

OpenITSM - IT Service Management with Open Source Software

März 2011 – CeBIT

Speaker: Julian Hein



NETWAYS

- Founded 1995
- 26 full time employees
- Headquarter Nuremberg, Germany
- Focus on Open Source in
 - Systems Management
 - Enterprise IT Infrastructure





Key Areas

Open Source Solutions

Systems Management

- Monitoring
- Performance Management
- Configuration Management
- Service Management
- Knowledge Management
- Asset Management
- Identity Management
- Backup & Datensicherung

Enterprise IT Infrastructure

- High Availability
- Cluster Solutions
- Load Balancing
- Virtualization
- Storage Solutions
- Firewalls
- Databases
- Voice over IP

Consulting

Managed Services

Events



Key Areas

Open Source Solutions

Systems Management

Enterprise IT Infrastructure

Consulting

Managed Services

Events

- Projects
- Consulting
- Development
- Implementation
- Integration
- On Site
- Remote

- Premium Hosting
- Managed Monitoring
- Managed Backup
- Managed Servers
- Outsourcing

- Conferences
- Workshops
- In-house Training
- Classroom Training



Conferences



3. Open Source Datacenter Conference (OSDC)

- Focus on Automation and Systems Management
- April, 06 & 07 -> <http://netways.de/osdc>



6. Open Source Monitoring Conference (OSMC)

- Monitoring Tools, Techniques and Best Practices
- October, 06 & 07 -> <http://netways.de/osmc>



Customers



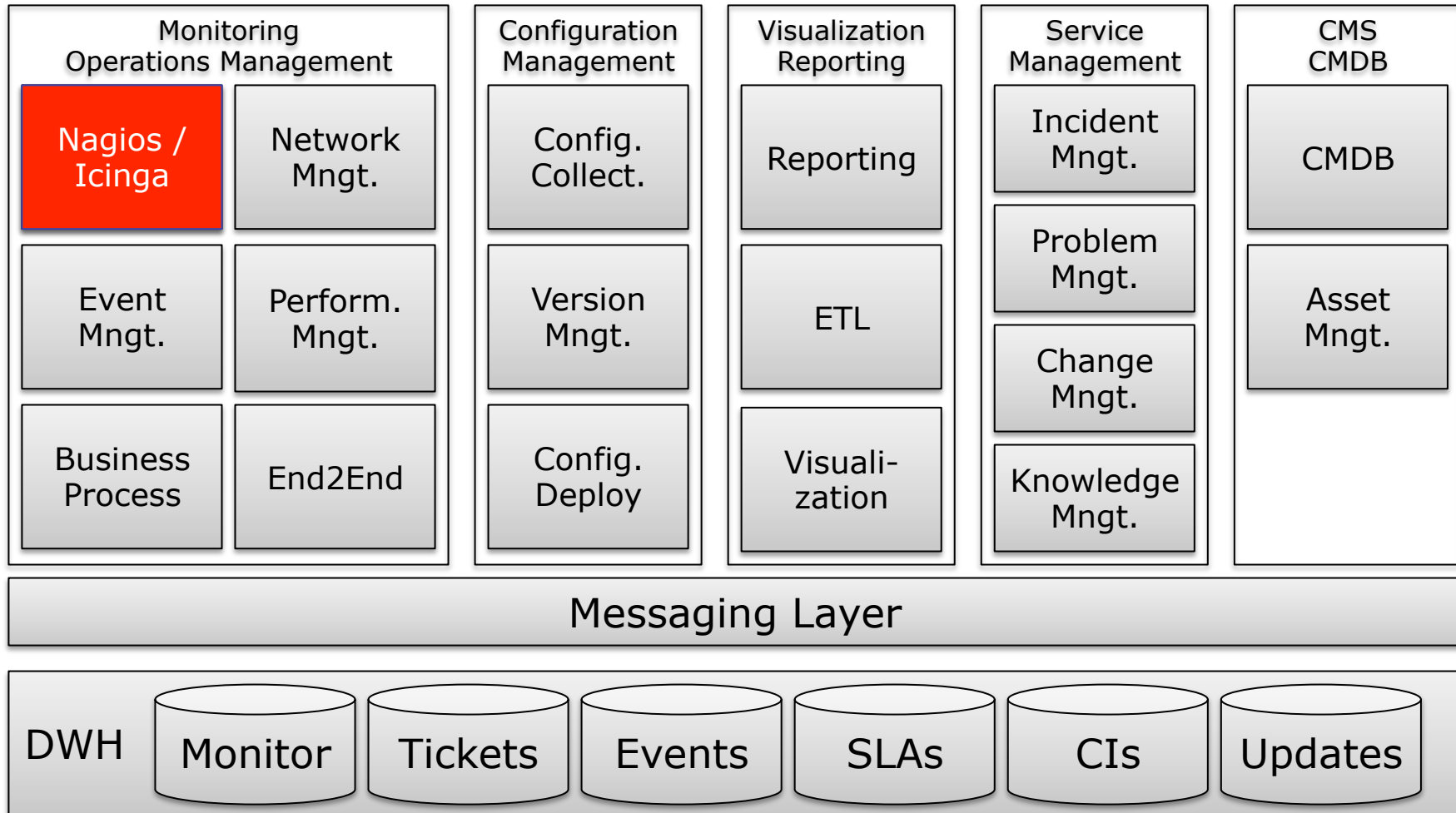
Open Source Commitment

- Service business model
- All our software is Open Source
- Monitoring AddOns
- Support Icinga (a Nagios Fork)
- Portal <http://monitoringexchange.org>
- Community Site <http://netways.org>





ITSM Areas





Monitoring w. Nagios / Icinga

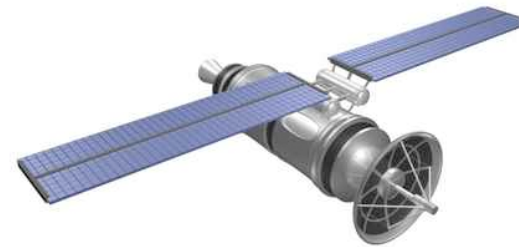
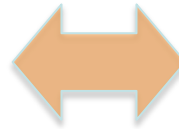
- Monitoring System for Server and Services
- Monitoring of objects through plugins
- Very flexible communication layer
- Webinterface for presentation and reporting
 - Birds Eye Overview
 - Details of single objects
- Flexible notification system
 - Channels: Email, Text, Voice Call
 - Configuration: Contacts, Groups, Intervalls, Daytime, Escalations
- Distributed Monitoring
- High Availability

Basic Setup of Nagios & Icinga



Daemon

- Central Framework
- Configuration & Scheduling
- Webinterface
- Notifications
- Logfiles
- Event Handler



Plugins

- Actual Monitoring
- Exe, Scripts, Agents
- Status Code
OK, WARNING, CRITICAL
- Additional Info
2% free on /dev/sda1



Nagios Tactical Overview

Tactical Monitoring Overview Last Updated: Tue Jun 22 23:10:37 CEST 2004 Updated every 90 seconds Nagios® - www.nagios.org Logged in as: <i>nagiosadmin</i>		Monitoring Performance Service Check Execution Time: 0.02 / 4.80 / 1.241 sec Service Check Latency: 0.01 / 0.64 / 0.224 sec Host Check Execution Time: 0.01 / 0.49 / 0.102 sec Host Check Latency: 0.00 / 0.00 / 0.000 sec # Active Host / Service Checks: 84 / 444 # Passive Host / Service Checks: 0 / 49		
Network Outages 0 Outages		Network Health Host Health: ██████████ Service Health: ██████████		
Hosts 0 Down 0 Unreachable 84 Up 0 Pending				
Services 1 Critical 0 Warning 0 Unknown 492 Ok 0 Pending 1 Unhandled Problems 49 Disabled				
Monitoring Features				
Flap Detection Enabled 34 Services Disabled 1 Service Flapping All Hosts Enabled No Hosts Flapping	Notifications Enabled 31 Services Disabled 12 Hosts Disabled	Event Handlers Enabled All Services Enabled All Hosts Enabled	Active Checks Enabled 49 Services Disabled All Hosts Enabled	Passive Checks Enabled 444 Services Disabled All Hosts Enabled



Nagios Webinterface Details

Current Network Status

Last Updated: Tue Jun 22 23:07:50 CEST 2004
 Updated every 90 seconds
 Nagios® - www.nagios.org
 Logged in as: *nagiosadmin*

[View History For This Host](#)
[View Notifications For This Host](#)
[View Service Status Detail For All Hosts](#)

Host Status Totals

Up	Down	Unreachable	Pending
1	0	0	0
All Problems		All Types	
0		1	

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
17	0	0	0	0
All Problems		All Types		
0		17		

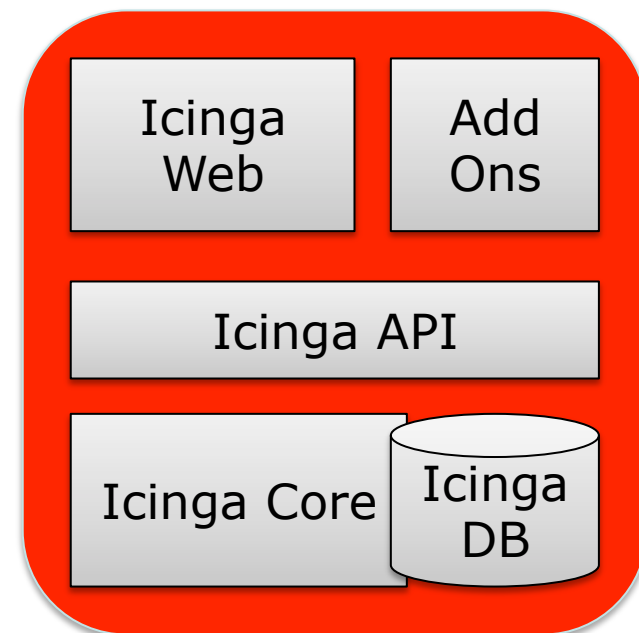
Service Status Details For Host 'net-kilogramm'

Host ↑↓	Service ↑↓	Status ↑	Last Check ↑↓	Duration ↑↓	Attempt ↑	Status Information
net-kilogramm	3ware Unit 0	OK	22-06-2004 22:46:30	37d 19h 29m 12s	1/2	check_3ware.pl: OK (Unit 0 at Controller 0 is OK)
	3ware Unit 5	OK	22-06-2004 22:48:16	64d 10h 23m 24s	1/2	check_3ware.pl: OK (Unit 5 at Controller 0 is OK)
	CPU_LOAD	OK	22-06-2004 23:06:24	64d 10h 46m 36s	1/5	load average: 0.00, 0.00, 0.00
	Current User	OK	22-06-2004 23:06:26	36d 9h 36m 15s	1/5	USERS OK - 0 users currently logged in
	Disk /dev/sda1	OK	22-06-2004 23:03:48	64d 10h 29m 31s	1/5	DISK OK - [1222952 kB (33%) free on /dev/sda1]
	Disk /dev/sda3	OK	22-06-2004 23:03:48	64d 10h 27m 28s	1/5	DISK OK - [557458824 kB (61%) free on /dev/sda3]
	NTP	OK	22-06-2004 22:46:30	37d 19h 29m 12s	1/2	OK: Time difference 0.000287 seconds
	PING	OK	22-06-2004 23:04:11	64d 10h 23m 22s	1/5	PING OK - Packet loss = 0%, RTA = 1.90 ms
	Prozesse	OK	22-06-2004 23:06:27	64d 10h 46m 35s	1/5	OK - 71 processes running
	Prozesse bacula-dir	OK	22-06-2004 22:53:16	64d 10h 44m 32s	1/5	OK - 4 processes running with command name bacula-dir
	Prozesse bacula-fd	OK	22-06-2004 22:54:07	58d 12h 40m 18s	1/5	OK - 3 processes running with command name bacula-fd
	Prozesse bacula-sd	OK	22-06-2004 22:43:57	58d 18h 29m 59s	1/5	OK - 3 processes running with command name bacula-sd
	Prozesse zombie	OK	22-06-2004 23:06:27	58d 1h 41m 7s	1/5	OK - 0 processes running with STATE = Z
	Remote Backup	OK	22-06-2004 22:48:16	58d 12h 40m 8s	1/5	Bacula OK: Found 2 successful jobs
	SSH	OK	22-06-2004 23:06:22	37d 16h 34m 12s	1/5	SSH ok - protocol version 2.0 - server version
	Swap Usage	OK	22-06-2004 23:06:24	64d 10h 44m 30s	1/5	Swap ok - Swap used: 10% (51924992 bytes out of 509956096)
	Uptime	OK	22-06-2004 23:03:53	23d 19h 32m 17s	1/5	Uptime o.k. - Up 120 days

17 Matching Service Entries Displayed

What is Icinga?

- Community Fork of Nagios
- Started May 2009
- Components & Teams
 - Icinga-core
 - Icinga-web
 - Icinga-docs
- Compatible to Nagios
 - Plugins
 - Configuration Syntax
 - AddOns
 - Database



<http://www.icinga.org>



Icinga Webinterface

The screenshot displays the Icinga Web interface with the following components:

- Navigation Bar:** Includes tabs for ServiceStatus, Overview, Julians Dashboa, HostStatus, Open problems, Service perdata for b, and EventDB.
- Summary Widgets:** Shows overall system health with metrics like 28 UP, 2 DOWN, 0 UNREACHABLE, 30 IN TOTAL, and 214 IN TOTAL.
- Open problems Table:**

Host	Service	Host status	Service status	Last ...	Last ...	Attem...	Attem...	Host...	Servi...
c1-w...	lx-disk	UP	WARNING	2011...	2011...	1/3	3/3	PING...	DISK...
c1-w...	lx-cpu	UP	CRITICAL	2011...	2011...	1/3	3/3	PING...	CRIT...
c1ex...		DOWN		2011...	2011...	3/3	N/A	PING...	
c1ex...	net-i...	DOWN	OK	2011...	2011...	3/3	1/3	PING...	IMAP...
c1ex...	net-ping	DOWN	CRITICAL	2011...	2011...	3/3	3/3	PING...	PING...
c1ex...	net-p...	DOWN	OK	2011...	2011...	3/3	1/3	PING...	POP ...
c1ex...	net-s...	DOWN	OK	2011...	2011...	3/3	1/3	PING...	SMT...
c1ex...	nt-disk	DOWN	OK	2011...	2011...	3/3	1/3	PING...	ci - t...
c1ex...	nt-load	DOWN	OK	2011...	2011...	3/3	1/3	PING...	CPU ...
c1ex...	nt-m...	DOWN	OK	2011...	2011...	3/3	1/3	PING...	Mem...
Linux...		DOWN		2011...	2011...	3/3	N/A	PING...	
Linux...	net-ping	DOWN	OK	2011...	2011...	3/3	1/3	PING...	PING...
Wind...	net-ping	UP	CRITICAL	2011...	2011...	1/3	3/3	PING...	PING...
- EventDB Table:**

Ack	Type	Host	Priority	Message	Program	Fac
	Syslog	storage-int	NOTICE	Random test Event,50243	test	loc
	Mail	mail-int	EMERGENCY	Random event :131353	cms	mai
	Syslog	workstation...	INFORMATION	A testevent, 73373	accessCheck	FTF
	Syslog	workstation...	CRITICAL	Random test Event,11876	ping	sec
	Mail	workstation...	DEBUG	Random event :65156	cms	log
	SMNP	storage-int	WARNING	Random test Event,28345	accessCheck	line
	SMNP	workstation...	ERROR	Random event :457498	ping	loc
	Syslog	storage-bak	CRITICAL	Random test Event,30434	mail	sys
	SMNP	share-test	DEBUG	Random test Event,58624	cms	loc
	Syslog	workstation...	ALERT	Random event :745858	mail	sec
	SMNP	oracle-bak	INFORMATION	Random test Event,43532	ping	loc
	Mail	cluster-int	NOTICE	Random test Event,23988	ping	FTF
	SMNP	www-ext	NOTICE	A testevent, 234915	ping	ker
	SMNP	firewall-test	CRITICAL	Random test Event,8571	accessCheck	ker
	SMNP	firewall-bak	CRITICAL	Random test Event,12166	mail	mei
	Mail	workstation...	CRITICAL	Random event :116834	mail	loc
	Syslog	firewall-int	EMERGENCY	Random test Event,33368	accessCheck	neh
	Syslog	oracle-ext	WARNING	A testevent, 389016	load	clb
	Syslog	share-ext	DEBUG	Random test Event,38038	test	mai
	SMNP	cluster-int	DEBUG	Random test Event,41710	ping	mei
	Mail	share-ext	INFORMATION	Random test Event,58809	accessCheck	UU
	Syslog	share-bak	DEBUG	Random event :975006	load	ker
	Syslog	www-int	INFORMATION	Random test Event,11182	load	sys
	Mail	www-int	WARNING	A testevent, 872955	accessCheck	loc
	SMNP	mail-test	NOTICE	Random event :557463	test	loc
- HostStatus Table:**

Host	Status	Last c...	Duration	Info	Attempt	Output	Perfdata
c1-dns1	UP	2011...	5w 2h ...		1/3	PING ...	
c1-dns2	UP	2011...	5w 2h ...		1/3	PING ...	
c1-dns3	UP	2011...	5w 2h ...		1/3	PING ...	
c1-dns4	UP	2011...	5w 2h ...		1/3	PING ...	



Icinga Statusmap

The screenshot shows the Icinga web interface. At the top, there's a navigation bar with 'Home', 'My', and 'Monitoring' menus. A search bar and a Google search button are also present. The main content area is divided into several sections:

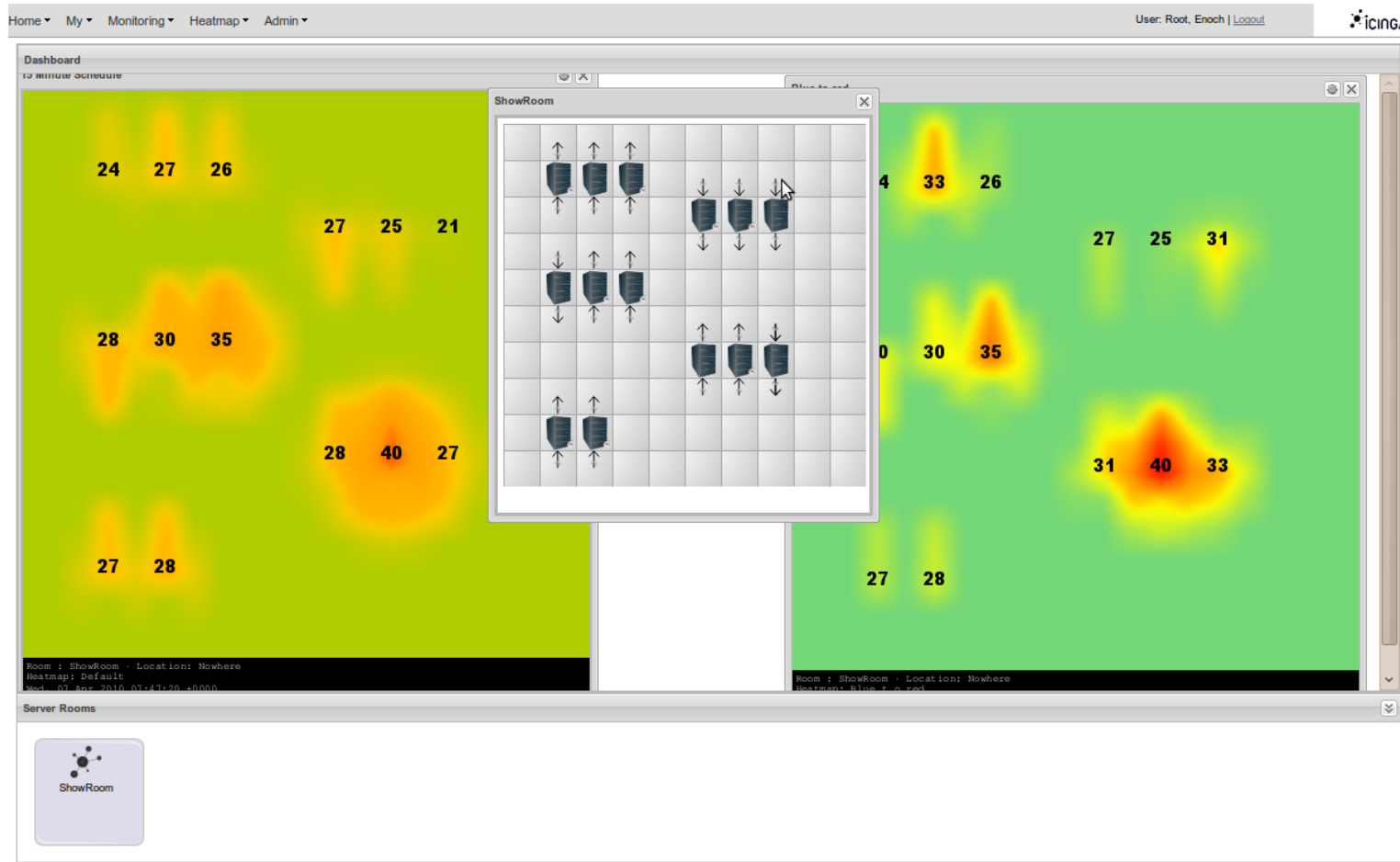
- Summary:** A search bar and two progress bars (green and red) are shown. To the right, a summary of host and service statuses is displayed:

26 UP	40 OK
4 DOWN	0 WARNING
0 UNREACHABLE	5 CRITICAL
4 NOT OK	0 UNKNOWN
30 All	5 NOT OK
	45 All
- Navigation:** A sidebar on the left contains icons for Hostgroups, Servicegroups, HostStatus, HostHistory, ServiceStatus, ServiceHistory, LogView, Notifications, and Status Map.
- Status Map:** The central part of the interface shows a network diagram with nodes and connecting lines. The nodes are color-coded based on their status (green for UP, red for DOWN, etc.).
- Host Details:** On the right side, a detailed view for the host 'c2-switch-1' is shown, including its address, current state, and performance data.

Name	c2-switch-1
Address	10.10.200.230
Alias	company2-switch-1
Display name	c2-switch-1
Current state	UP
Output	check_alive.phpsh: OK (f2-switch-1 is on)
Performance data	
Current check attempt	1
Max check attempts	10
Last check	2010-03-05 11:51:33
Check type	0
Latency	0.119
Execution time	0.07173
Next check	2010-03-05 11:56:43
Hard state change	2010-02-01 15:54:10
Last notification	2010-02-01 15:54:10
Is flapping	0
Scheduled downtime depth	0
Status update time	2010-03-05 11:51:43

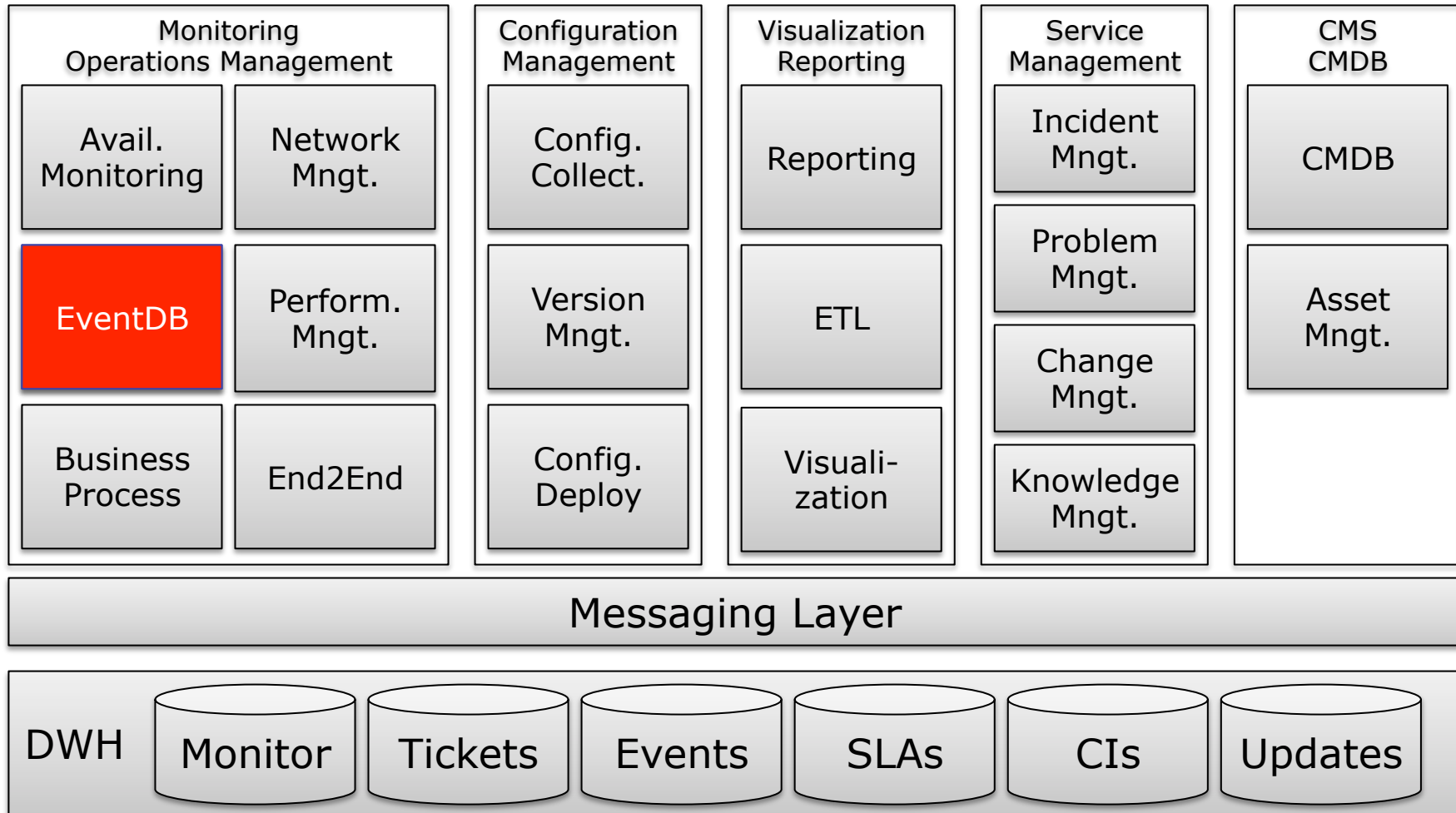


Plugin Heatmap



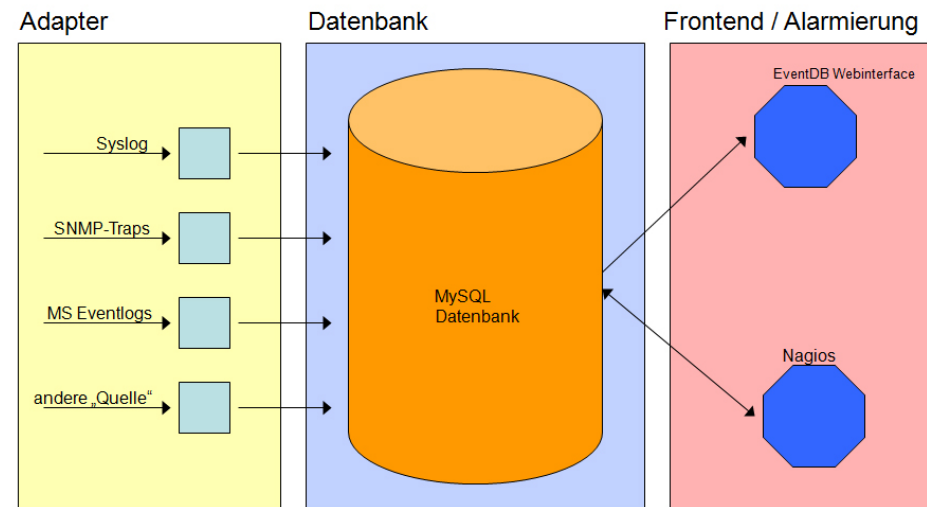


ITSM Areas



Event Management: EventDB

- One Interface for Events
 - Logfiles
 - E-Mails
 - SNMP Traps
- Analyze Events
 - Type of event
 - # of Events
 - Time and period
 - Full text search
 - Correlate Error & OK message
- Integration in Nagios and Icinga



<http://www.netways.org>



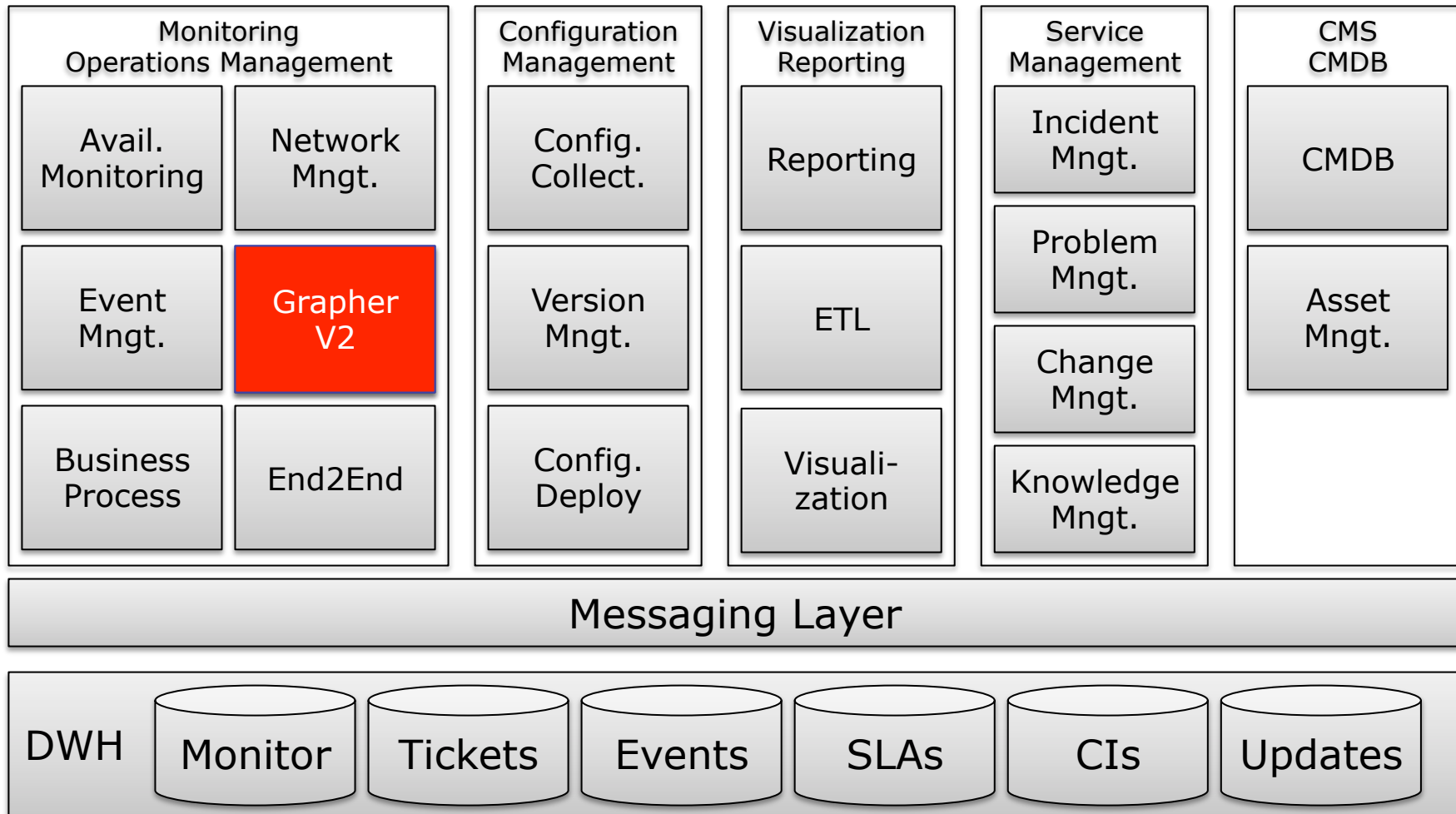


Integration with other applications

- Monitoring
 - Notify based on events
 - Link events to hosts in monitoring
 - Integration in monitoring web interface
- CMDB
 - Integration of current status in CMDB
 - Integration of historic states in CMDB
- Ticketing
 - Integrate events in Tickets

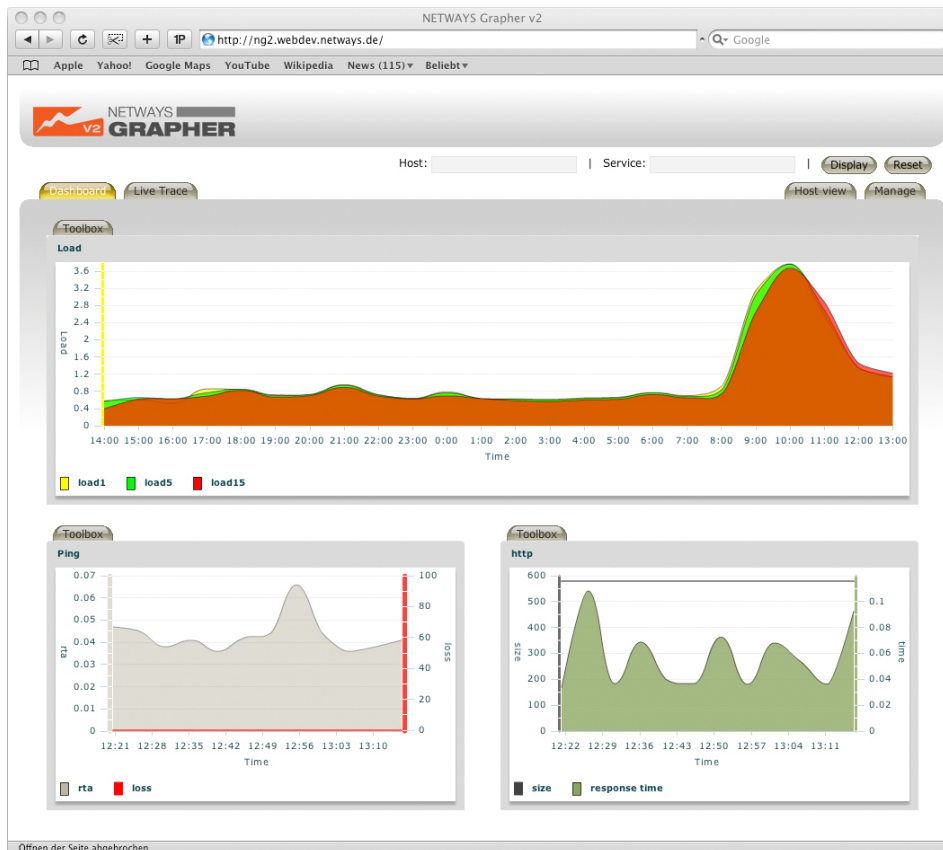


ITSM Areas





Performance Management: Grapher V2

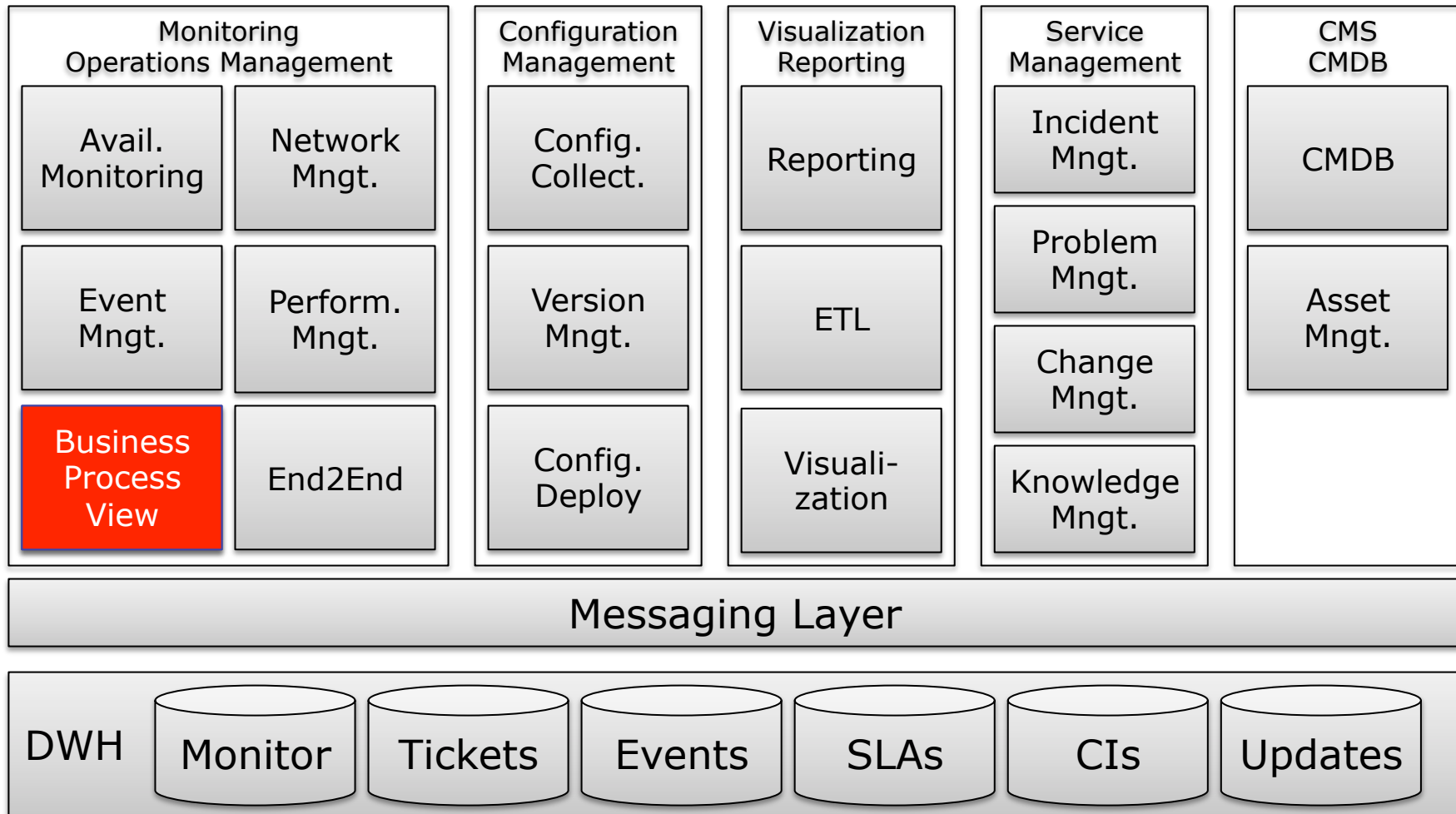


<http://www.netways.org>

- Use data from monitoring system
- Create dynamic performance charts
- MySQL Backend
- AJAX web interface
- Realtime
- Dashboards
- Multi Graphs
- Calculations
- Integration in monitoring

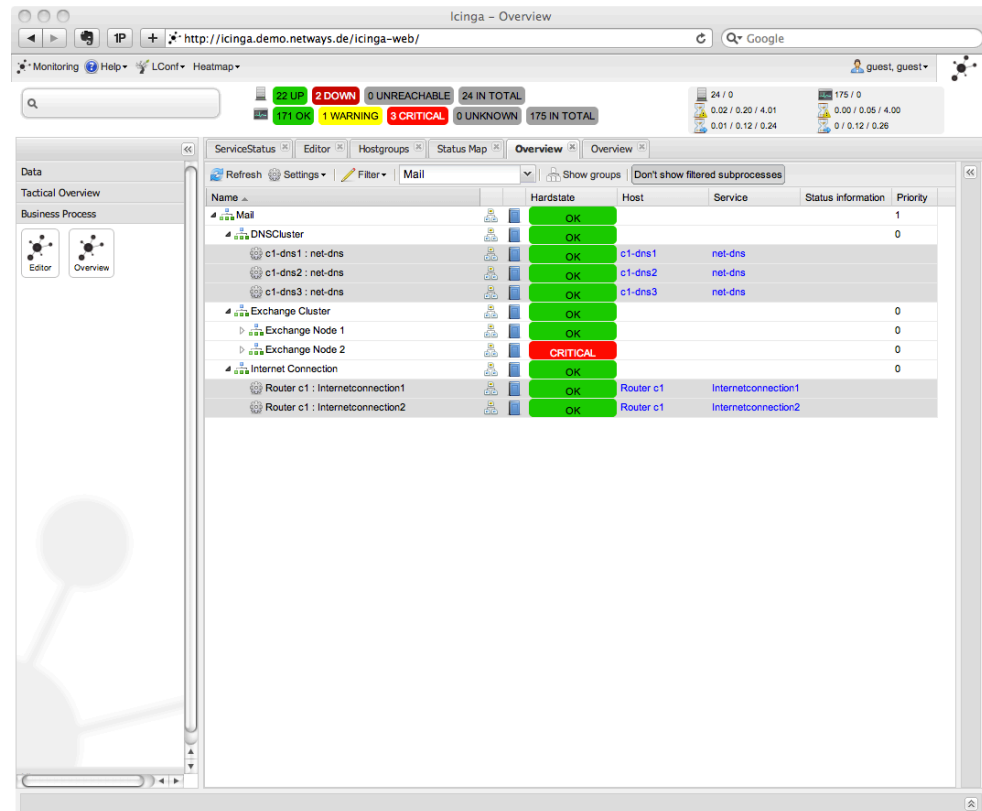


ITSM Areas



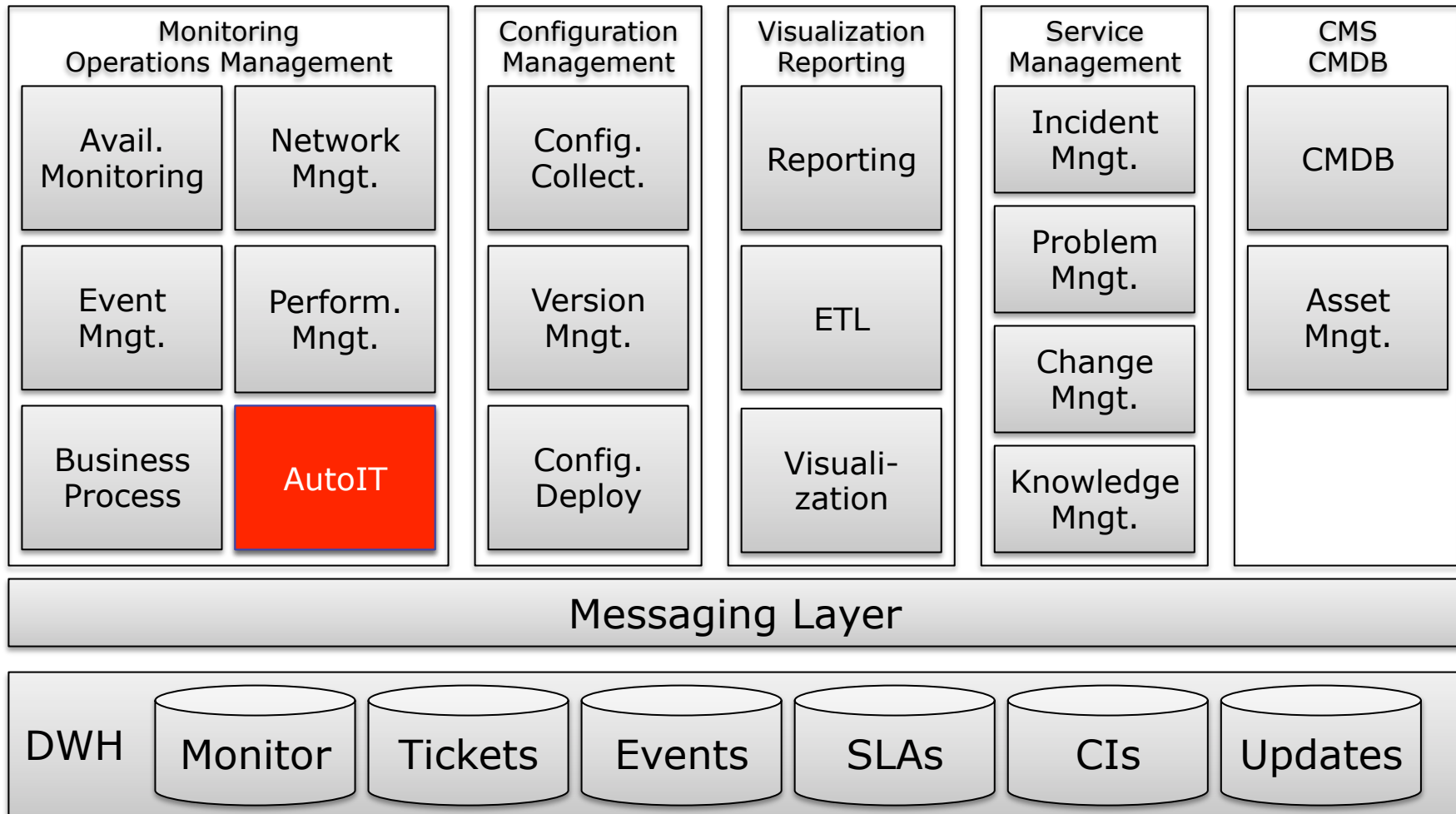
Business Processes

- Business Process View
- Aggregate single items into business processes
- Hierarchical tree views
- And / Or
- Drilldown through elements
- Simulate problems





ITSM Areas





End 2 End Monitoring: AutoIT

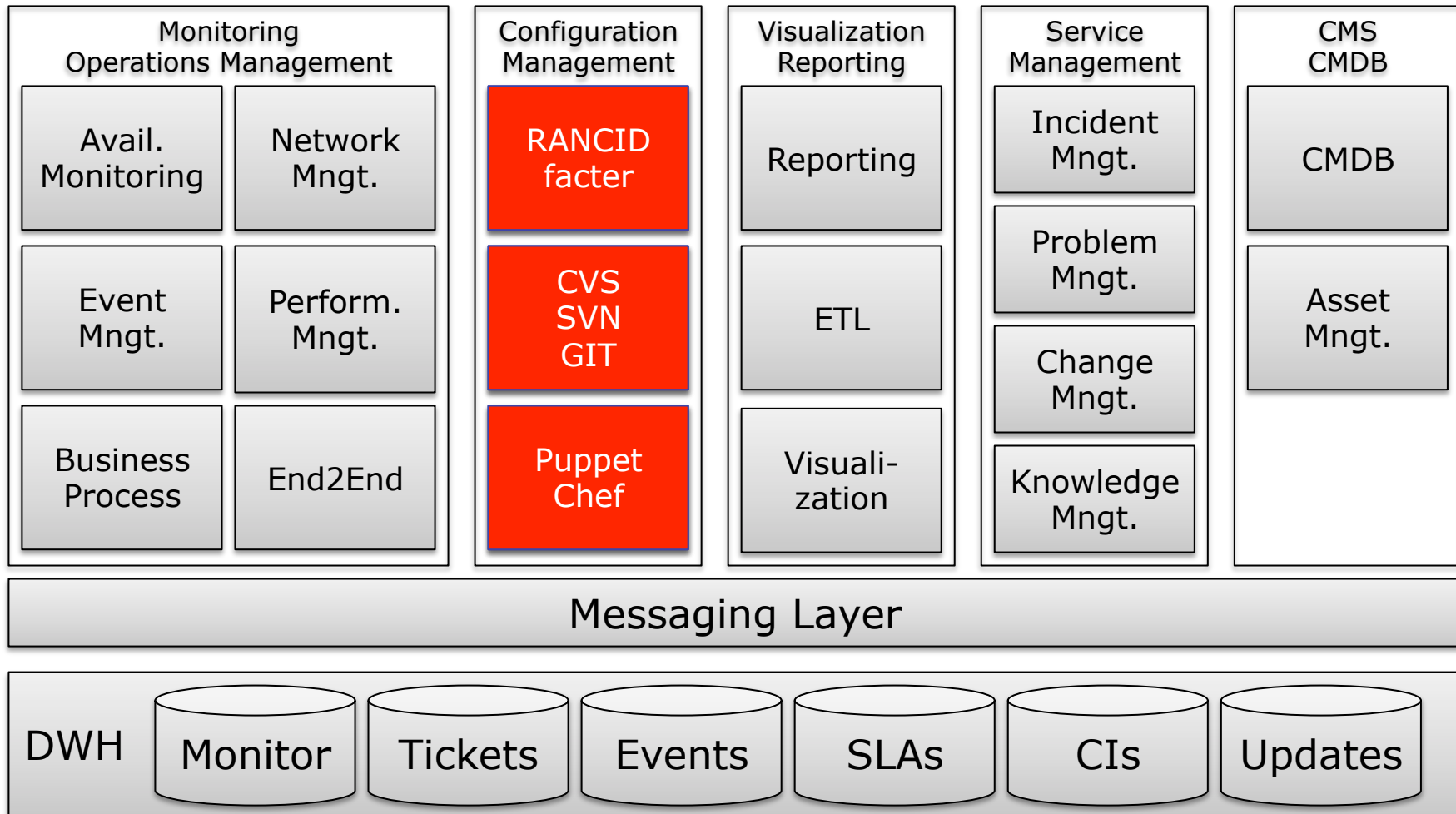
- Open Source automation tool for Windows
- Simulates complex user actions
- Checks a whole process chain, e.g.
 - Open Outlook & send mail
 - Start SAP GUI
 - Log into terminal server and start apps
- Log transaction time
- Forward results to Nagios / Icinga



<http://www.autoitscript.com>



ITSM Areas





Configuration Management

- Get Configurations
 - Collect configuration from distributed systems
 - RANCID (Network Devices)
 - facter (Linux, Puppet)
 - opsi (Windows)
- Manage Configurations
 - Store and track configuration files
 - Version Control Systems, e.g. CVS, SVN oder GIT
- Deploy Configurations
 - Deploy changes to multiple and heterogenic Systems
 - Configuration Management Systems, e.g. Puppet, Chef, opsi

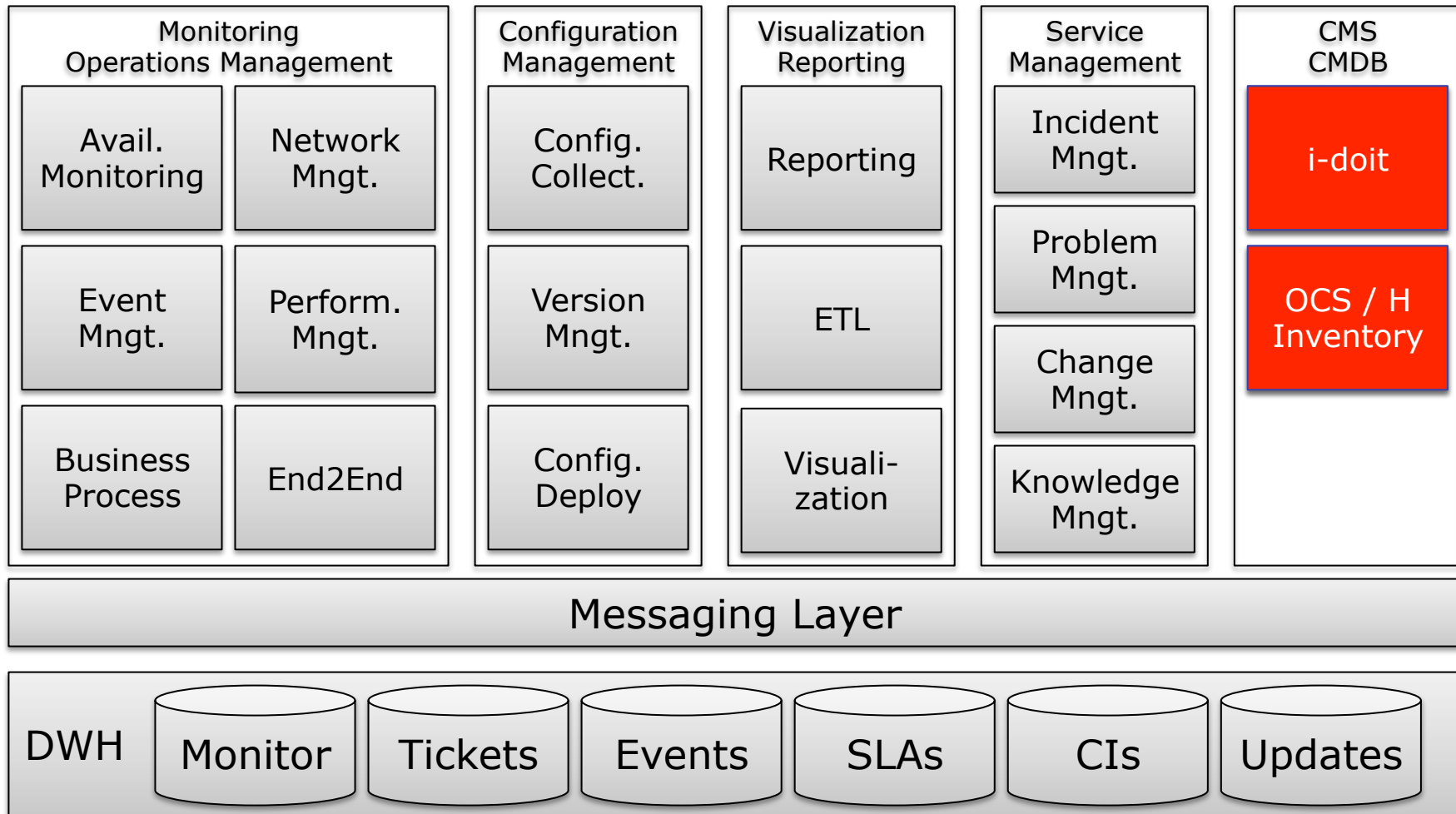


Integration with other applications

- Monitoring
 - Track success / failure of changes
 - Monitor unauthorized changes
- CMDB
 - Create config data from CMDB entries
 - Send inventory data to CMDB
- Ticketing
 - Implement authorization workflow
 - Track changes in ticketing system
 - Auto generate changes from tickets



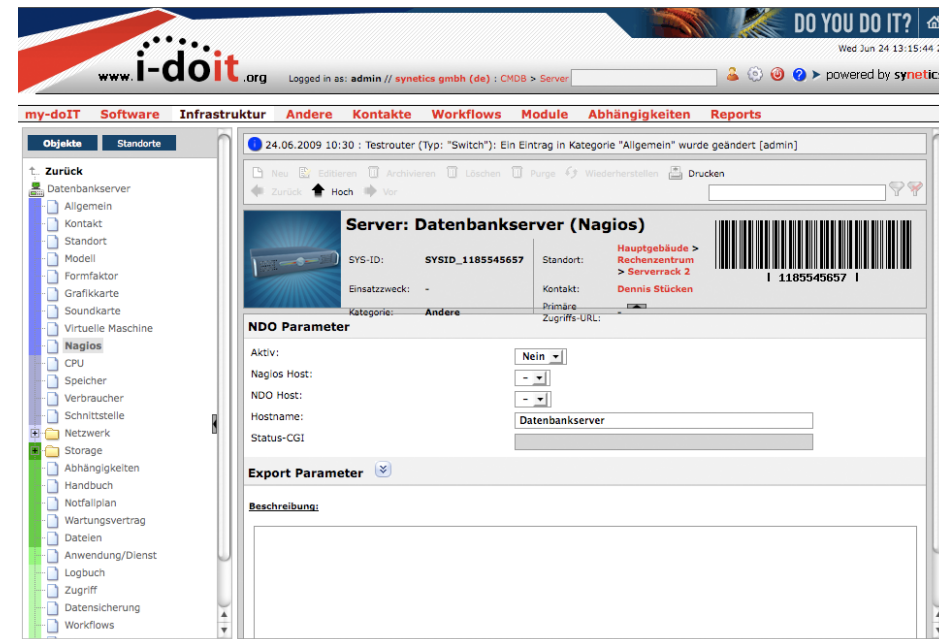
ITSM Areas





CMDB: i-doit

- ITIL Configuration Management Database
- Document all existing configuration items
 - Technical documentation
 - Dependencies b/w CI
 - Business data
- History
- Any level of details
- Extendable
 - Licence Management
 - SLA Management



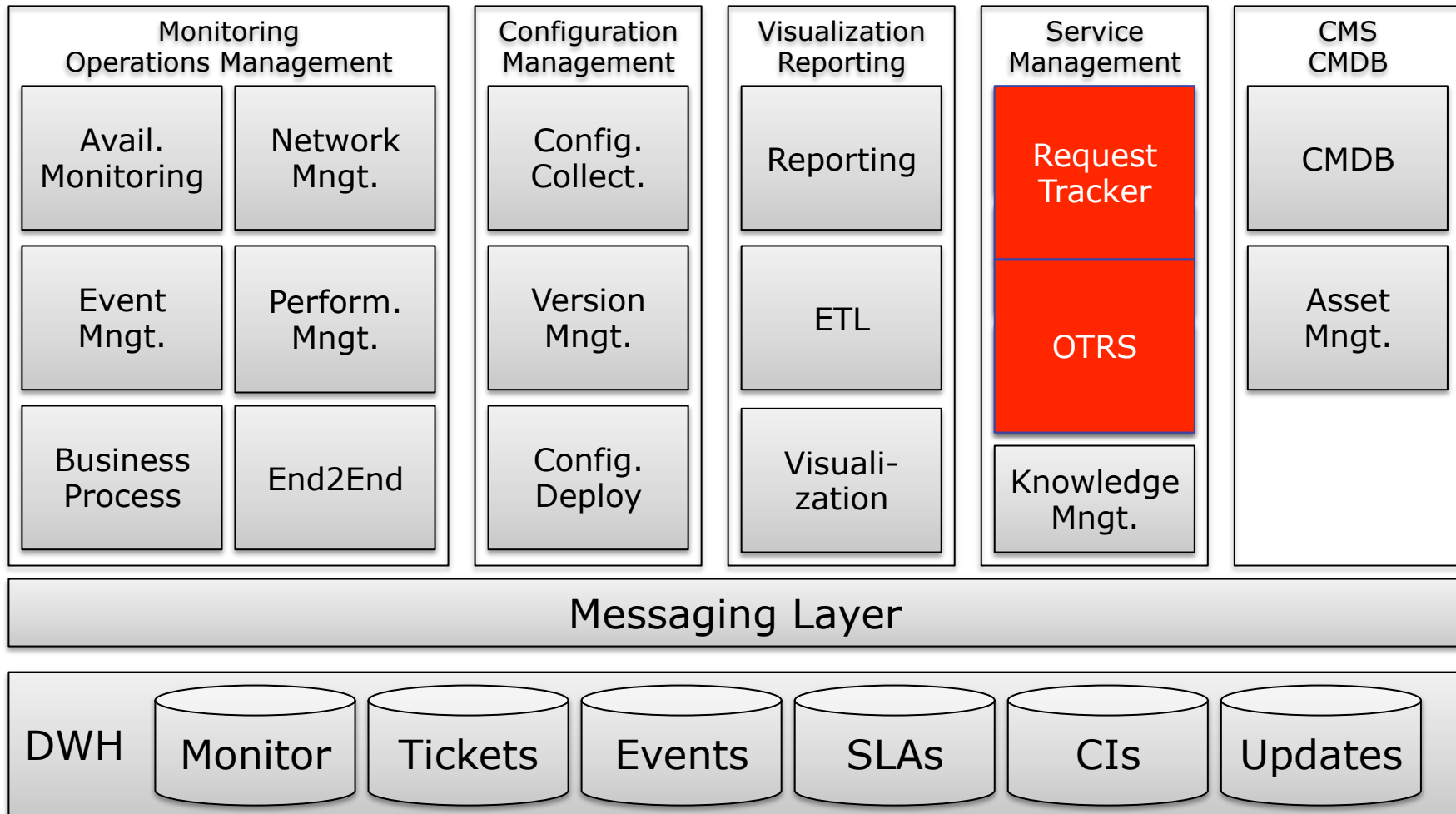


Integration with other applications

- Integration w/ Monitoring
 - Display of current status from monitoring
 - Integration of historic states into CI logbook
 - Generation of configuration for the monitoring system
- Integration w/ Ticketing
 - Select Configuration Items in ticketing system
 - Display all incidents, problems und changes (open & resolved)
- Integration w/ Asset Management
 - Get hardware data from asset management
 - Store hardware data in CMDB
 - Detect unauthorized hardware changes



ITSM Areas





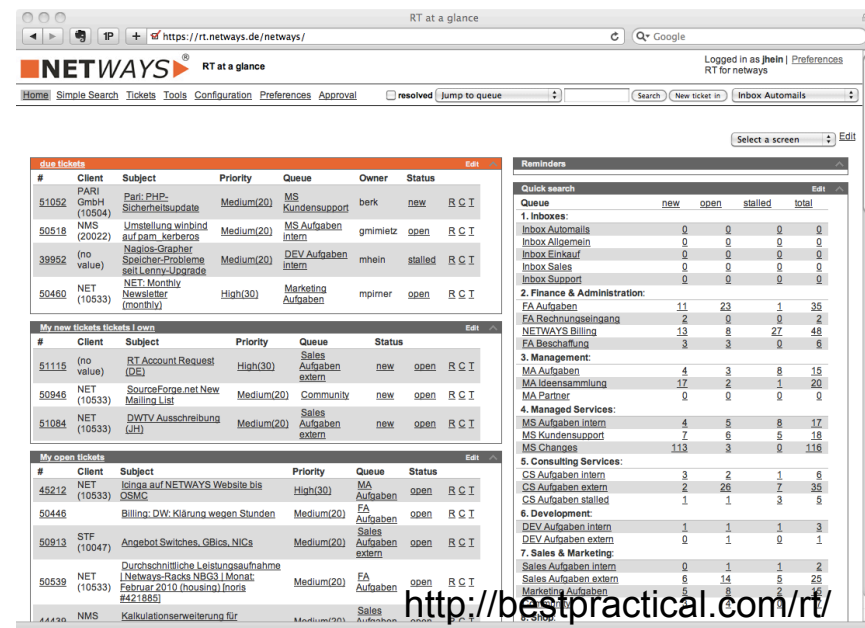
Service Management: Request Tracker / OTRS

- Implement the most important ITIL processes

- Request Fulfilment
- Incident Management
- Problem Management
- Change Management

- Main features

- Assign ticket id no.
- Store history and comm.
- Assign to owner
- Track progress
- Priorisation & classification
- Resolve tickets
- Statistics & reporting



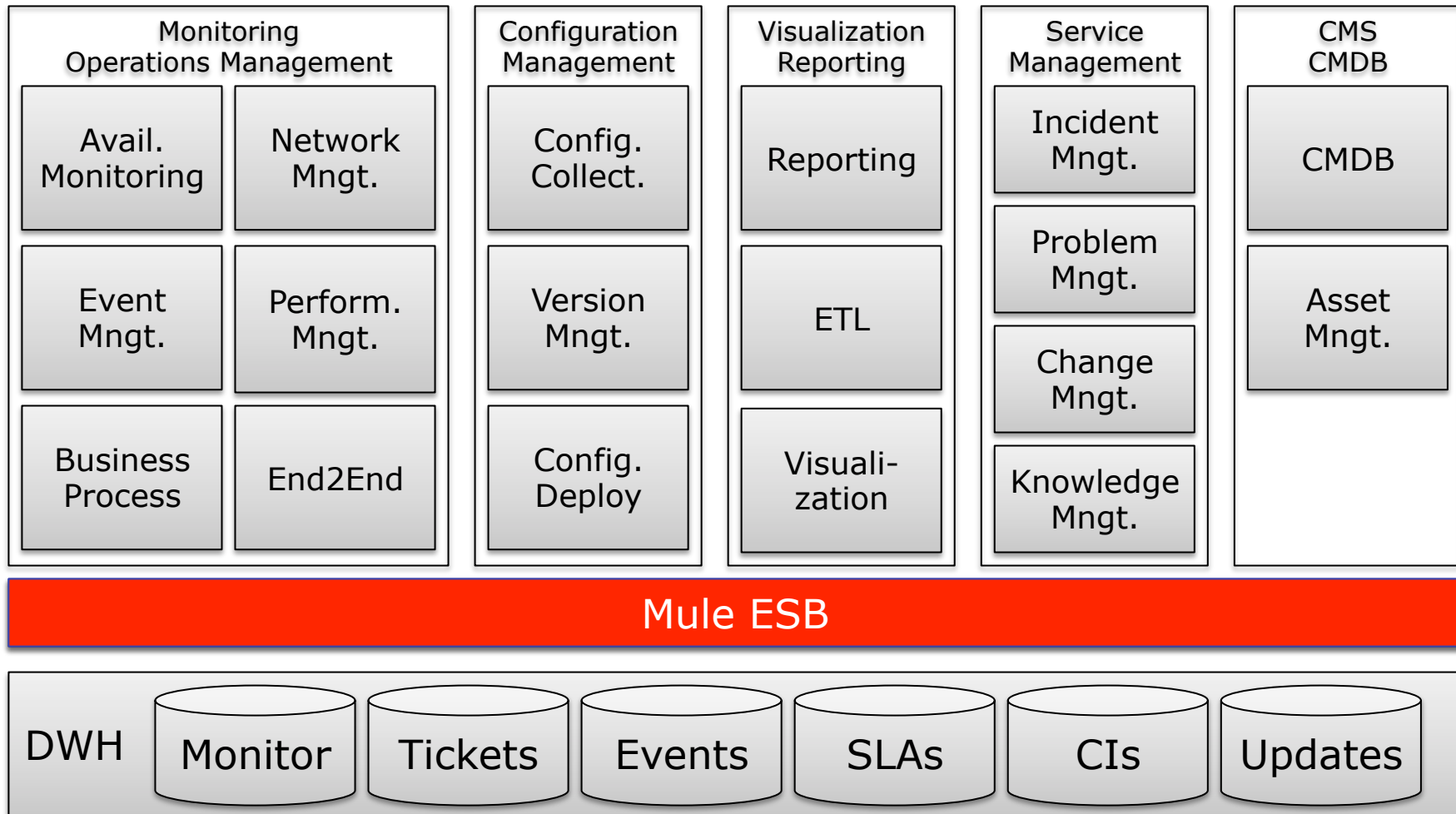


Integration with other applications

- Integration w/ monitoring system
 - Create tickets not mails
 - Processing of alerts from monitoring system
 - Resolve tickets if problem goes away
- Monitor ticketing system
 - Availability
 - Monitor service levels and reaction time
 - Escalate tickets with high priority
- Integrate with CMDB
 - Assign Tickets to CIs
 - Integrate tickets into CI history



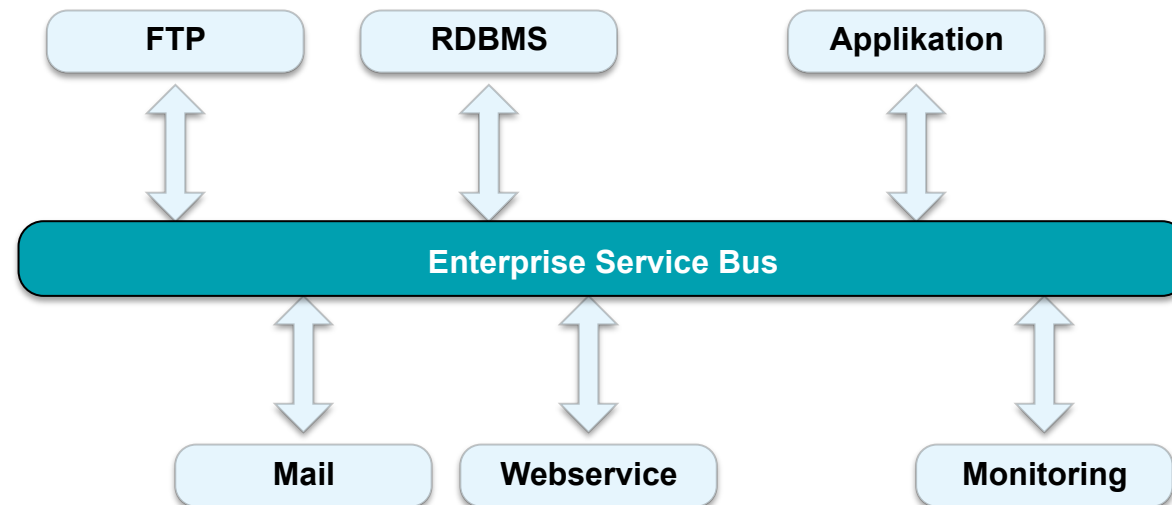
ITSM Areas





Mule Enterprise Service Bus

- Single communication layer
- Safe transmission of messages b/w different endpoints
- Interfaces for different services (DB, Files, FTP, etc.)
- Routing, transformation & monitoring



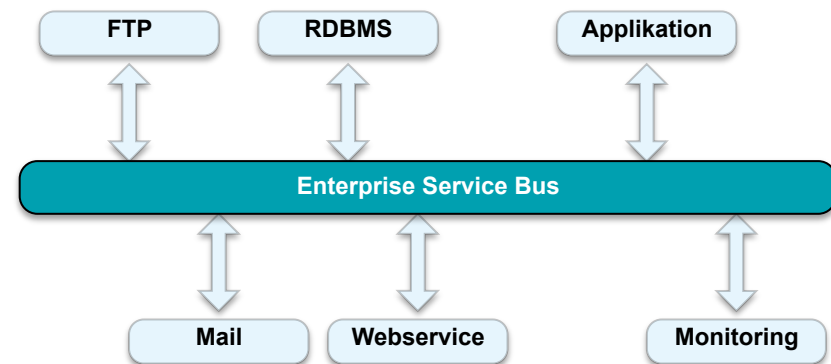
<http://www.mulesoft.com/>



Scenarios and Advantages

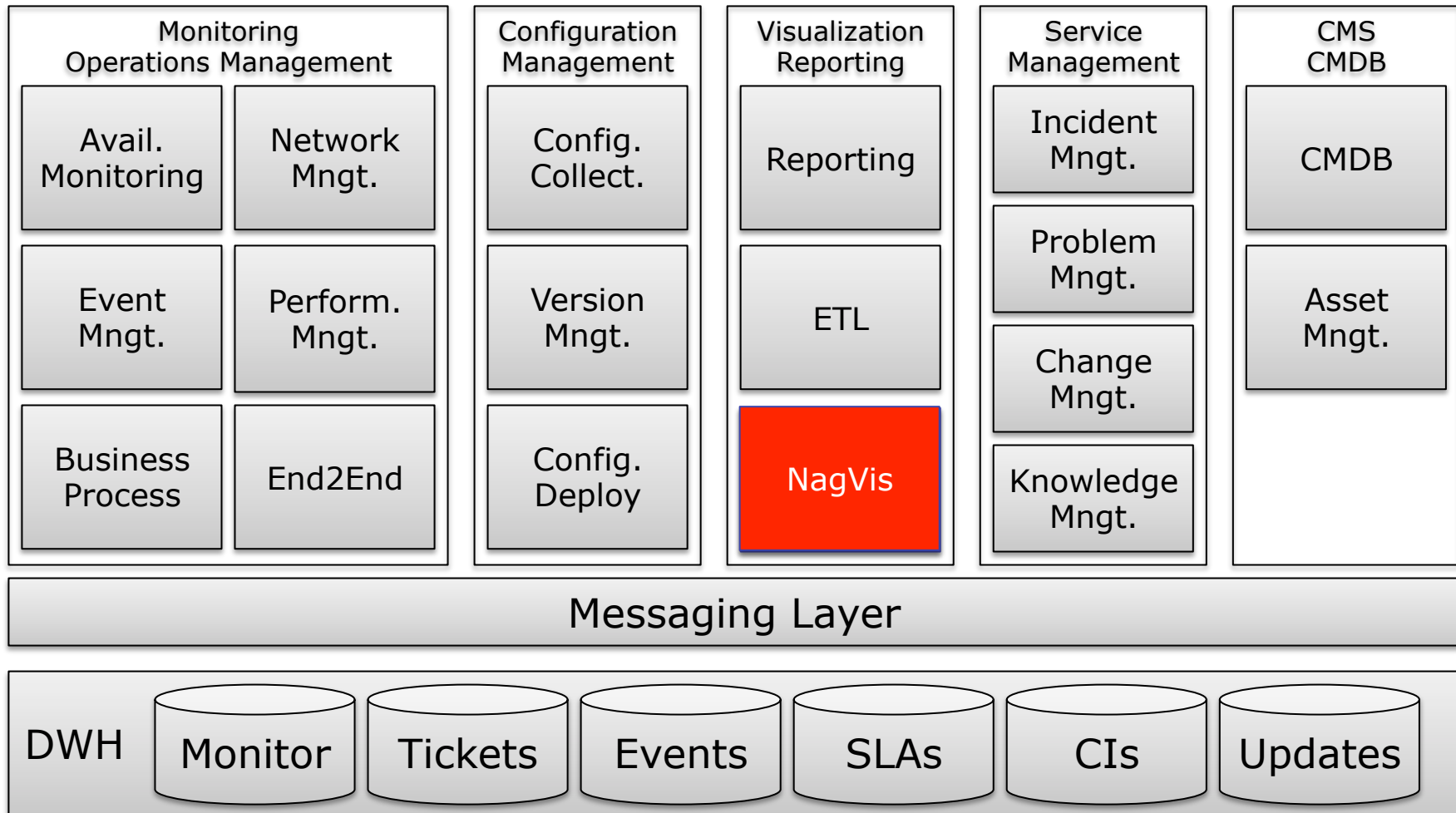
- Send monitoring status to central system
- Send commands
- Generate tickets and alerts
- Integrate different applications

- Reduces messaging complexity
- Safe transport of messages (think email)
- Message spooling
- Routing of messages e.g. by content





ITSM Areas



Visualisation: NagVis

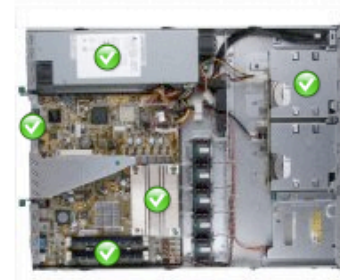
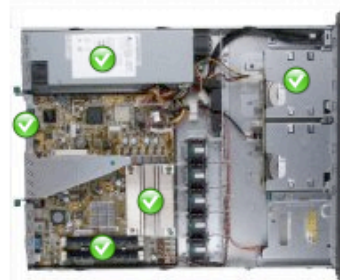
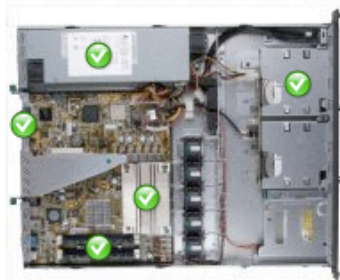
- Live, realtime visualisation of monitoring data
- Individual graphics with live status
- Single objects or groups
- Hierarchical maps and drill down
- Display process or complex systems



<http://www.nagvis.org/>

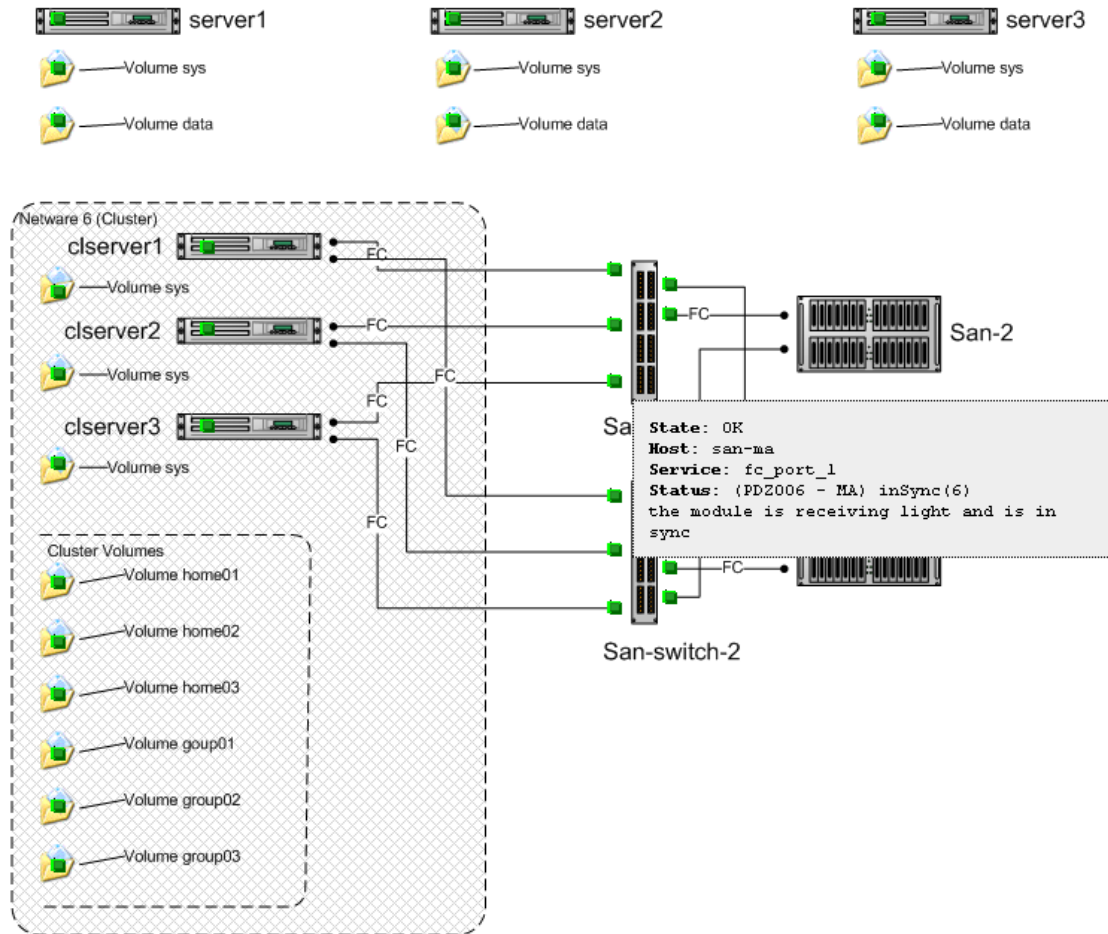


Hardware Monitoring



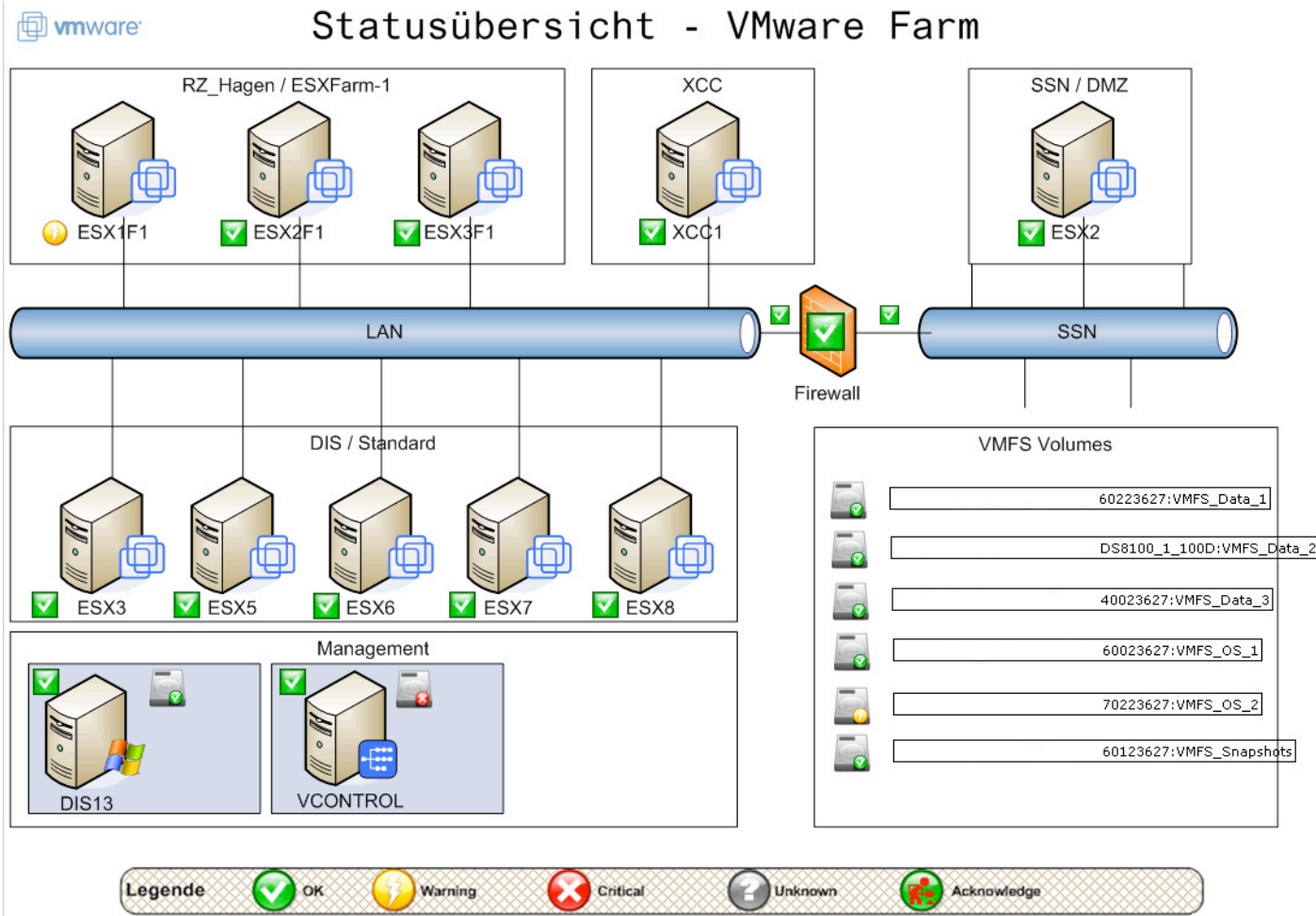


Complex setup, e.g. SAN



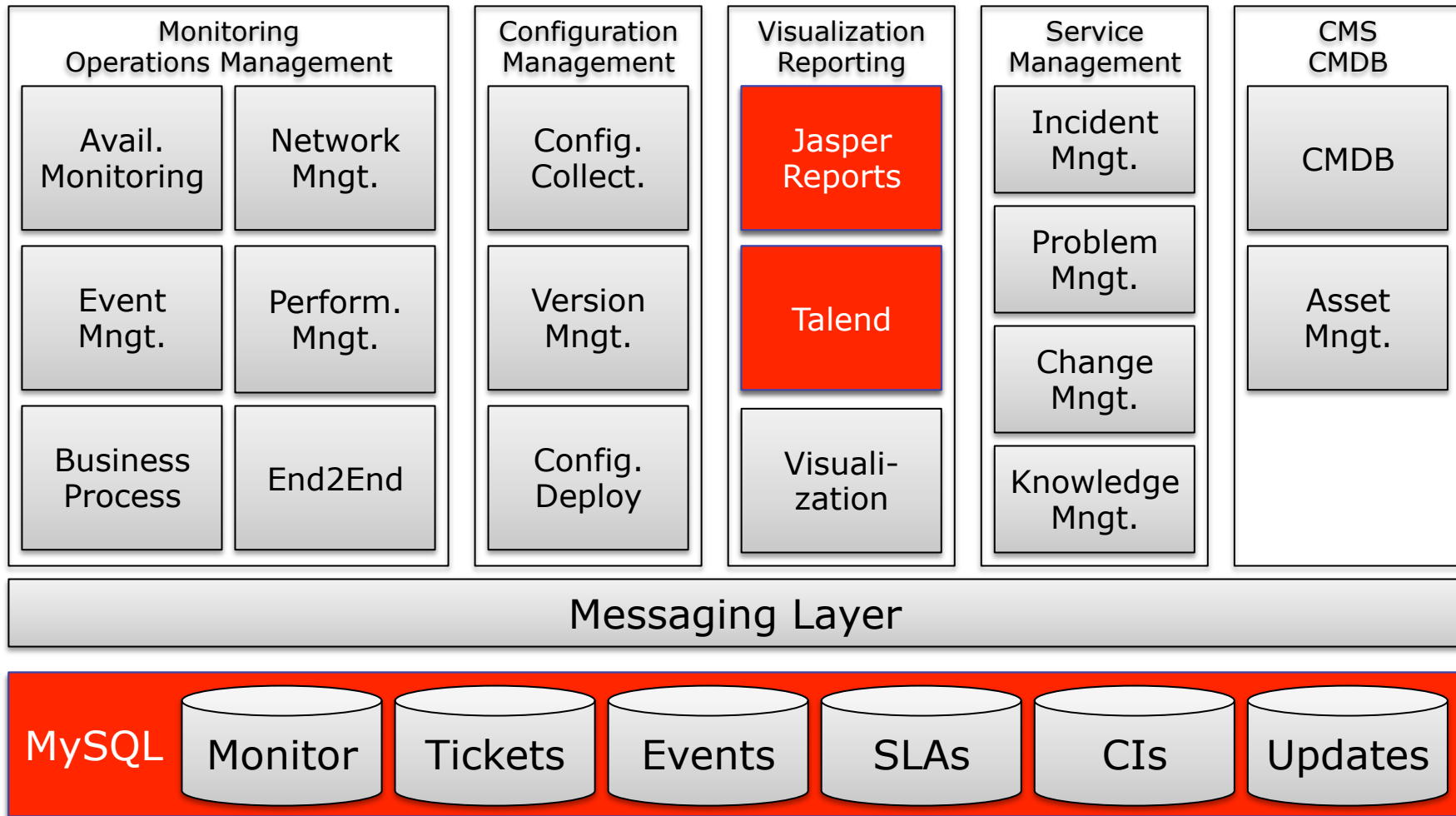


VM Setup



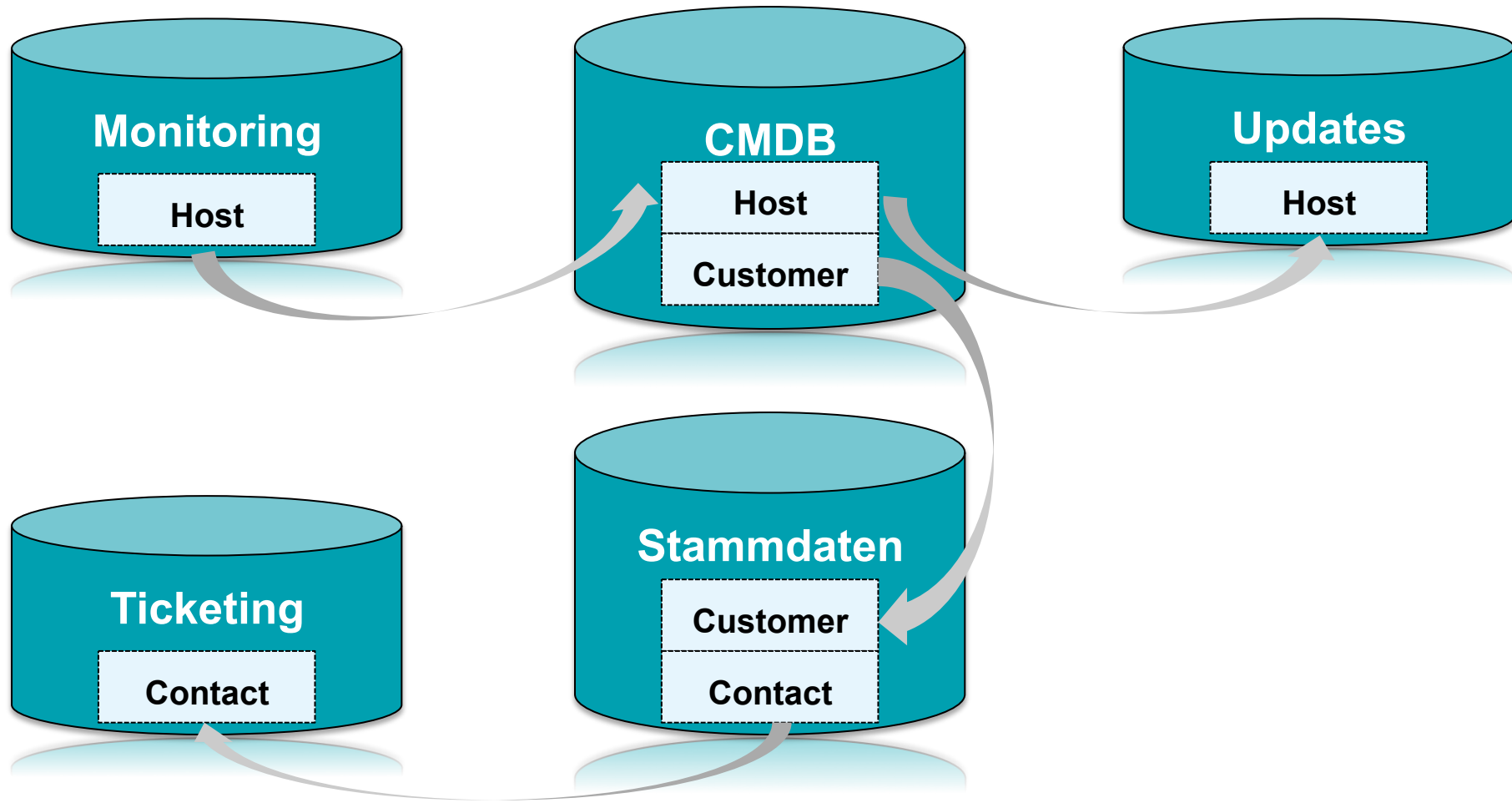


ITSM Areas





Relationships between ITSM objects





Jasper Reports

- Create reports
 - Java client
 - Creation w/ realtime preview
 - WYSIWYG layout
 - Multiple diagram types: pie, line, balken
 - Advanced feature: grouping, parameters, subreports
- Report distribution
 - Channels: Webserver, Mail, on demand
 - Formats: PDF, HTML, Excel, Word, Flash
 - Scheduling



Example Report

Mustermann AG
 Musterstr. 123
 12345 Musterstadt
 Germany

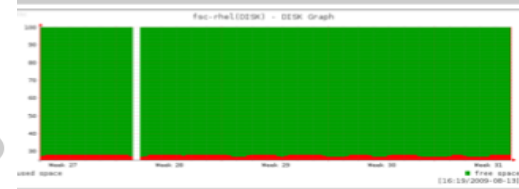
Ansprechpartner des Kunden

Vorname	Nachname	Email	Telefon
Max	Mustermann	max@mustermann-ag.de	+49 999 123456
Hans	Mustermann	hans@mustermann-ag.de	+49 999 1234567

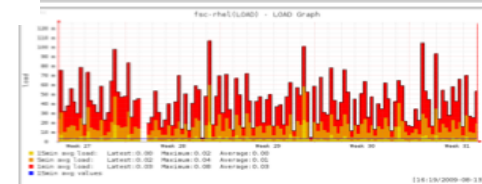
Report: Monitoring

Servername: fsc-rhel
 Adresse: 1.2.3.4

Service: DISK



Service: LOAD



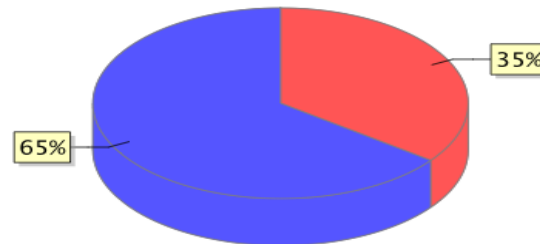
Report: Sicherungsvolumen

Aktuelle Werte:

Frei: 647,52 GB

Verwendet: 352,48 GB

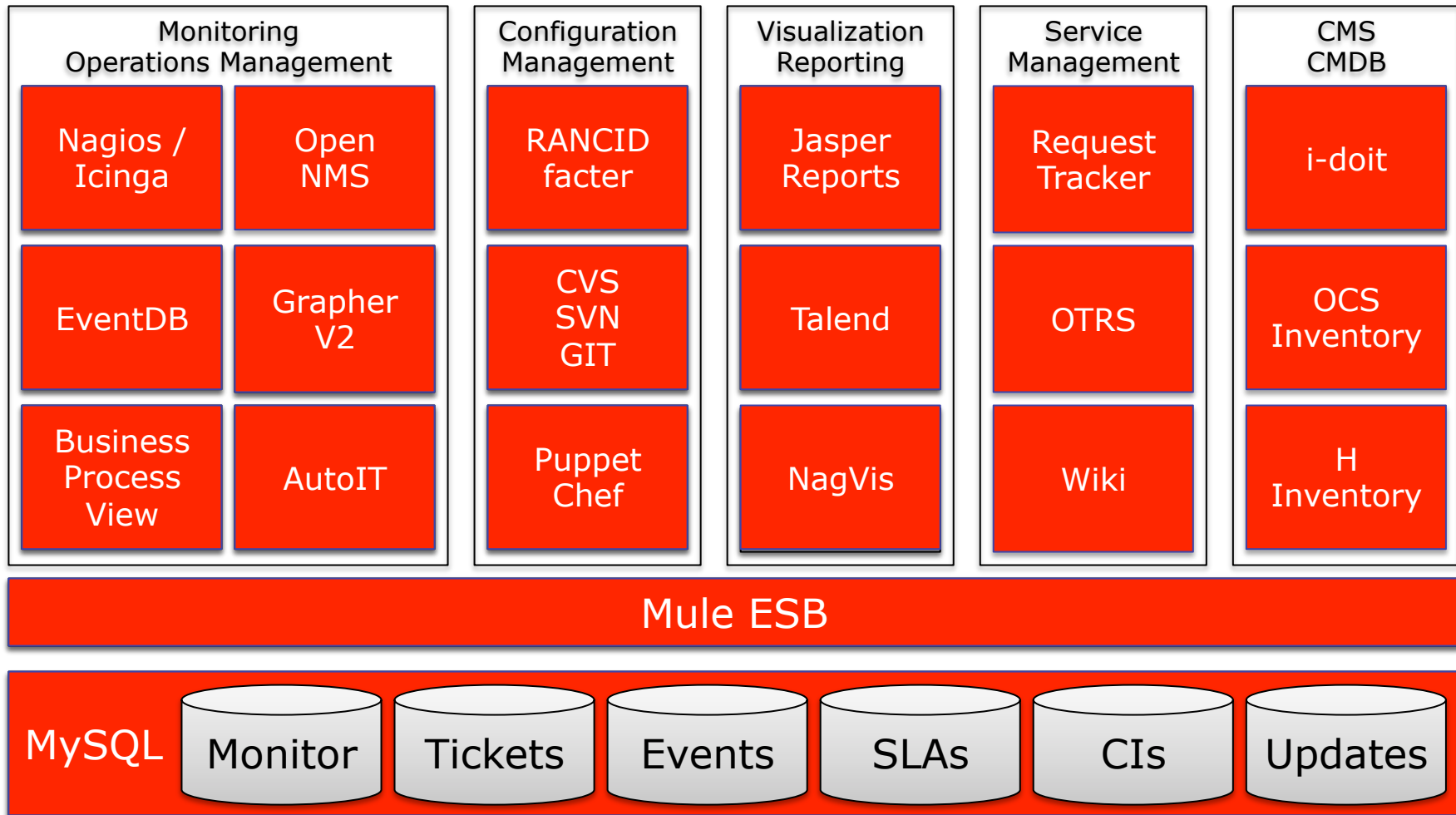
Gesamt: 1.000,00 GB



● Verwendeter Speicherplatz
 ● Freier Speicherplatz



ITSM Areas





Contact

- Questions?

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