
- Discovery
  SAP IT Infrastructure Management Discovery Engine enables automated inventorying data on software and hardware configurations of system and network components are read out and stored in the CMDB.
  For inventory discovery SNMP or CIM (e.g. WMI) are possible to use.
- Manual Entry
  All data can be entered and managed manually. This concept adheres strictly to the recommendations of the IT Infrastructure Library (ITIL).

2.2.5.2 Data Normalization

All incoming data is subject to automated normalization to ensure full comparability of data from different systems. The data is structured and managed on basis of CIs (CIs).
Technically speaking, this refers to MOs and their properties. Relations between objects are predefined to some extent and can also be added manually.
Data can be collected via diverse methods and protocols. Protocols can be extended on a per-project basis without any impact to the current program version.
All data can be input, modified and managed manually and/or automatically.

2.2.5.3 Managed Objects Type Group

Many different MO types may affect clarity and transparency. To gain a clear structure of the MO types, *Managed Object Type Groups* are introduced.
The previously flat structure to the MO types was organized according to functional criteria. For example, database-relevant *Managed Objects* and *Database* are provided with the *managed objects* of *Oracle database*, *MS/SQL database*, *SAPDB*, arranged thereunder.

2.2.6 Asset and Inventory Module

SAP IT Infrastructure Management Asset & Inventory module enables asset and inventory data to be managed for any number of IT components in the central database (CMDB).
The underlying data model ensures a strict structuring to all data. Normalization makes information from the most diverse types of devices and systems comparable.

2.2.6.1 Manual Relations

SAP IT Infrastructure Management allows the manual definition and management of relations between nodes/node groups, managed object instances/managed objects groups and user/user groups.
The relations automatically detected by the discovery processes can only be viewed, but not changed.
Manual relation types are, for example, *Depends on*, *Has installed* and *Subcontract of*.
You can create any new relation type, which is required.

2.3 System Landscape

2.3.1 Hardware Requirements

For optimal working of SAP IT Infrastructure Management, the following hardware parameters are recommended:

- Processor Intel Xeon or compatible
- 16 GByte RAM (32 GByte recommended)
- At least 200 GByte fixed disk space free
- Monitor with 1280x1024 resolution (1680x1050 recommended)
- 100 MBit network card (1 GBit recommended)

Note
For distributed installations (for example, dedicated embedding of an external SQL Server system), an additional network interface card is needed.

2.3.2 Software Requirements

For optimal working of SAP IT Infrastructure Management, the following software parameters are recommended:

- Windows Server 2008 64 Bit Service Pack 2
- Windows Server 2008 R2 64 Bit Service Pack 1

Note
Only German and English operating systems are supported on the server installation.

- Internet Protocol (TCP/IP), SNMP, and Internet Information Services (IIS)
- Microsoft Internet Explorer 7 (or higher)
- Microsoft Terminal Services
  Alternatively for Microsoft Terminal Services, also CITRIX ICA can be used.

The capability of SAP IT Infrastructure Management depends on the system environment, on which it is installed. Although the following items influence the capability:

- Performance and type of CPU
- Number of CPUs
- Memory size
- Usage of swap file

- Access time to hard disks
- Distributed installation of single system processes (for example, database)
- Microsoft Windows operating system

The specified requirements are considered as least requirements to the respective basic system variant.

Note
You do not have to install separate software packages. SAP IT Infrastructure Management checks the system and installs (if necessary) software packages like Java or ASP.Net.
In this case, check the installer and popup windows. Sometimes you have to confirm the installation of this software or define the directory in which the software shall be installed. The installation of SAP IT Infrastructure Management will only start if all prerequisites are completely installed.

2.3.3 Microsoft SQL Database System

SAP IT Infrastructure Management stores all configuration and data into several databases. Therefore, SAP IT Infrastructure Management needs Microsoft SQL Server as a database system.
The Microsoft SQL Server is not a component of SAP IT Infrastructure Management. It is acquired separately.
The following SQL Server Editions are supported:

- Microsoft SQL Server 2005 Standard Edition 32 Bit Service Pack 4
- Microsoft SQL Server 2008 Standard Edition 32/64 Bit Service Pack 3
- Microsoft SQL Server 2008R2 Standard Edition 32/64-Bit Service Pack 1

Note
If a 64-bit version is used, the Reporting Services need to be installed as a separate 32 bit instance.

We recommend to use a 64-bit Microsoft SQL Server database system.

2.3.4 Microsoft Bases Feature

The following component is a component of the Microsoft Windows Servers operating systems:
Microsoft Internet Information Services (IIS)
This feature is necessary for using SAP IT Infrastructure Management Web Console.

Note
Microsoft Windows Server 2008 knows Internet Information Services as “Roles” (and not as “Windows Components” like Microsoft Windows 2003 Server).

The configuration of the virtual directories will be executed automatically by the installation wizard of SAP IT Infrastructure Management. You do not need to make special settings here. The only requirement is the correct installation of IIS.

- Activate and configure SNMP protocol.
- Activate Telnet client feature (not installed on typical Microsoft Windows Server 2008 systems).
- SAP IT Infrastructure Management needs Microsoft Windows 32-bit Help feature. For more information, see the Microsoft Knowledge Base entry 917607.

A Reference

A.1 The Main SAP Documentation Types

The following is an overview of the **most important** documentation types that you need in the various phases in the life cycle of SAP software.

Cross-Phase Documentation

SAPterm is SAP's terminology database. It contains SAP-specific vocabulary in over 30 languages, as well as many glossary entries in English and German.

- Target group:
  - Relevant for all target groups
- Current version:
  - On SAP Help Portal at http://help.sap.com → *Glossary*
  - In the SAP system in transaction STERM

SAP Library is a collection of documentation for SAP software covering functions and processes.

- Target group:
  - Consultants
  - System administrators
  - Project teams for implementations or upgrades
- Current version:
  - On SAP Help Portal at http://help.sap.com (also available as documentation DVD)

The **security guide** describes the settings for a medium security level and offers suggestions for raising security levels. A collective security guide is available for SAP NetWeaver. This document contains general guidelines and suggestions. SAP applications have a security guide of their own.

- Target group:
  - System administrators
  - Technology consultants
  - Solution consultants
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/securityguide

Implementation

The **master guide** is the starting point for implementing an SAP solution. It lists the required installable units for each business or IT scenario. It provides scenario-specific descriptions of

preparation, execution, and follow-up of an implementation. It also provides references to other documents, such as installation guides, the technical infrastructure guide and SAP Notes.

- Target group:
  - Technology consultants
  - Project teams for implementations
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

The **installation guide** describes the technical implementation of an installable unit, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for implementations
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

Configuration Documentation in SAP Solution Manager – SAP Solution Manager is a life-cycle platform. One of its main functions is the configuration of business scenarios, business processes, and implementable steps. It contains Customizing activities, transactions, and so on, as well as documentation.

- Target group:
  - Technology consultants
  - Solution consultants
  - Project teams for implementations
- Current version:
  - In SAP Solution Manager

The **Implementation Guide (IMG)** is a tool for configuring (Customizing) a single SAP system. The Customizing activities and their documentation are structured from a functional perspective. (In order to configure a whole system landscape from a process-oriented perspective, SAP Solution Manager, which refers to the relevant Customizing activities in the individual SAP systems, is used.)

- Target group:
  - Solution consultants
  - Project teams for implementations or upgrades
- Current version:
  - In the SAP menu of the SAP system under ▶ *Tools* → *Customizing* → *IMG* ↵

Production Operation

The **technical operations manual** is the starting point for operating a system that runs on SAP NetWeaver, and precedes the application operations guides of SAP Business Suite. The manual refers

users to the tools and documentation that are needed to carry out various tasks, such as monitoring, backup/restore, master data maintenance, transports, and tests.

- Target group:
  - System administrators
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

The **application operations guide** is used for operating an SAP application once all tasks in the technical operations manual have been completed. It refers users to the tools and documentation that are needed to carry out the various operations-related tasks.

- Target group:
  - System administrators
  - Technology consultants
  - Solution consultants
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

Upgrade

The **upgrade master guide** is the starting point for upgrading the business scenarios and processes of an SAP solution. It provides scenario-specific descriptions of preparation, execution, and follow-up of an upgrade. It also refers to other documents, such as upgrade guides and SAP Notes.

- Target group:
  - Technology consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

The **upgrade guide** describes the technical upgrade of an installable unit, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

Release notes are documents that contain short descriptions of new features in a particular release or changes to existing features since the previous release. Release notes about ABAP developments are the technical prerequisite for generating delta and upgrade Customizing in the Implementation Guide (IMG).

- Target group:

- Consultants
- Project teams for upgrades

- Current version:
  - On SAP Service Marketplace at http://service.sap.com/releasenotes
  - In the SAP menu of the SAP system under *Help* → *Release Notes* (only ABAP developments)

Typographic Conventions

Example	Description
<Example>	Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, “Enter your **<User Name>**”.
Example → *Example*	Arrows separating the parts of a navigation path, for example, menu options
Example	Emphasized words or expressions
Example	Words or characters that you enter in the system exactly as they appear in the documentation
http://www.sap.com	Textual cross-references to an internet address
/example	Quicklinks added to the internet address of a homepage to enable quick access to specific content on the Web
123456	Hyperlink to an SAP Note, for example, SAP Note 123456
Example	■ Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options. ■ Cross-references to other documentation or published works
Example	■ Output on the screen following a user action, for example, messages ■ Source code or syntax quoted directly from a program ■ File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE
EXAMPLE	Keys on the keyboard

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Any Java™ Source Code delivered with this product is only to be used by SAP's Support Services and may not be modified or altered in any way.

Documentation in the SAP Service Marketplace

You can find this document at the following address: http://service.sap.com/instguides

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