

CHECK_MK

CONFERENCE #3



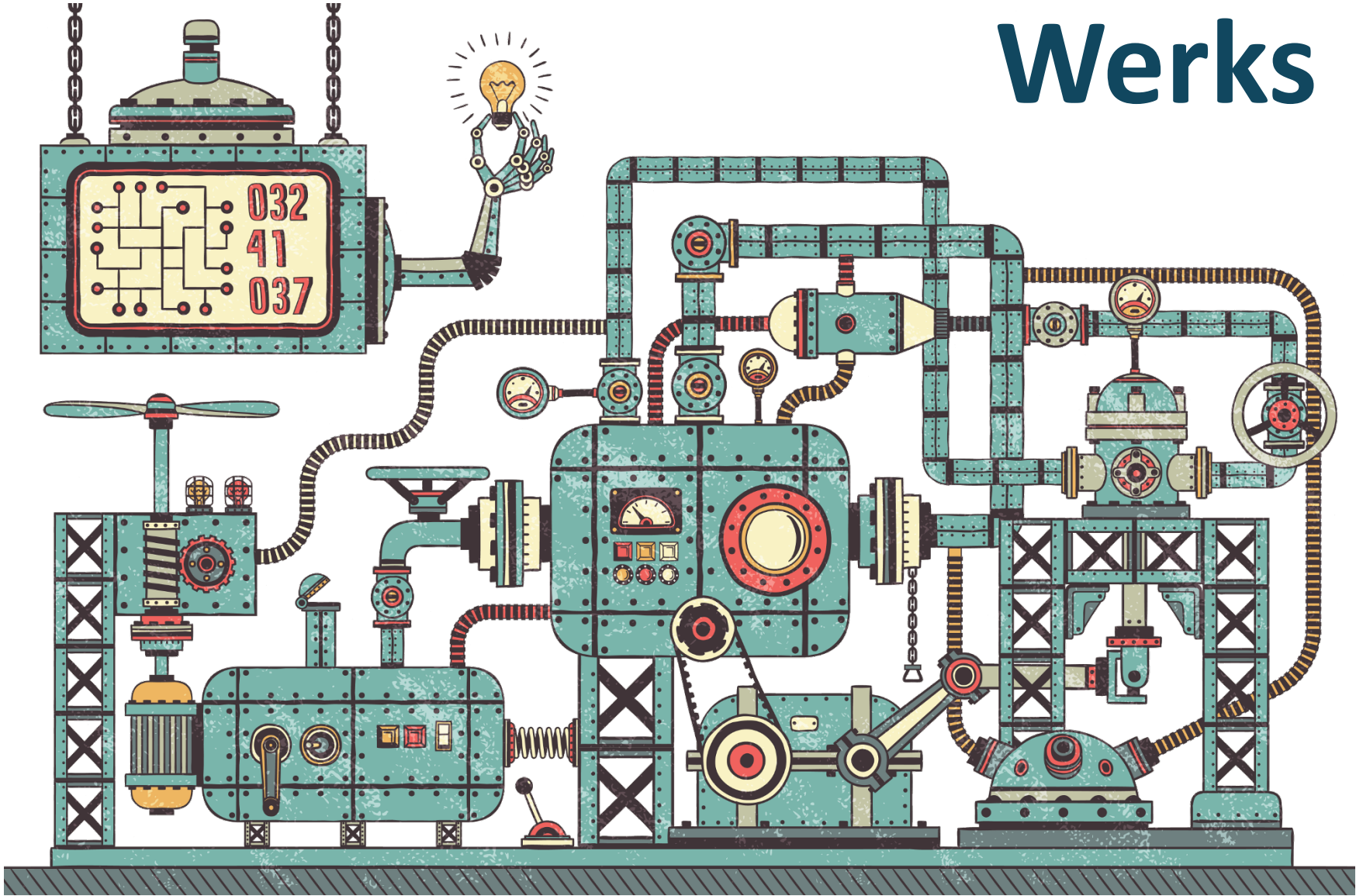
CHECK_MK
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Micro Core News

Sven Panne

Werks



New Feature-Werks

#8350 #8476 #3646 #8541

#8574 #8567 #8642 #8403 #8579 #8674
#8411 #8560 #8327





Werk #8350

Real-time checks

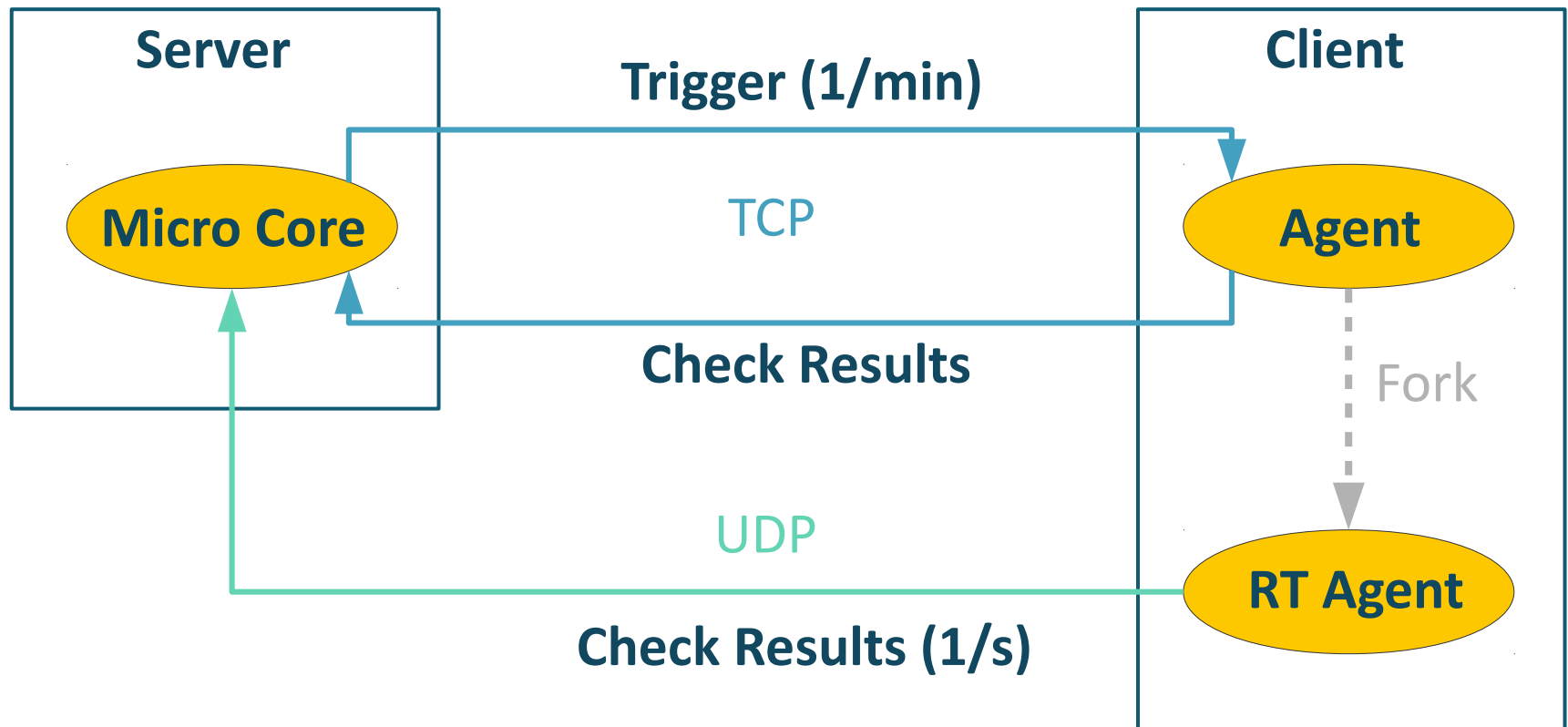


The check interval problem

- 1min is OK, but not always sufficient
- Lowering it can be problematic
 - Connection overhead for TCP/SSH
 - Agents run more often
 - More check results to process
 - Not all checks need it



Solution: 1 second push model via UDP



Security

- Problem: Anybody could push check results to the server
 - Can be a problem, but doesn't have to be (Firewalls, Router, etc.)
- Solution: UDP packets can be encrypted, like normal agent output
- Downside: Slightly higher load on client and server



Configuration

- Rule-based via WATO plus Agent Bakery
- Configurable set of checks
 - Currently CPU/memory-related ones
 - Easily extendable on request
- Configurable agent timeout and server port



Pro-Tips

- Configure a rule for finer-grained RRDs to get more detailed graphs
- Own scripts/programs can easily push check results. Details on request!
- Be careful with alerts and Graphite connections





Werks #8476 #8574 #8567

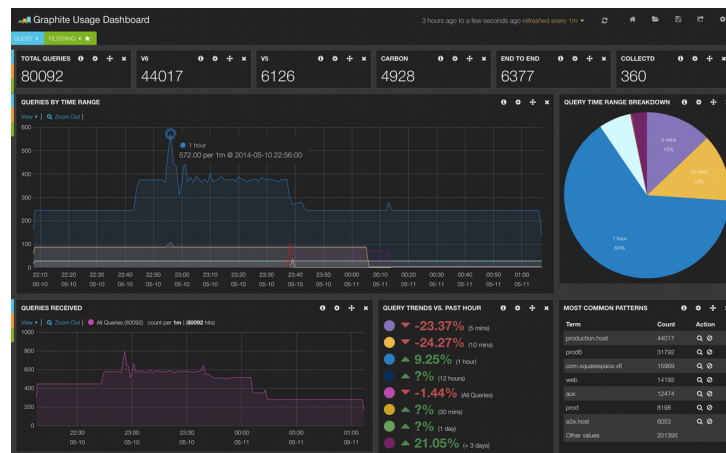


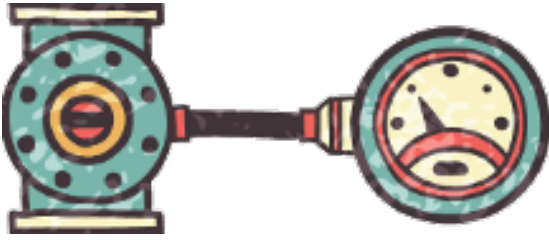
Make the Graphite Interface Great Again!



The Graphite interface

- Simple text-based protocol for metrics
- Basically consists of triples
what/value/when
- Programs/tools with Graphite interface
 - Graphite
 - InfluxDB
 - Grafana





Improvements

New rules for services

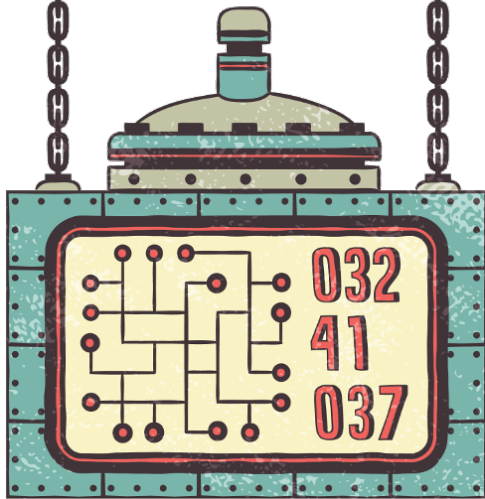
#8476 Sending metrics for a service can be disabled

#8574 Warn/crit/min/max levels can be sent

New option for Graphite connections

#8567 New mangling for metric names: Ugly, but invertible





Werk #8642 Improved Logging



Logging problems

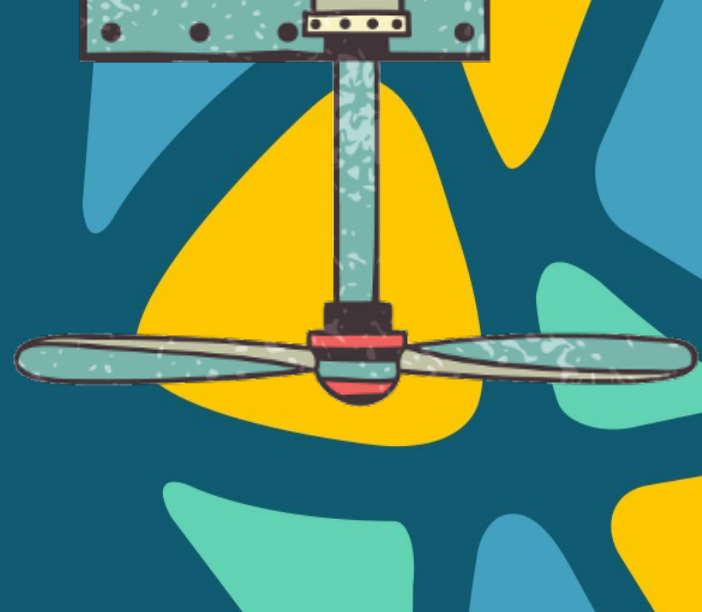
- Low logging levels: Potentially missing interesting information
- High logging levels: Overwhelming amount of messages (several MB/s)
- Inconsistent logging configuration of different parts of the Micro Core



Solution

- Partition logging into 9 separate areas
 - Alerts
 - Downtimes
 - RRD processing...
- Each area has a separate logging level, ranging from *Emergency* to *Debug*
- ToDo: Improve check helper logging

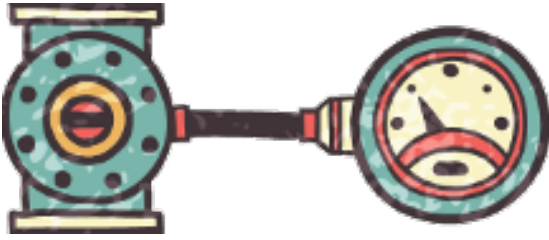




Werks #8403 #3646 #8579 #8674

Livestatus Improvements

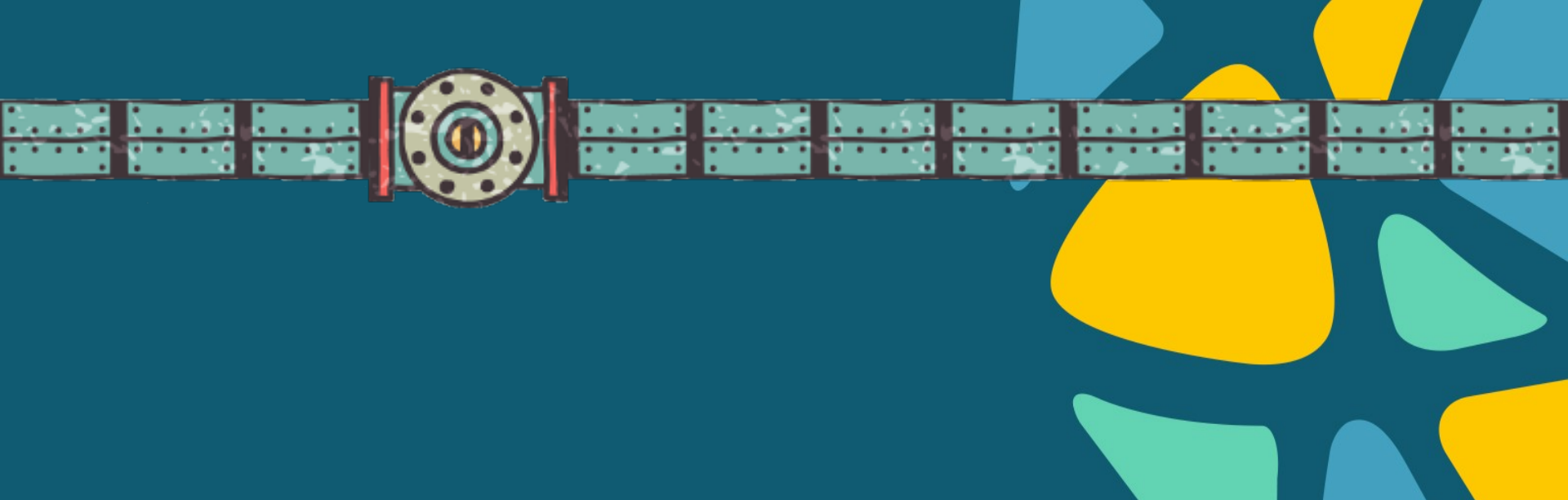




Livestatus improvements

- #8403** Handle large Livestatus queries up to 500MB
- #3646** Improved Livestatus output formats, including correct CSV and Python 3
- #8579** Generalized Livestatus filter operators
- #8674** Improved query capabilities for some list-valued columns





Werks #8541 #8411 #8560 #8327

Bits and Pieces



Miscellaneous Werks

- #8541** Service check timeouts can now be configured per service
- #8411** Optionally ignore TCP RST packets as "host up" indication
- #8560** Output warning message to cmc.log when detecting new open file descriptors after running checks
- #8327** Set HOSTNOTES and SERVICENOTES attributes for notification plugins



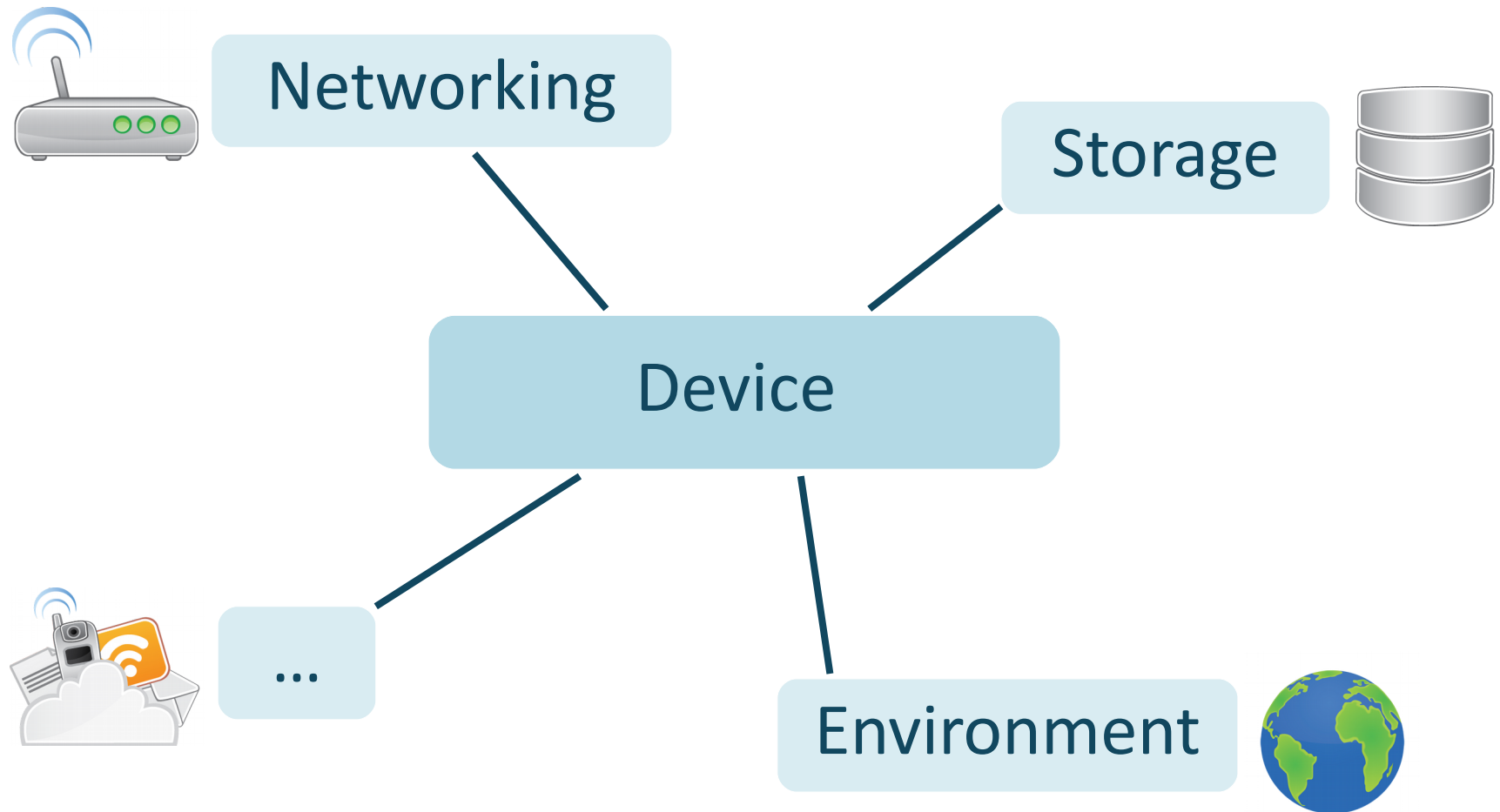
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Checks & Agents

Marcel Arentz & Simon Betz



Devices – Classification



New devices – Environment (1)

- Acme Packet Net-Net (#4525)
- APC Netbotz (#3311)
- Bachmann Bluenet2 Powerrails (#3428)
- Didactum EMS (#3863)
- Eltek Valere USV (#2976)
- EMKA Electronic Locking Modules (#4522)



New devices – Environment (2)

- Gude Power Control (#3913)
 - Intel True Fabric Scale (#3639)
 - Intercept Pro (#3712)
 - Papouch TH2E (#3423)
 - Tinkerforge (#2941)
- ... and more



New devices – Networking & others (1)

- Arbor Networks (#2710)
- Artec Appliance (#2634)
- Aruba WLAN Controller (#2977, #2979)
- Avaya, IP telephony (#4096)
- Barracuda Mail Appliance (#2840)
- Checkpoint Firewall (#2916)



New devices – Networking & others (2)

- Fireeye Appliance (#3403)
 - Infoblox Network Control (#3683)
 - Palo Alto Firewall (#2456)
 - Perle Mediaconverter (#3688)
- ... and more



New applications

- MS-Exchange (#2870)
 - Proxmox Virtual Environment (#3308)
 - Mongo DB (#2985)
 - Skype for Business (#3132)
 - Varnish HTTP Accelerator Statistics (#3184)
- ... and more

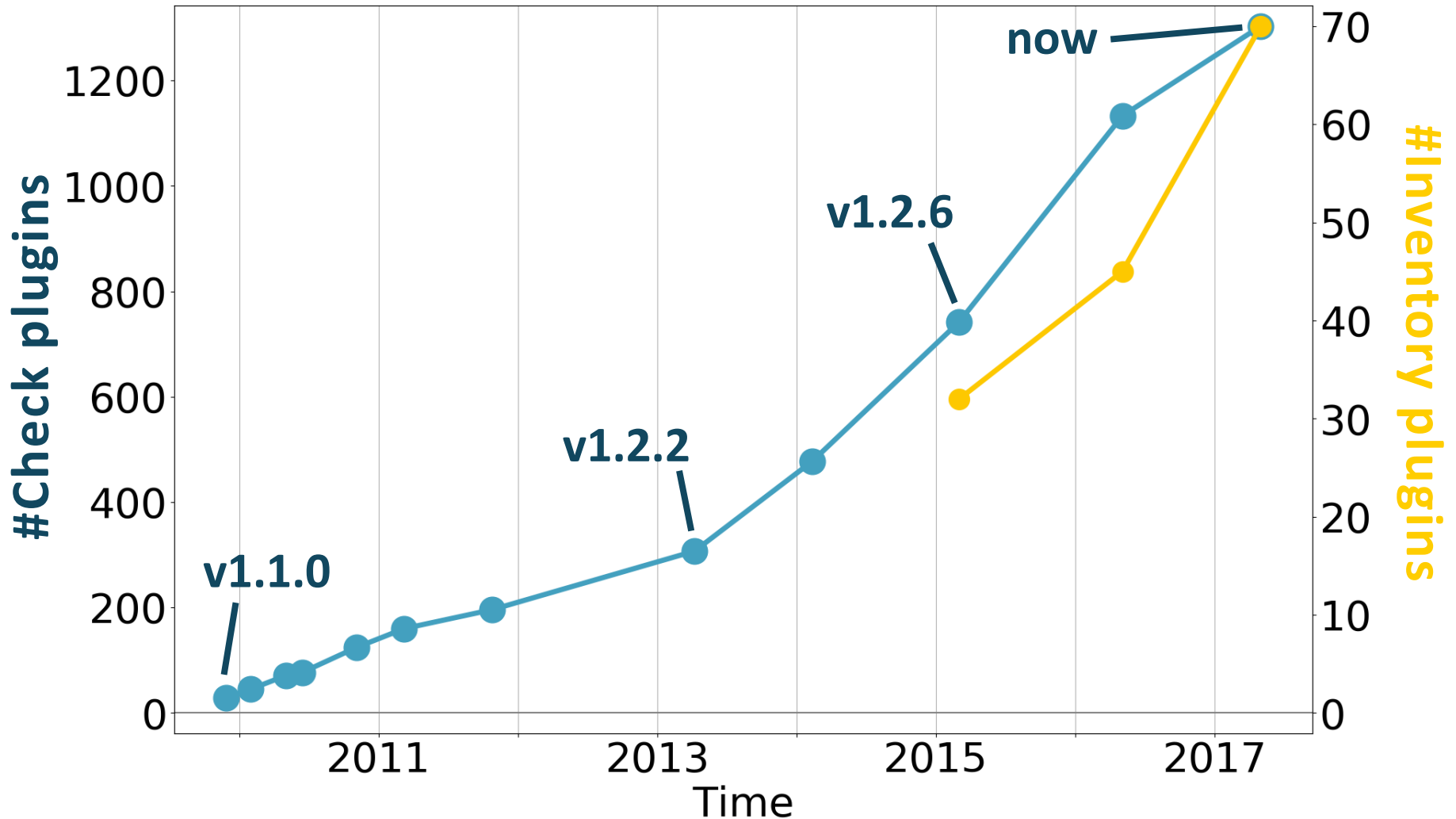


New check plugins



... and many more!

#Plugins



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Check plugin development

Marcel Arentz & Simon Betz

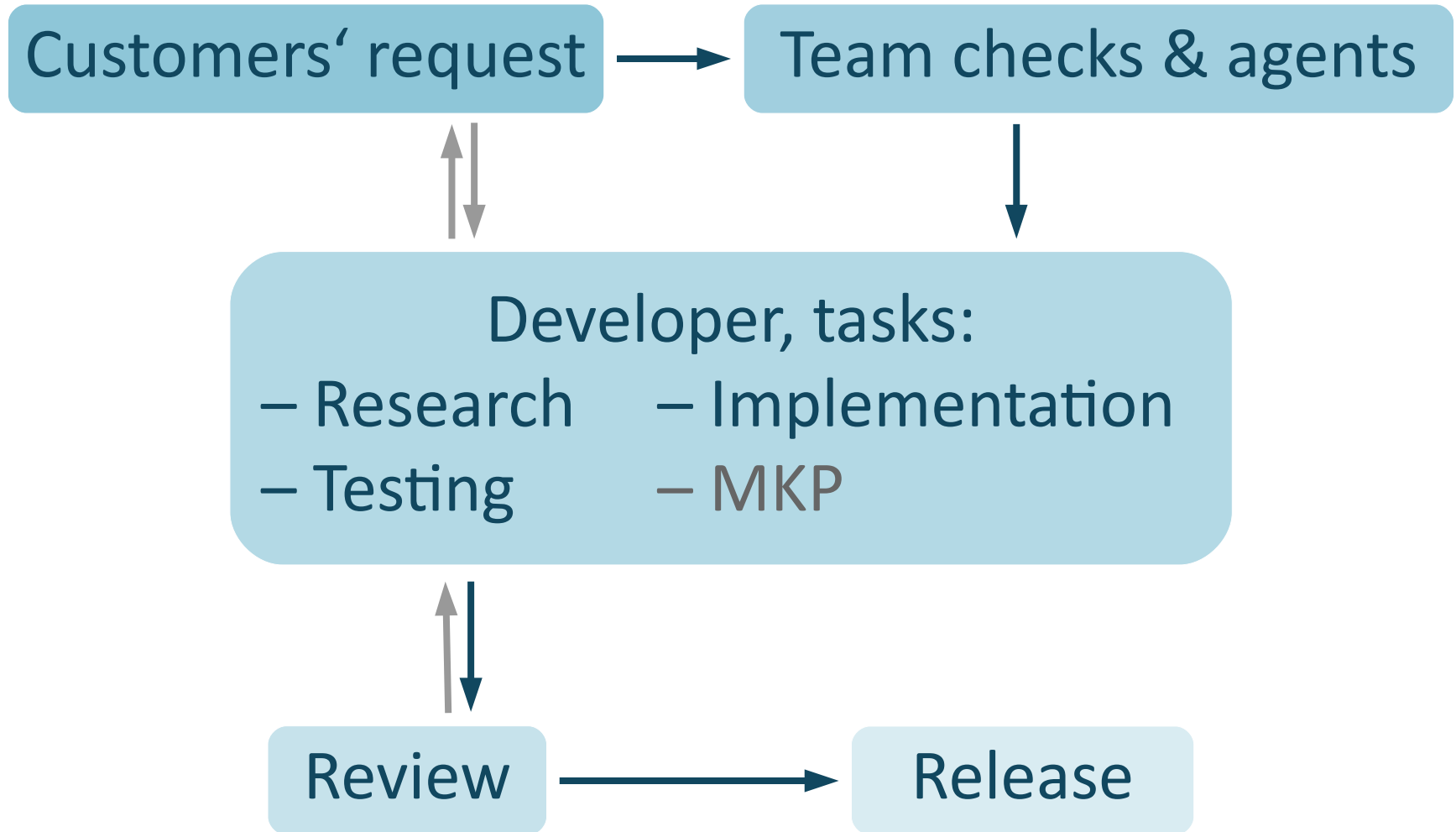


State of affairs

- Additional five to 15 requests per week
- Fully booked until end of June
- Lead time about two months
- 320 feature works during 380 workdays
(since last conference, Oct. 2015)



Development process



We need information about ... (1)

- what should be monitored?
- how to get data?
 - Agent (cmk -d HOST)
 - SNMP (cmk -v --snmpwalk HOST)

Test data absolutely necessary!

- MIBs (SNMP case)



We need information about ... (2)

- WATO configuration?
- metrics?
- cluster-aware?
- backport needed? (extra costs)
- MKP/patch? (if possible)



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Obstacles and difficulties

Marcel Arentz & Simon Betz



General problems

- Commands/OIDs have changed
(stay compatible to older versions)
- Only outdated/no documentation available
- Third party libraries
(eg. Netapp: license required)
- Complex outputs/structures
(Cisco QoS tables)





Werk #4158

SNMP components

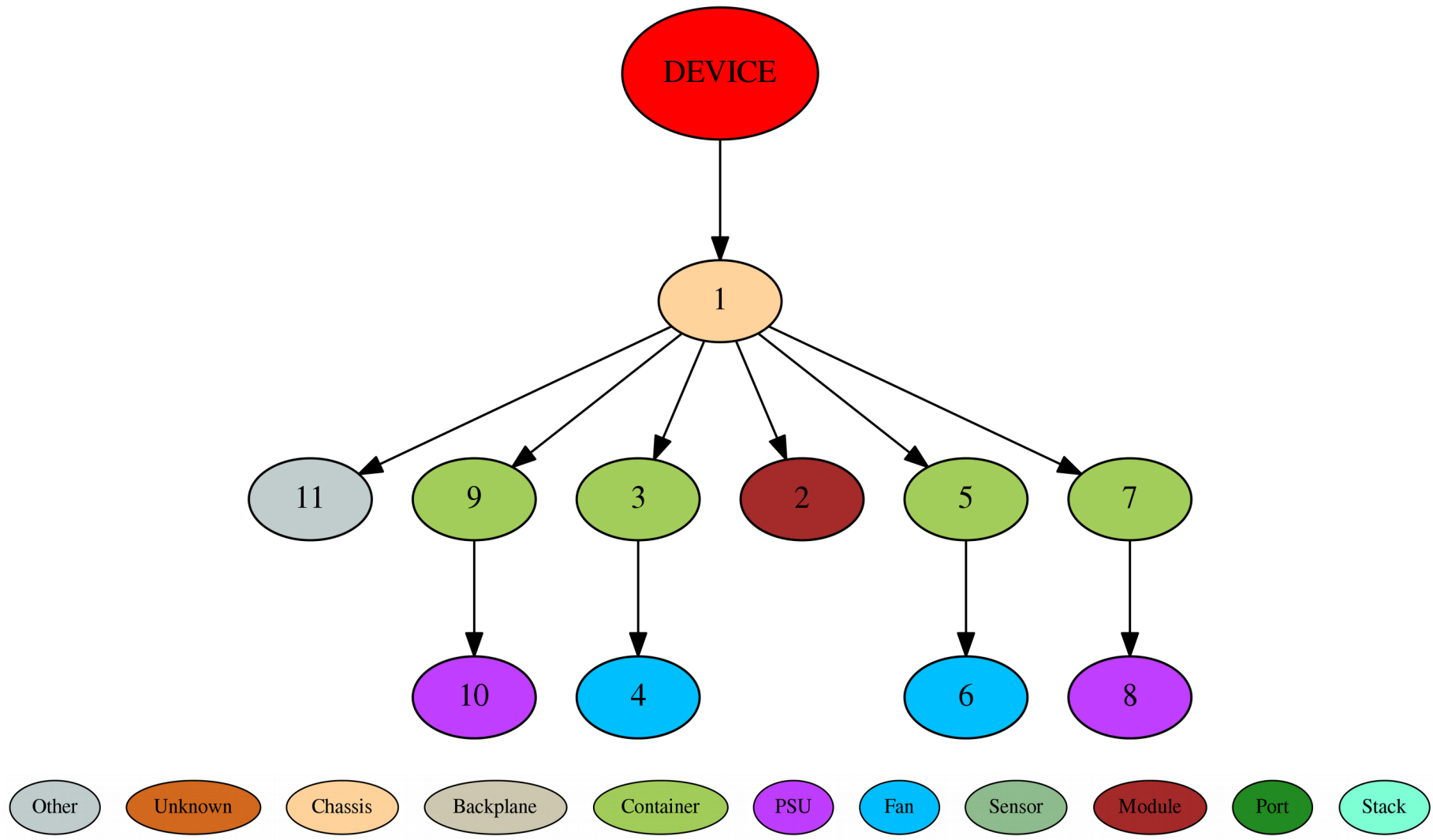
Werk #4158

Inventorize all physical components of arbitrary SNMP devices

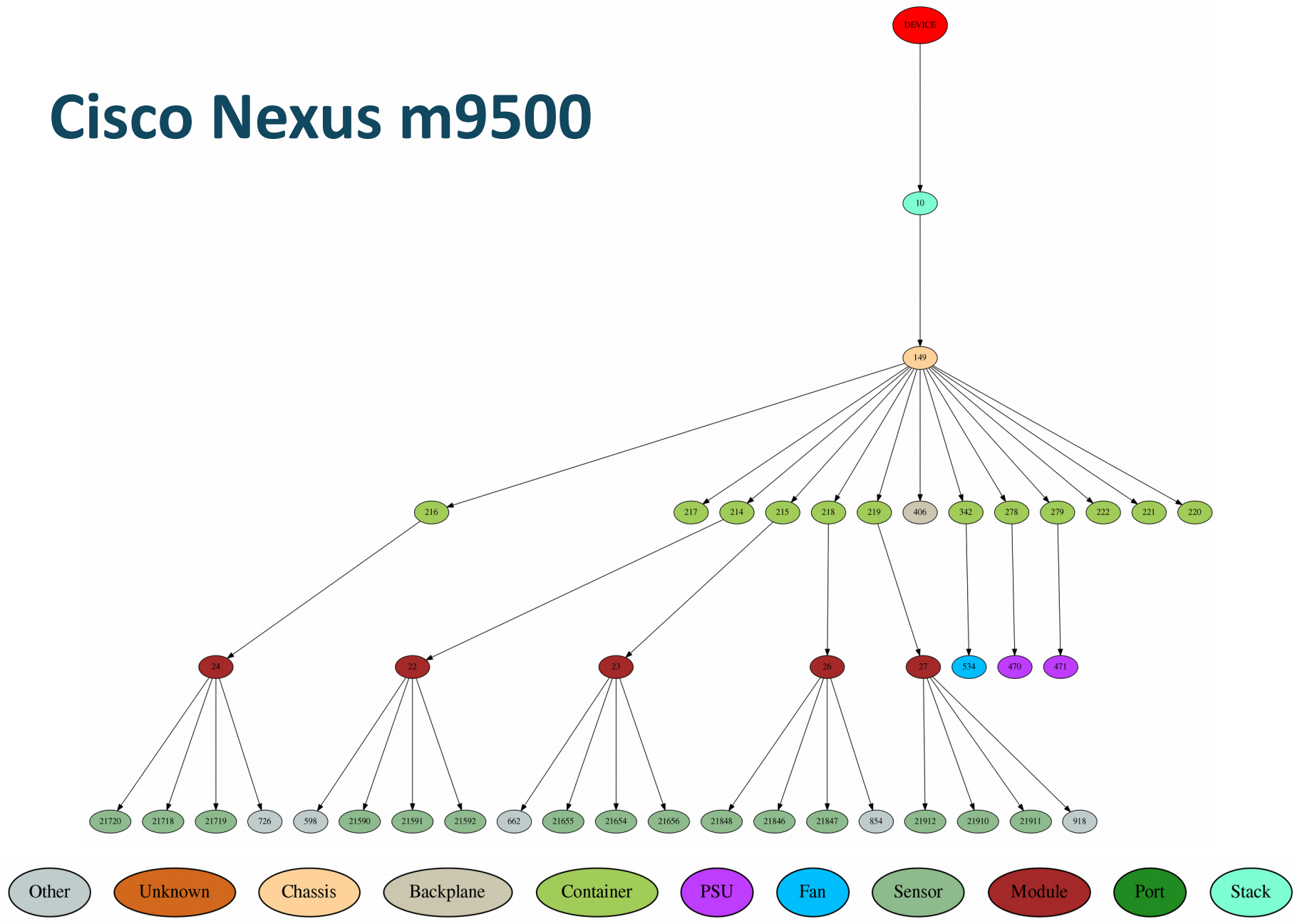
- Fans, sensors, PSUs, modules, ...
(no ports → extra view)
- Data from ENTITY-MIB
(nearly every SNMP device supports that)
- Organized as tree structures



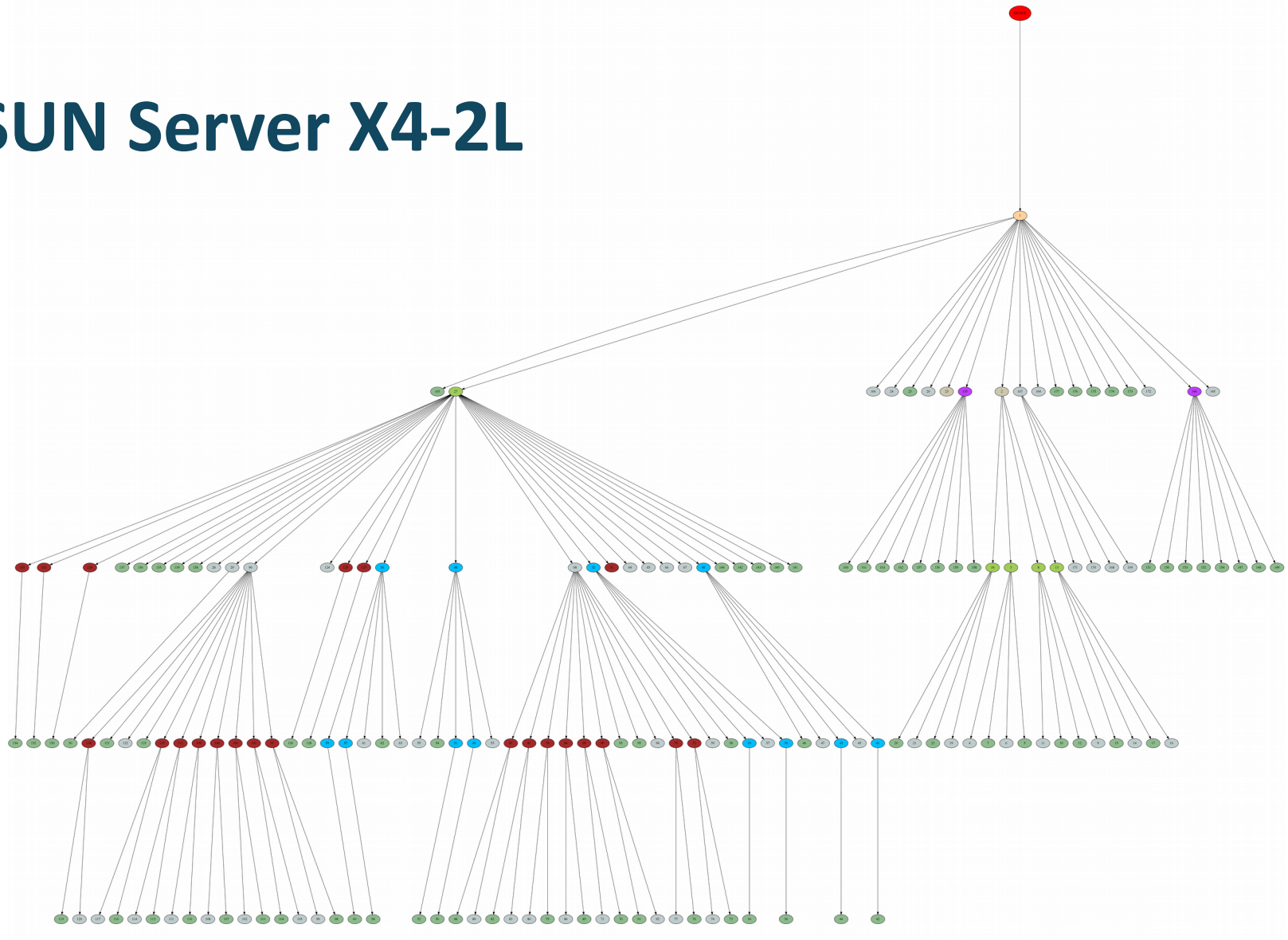
Brocade SAN-Switch



Cisco Nexus m9500



SUN Server X4-2L



Check_Mk HW/SW inventory system

switch-cisco-nexus-m9500

Hardware

Physical Components

Backplanes

Open this table for filtering / sorting

Index	Name	Description	Serial Number	Model Name	Location
406	Backplane	Backplane	FOX1222GAQK	DS-C9509	Chassis (149)

Chassis

Open this table for filtering / sorting

Index	Name	Description	Serial Number	Model Name	Location
149	MDS 9509 (9 Slot) Chassis	MDS 9509 (9 Slot) Chassis	FOX1222GAQK	DS-C9509	Stack (10)

Fans

Open this table for filtering / sorting

Index	Name	Description	Serial Number	Model Name	Location
534	Fan Module-1	Fan Module-1	DCH12120786	DS-9SLOT-FAN	Container (342)

Modules

Open this table for filtering / sorting

Index	Name	Description	Serial Number	Model Name	Location	Bootloader	Firmware	Type
24	1/2/4 Gbps FC Module	1/2/4 Gbps FC Module	JAE11517UOC	DS-X9124	Container (216)			
26	Supervisor/Fabric-2	Supervisor/Fabric-2	JAE1232QYFK	DS-X9530-SF2-K9	Container (218)			
27	Supervisor/Fabric-2	Supervisor/Fabric-2	JAE1232QUWX	DS-X9530-SF2-K9	Container (219)			
22	1/2/4 Gbps FC Module	1/2/4 Gbps FC Module	JAE1239W0PL	DS-X9124	Container (214)			
23	1/2/4 Gbps FC Module	1/2/4 Gbps FC Module	JAE1242XGQQ	DS-X9148	Container (215)			

Power Supplies

Open this table for filtering / sorting

Index	Name	Description	Serial Number	Model Name	Location
470	PowerSupply-1	DS-CAC-3000W	AZS12210NN7	DS-CAC-3000W	Container (278)
471	PowerSupply-2	DS-CAC-3000W	AZS12210NN6	DS-CAC-3000W	Container (279)

Sensors

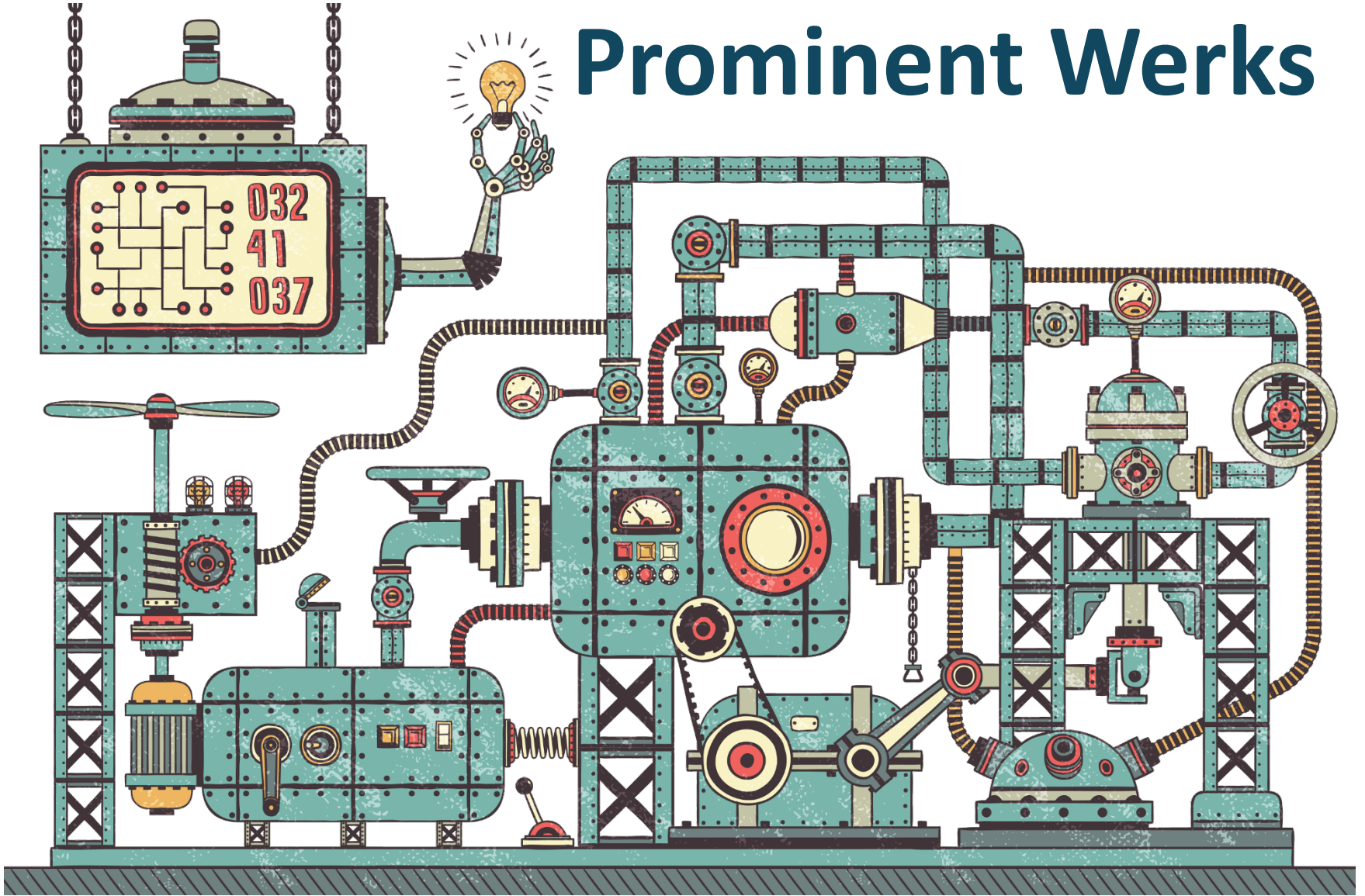
Open this table for filtering / sorting

Index	Name	Description	Serial Number	Model Name	Location
21912	module-6 Intake1	module-6 Intake1			Module (27)
21910	module-6 Outlet1	module-6 Outlet1			Module (27)
21911	module-6 Outlet2	module-6 Outlet2			Module (27)
21848	module-5 Intake1	module-5 Intake1			Module (26)
21846	module-5 Outlet1	module-5 Outlet1			Module (26)
21847	module-5 Outlet2	module-5 Outlet2			Module (26)
21720	module-3 Intake1	module-3 Intake1			Module (24)
21718	module-3 Outlet1	module-3 Outlet1			Module (24)
21719	module-3 Outlet2	module-3 Outlet2			Module (24)
21590	module-1 Outlet1	module-1 Outlet1			Module (22)
21591	module-1 Outlet2	module-1 Outlet2			Module (22)
21655	module-2 Outlet2	module-2 Outlet2			Module (23)
21592	module-1 Intake1	module-1 Intake1			Module (22)
21654	module-2 Outlet1	module-2 Outlet1			Module (23)
21656	module-2 Intake1	module-2 Intake1			Module (23)

System



Prominent Werks



Checks & Agents

#2934

- Reorganized temperature checks
- One rule for all Temperature checks
- Spreading this principle to other checks



Werk #2934

▼ Parameters

- ☐ Upper Temperature Levels
- ☐ Lower Temperature Levels
- ☐ Display values in
- ☐ Override unit of sensor
- ☐ Interpretation of the device's own temperature status
- ☐ Trend computation



Checks & Agents

#4026

#4116







#3027

- Logs on Windows: Common configuration
- Oracle on Windows: Oracle Wallet support
- MTR plugin: detailed connection information



Werk #3027

Der Master, heute

State	Service	Icons	Status detail	Age	Checked	Perf-O-Meter
OK	Mtr to mathias-kettner.de	 	OK - Number of Hops: 8, Packet loss 0.0%, Round trip average 27.7ms, Standard deviation 7.1ms	26 m	59.3 s	0% / 27.7 ms
OK	Mtr to www.google.com	 	OK - Number of Hops: 10, Packet loss 0.0%, Round trip average 34.6ms, Standard deviation 3.5ms	26 m	59.3 s	0% / 34.6 ms
OK	Mtr to www.hsx.vn	 	OK - Number of Hops: 15, Packet loss 10.0% WARN (Levels at 10%/25%), Round trip average 311.6ms CRIT (Levels at 150ms/250ms), Standard deviation 15.0ms	4 m	59.4 s	10% / 312 ms





































Checks & Agents

#4195

- Supporting new HPE 3PAR Storage
- Information about CPGs, Virtual Volumes, etc
- Mostly compatible with known rulesets



Werk #4195

storage-3par-api-1						
State	Service	Icons	Status detail	Age	Checked	Perf-O-Meter
OK	Check_MK	 	Agent version (unknown), execution time 0.0 sec	106 m	27.7 s	19.0 ms
OK	Check_MK Discovery		no unmonitored services found, no vanished services found	30.7 s	30.7 s	
OK	Check_MK HW/SW Inventory		OK - found 6 entries	106 m	28.7 s	
OK	3PAR default-3par		OK - Model: HP_3PAR8400, Version: 3.2.2.530, Serial number: C134G42WE1E, Online nodes: 4/4	48 m	27.7 s	
OK	CPG default1		OK - Normal, 21 VVs	106 m	27.7 s	
OK	CPG default1 SAUsage	 	OK - 26.9% used (21.50 of 80.00 GB), trend: 0.00 B / 24 hours	106 m	27.7 s	26.9%
OK	CPG default1 SDUsage	 	OK - 0.229% used (35.88 GB of 15.31 TB), trend: 0.00 B / 24 hours	106 m	27.7 s	0.229%
CRIT	CPG default1 UsrUsage	 	CRIT - 100.0% used (19.39 of 19.39 TB), (warn/crit at 80.00/90.00%), trend: 0.00 B / 24 hours	106 m	27.7 s	100%
OK	Capacity SSD	 	OK - 46.0% used (51.44 of 111.72 TB), trend: 0.00 B / 24 hours	106 m	27.7 s	46%
OK	Capacity all	 	OK - 46.0% used (51.44 of 111.72 TB), trend: 0.00 B / 24 hours	106 m	27.7 s	46%
OK	Host hypervisor_a02		OK - ID: 20, OS: VMware(ESXi), FC Paths: 16	61 m	27.7 s	
OK	Host hypervisor_b02		OK - ID: 19, OS: VMware(ESXi), FC Paths: 16	61 m	27.7 s	
OK	Host server_a01		OK - ID: 2, OS: Windows2012/WS2012R2, FC Paths: 16	61 m	27.7 s	
OK	Host server_e01		OK - ID: 8, OS: RHELlinux(5.x,6.x), FC Paths: 16	48 m	27.7 s	
OK	Port FC Node 0 Slot 0 Port 1		OK - READY, portWWN: 20010012HG45QLT2, Mode: INITIATOR	106 m	27.7 s	
OK	Port FC Node 0 Slot 2 Port 1		OK - READY, portWWN: 20210012HG45QLT2, Mode: TARGET, Failover: NONE	106 m	27.7 s	
OK	Port FC Node 1 Slot 0 Port 1		OK - READY, portWWN: 21010012HG45QLT2, Mode: INITIATOR	106 m	27.7 s	
OK	Port FC Node 1 Slot 2 Port 1		OK - READY, portWWN: 21210012HG45QLT2, Mode: TARGET, Failover: NONE	106 m	27.7 s	
OK	Port SAS Node 0 Slot 1 Port 1		OK - Label: DP-1, READY, portWWN: 50002AC01101BFD5, Mode: INITIATOR	106 m	27.7 s	
OK	Port SAS Node 1 Slot 1 Port 1		OK - Label: DP-1, READY, portWWN: 50002AC11101BFD5, Mode: INITIATOR	106 m	27.7 s	
OK	Volume default_a01	 	OK - 69.9% used (2.79 of 4.00 TB), trend: 0.00 B / 24 hours, Compact: 1.4, Type: TPVV, WWN: 60002AC0000000000000000B0001BFD5	48 m	27.7 s	69.9%
OK	Volume default_a02.r	 	OK - 74.7% used (3.73 of 5.00 TB), trend: 0.00 B / 24 hours, Compact: 1.3, Type: TPVV, WWN: 60002AC0000000000000000BC0001BFD4	48 m	27.7 s	74.7%
OK	Volume default_b01	 	OK - 0.0% used (0.00 B of 4.00 TB), trend: 0.00 B / 24 hours, Compact: 1766022.7, Type: TPVV, WWN: 60002AC0000000000000000F20001BFD5	48 m	27.7 s	0%
OK	Volume default_d03	 	OK - 25.1% used (25.08 of 100.00 GB), trend: 0.00 B / 24 hours, Compact: 4.0, Type: TPVV, WWN: 60002AC000000000000000070001BFD5	48 m	27.7 s	25.1%



HW/SW Inventory

#3319

- HW/SW Inventory is not activated by default
- Configurable state of failing check:

(Check can be OK in case of unreachable Host)



HW/SW Inventory

#3585

- API over HTTP for exporting full inventory
- Request single/multiple hosts or information
- Different output formats: json, python, xml



Werk #3585

```
"software": {
  "applications": {
    "check_mk": {
      "cluster": {
        "is_cluster": false
      },
      "inventory": {
        "oldest_section": 1493567030,
        "sections": [
          {
            "age": 1493567030,
            "section": "dmidecode",
            "until": 1493578359
          },
          {
            "age": 1493567030,
            "section": "lnx_packages",
            "until": 1493578359
          },
          {
            "age": 1493567030,
            "section": "lnx_cpuinfo",
            "until": 1493578359
          },
          {
            "age": 1493567030,
            "section": "lnx_video",
            "until": 1493578359
          },
          {
            "age": 1493567030,
            "section": "lnx_ip_r",
            "until": 1493578359
          },
          {
            "age": 1493567030,
            "section": "lnx_distro",
            "until": 1493578359
          }
        ]
      }
    }
  }
}
```

```
▼<packages type="list">
  ▼<item type="dict">
    <name type="str">acl</name>
    <package_version type="str">2</package_version>
    <package_type type="str">deb</package_type>
    <summary type="str"/>
    <version type="str">2.2.52</version>
    <arch type="str">x86_64</arch>
  </item>
  ▼<item type="dict">
    <name type="str">acpi</name>
    <package_version type="str">1</package_version>
    <package_type type="str">deb</package_type>
    <summary type="str"/>
    <version type="str">1.7</version>
    <arch type="str">x86_64</arch>
  </item>
  ▼<item type="dict">
    <name type="str">acpi-support-base</name>
    <package_version type="str">6</package_version>
    <package_type type="str">deb</package_type>
    <summary type="str"/>
    <version type="str">0.142</version>
    <arch type="str">all</arch>
  </item>
  ▼<item type="dict">
    <name type="str">acpid</name>
    <package_version type="str">2</package_version>
    <package_type type="str">deb</package_type>
    <summary type="str"/>
    <version type="str">1:2.0.23</version>
    <arch type="str">x86_64</arch>
  </item>
</packages>
```



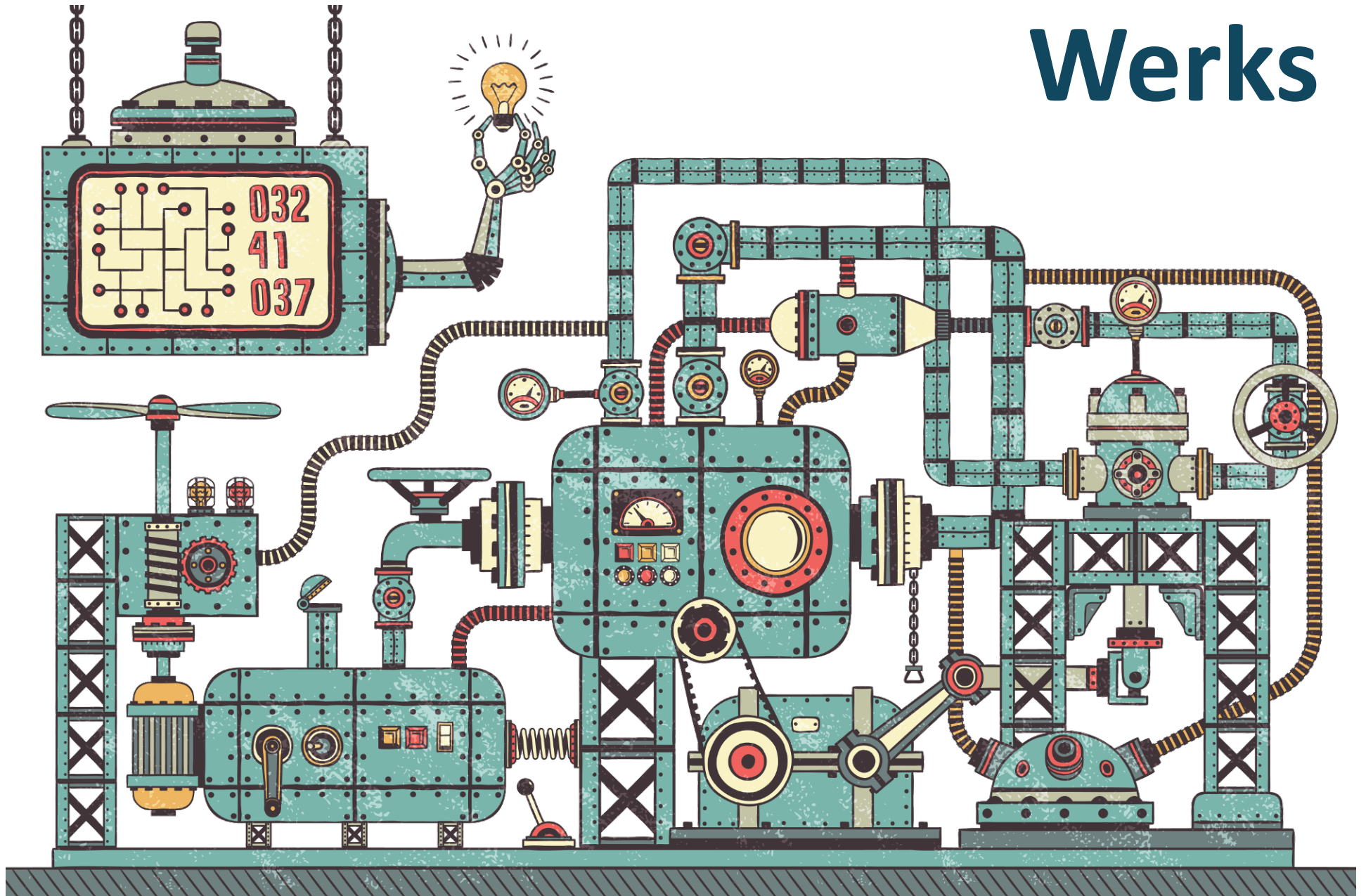
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News in the Core System

Konstantin Büttner



Werks



New Feature-Werks

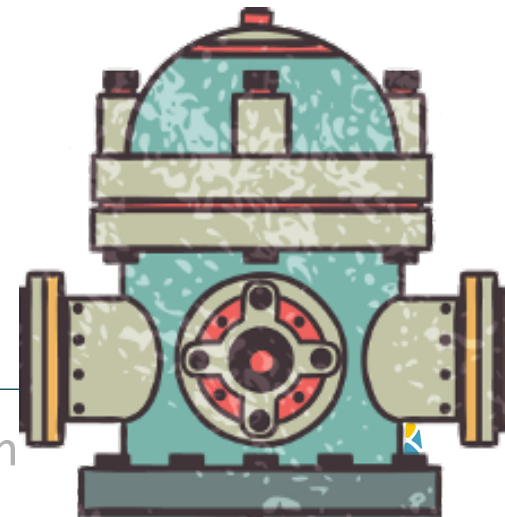
#2771 #8360 #3342 #3155 #3114

#3039 #2881 #3721 #3342 #3414 #3993
#3531 #3806 #3580 #3853 #3155 #4036



Werk #2771

Errors in Check_MK
configuration do not
prevent the core
from being restarted
anymore



Warning instead of preventing activation



Activate pending changes

omdadmin (admin) 14:14

[Main Menu](#) [Site Configuration](#) [Audit Log](#)



Currently there are no changes to activate.

Activation status

Actions	Site	Status	Version	Changes	Last result
 	Der Master	online	2017.04.26	0	<div>State: Activated. Started at: 14:14:37. Finished at: 14:14:37. Warnings:<ul style="list-style-type: none">check_mk: The following host names have duplicates: heute. This might lead to invalid/incomplete monitoring for these hosts.</div>

Pending changes

No entries.

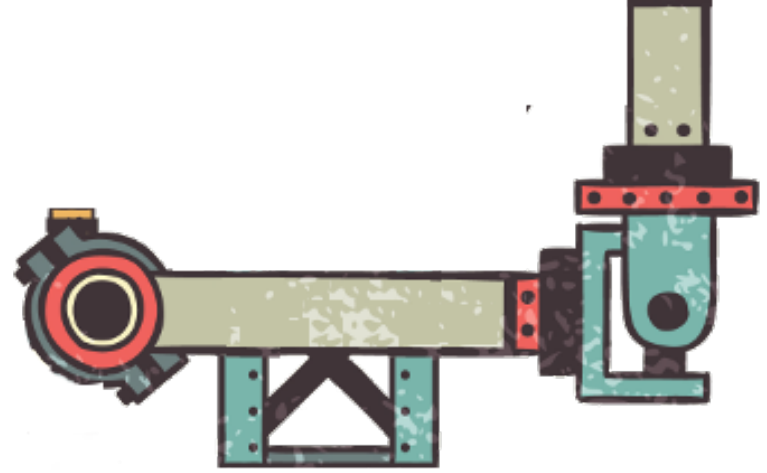
 



Wait, this doesn't seem new?

- Implemented for CMC in July 2015 (Werk #8294)
- Now also for other cores (Nagios, Icinga)





Werk #8360

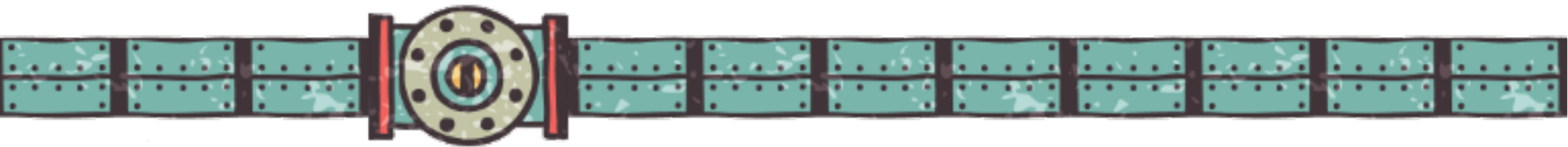
Recurring downtimes
now for nth day of
month and xth
weekday



Examples

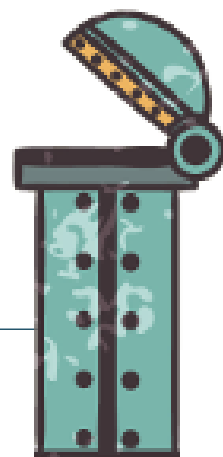
- Have a downtime repeat every
 - 23rd of the month
 - Second-to-last Tuesday of the month
 - First monday
- Counting backwards from the end of the month currently only for weekdays





Werk #3155

Implemented dual
monitoring for systems
with management
boards (like HP iLO)



Situation before

- No support for devices with multiple IP addresses
- Want to monitor hardware information via management board SNMP? Better create a second host in Check_MK
- ☹️



Situation now

Properties of host heute

omdadmin (admin) 17:03

Folder

Parameters

Update DNS Cache

Status

Rename host

Services

Delete host

Monitoring Agent

Diagnostics

General Properties

Basic settings

Host tags

Management Board

Protocol

Address

SNMP credentials

empty (Default value)

empty (Default value)

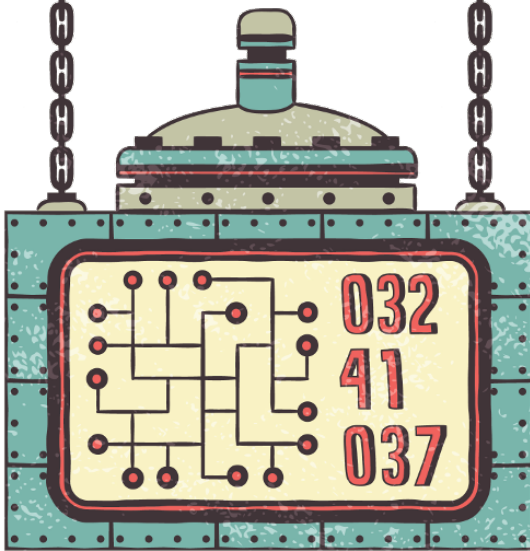
none (Default value)

Save & go to Services

Save & Finish

Save & Test





Werk #3114
Linux and
Windows
Agent can
now encrypt
their output



Situation before

Encryption possible through alternative datasource programs but:

- Tedious and difficult
- Lacking bakery integration



Situation now

Edit rule: Encryption

omdadmin (admin) 14:15

✖ Abort

Control encryption of data sent from agent to host.

▶ Rule Options

▼ Value

Encryption secret

.....

Please note that Check_MK needs this password in clear text during normal operation and thus stores it unencrypted on the Check_MK server.

Encryption for Agent

Enforce (drop unencrypted data) ▼

Encryption for Realtime Updates

Enforce (drop unencrypted data) ▼

▶ Conditions

Save



Situation now

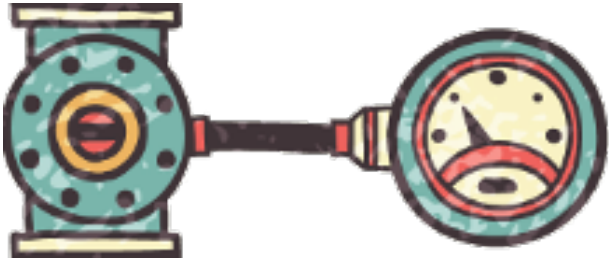
- Single rule controls both agent bakery and server-side enforcement
- Configurable to accept only clear-text, only encrypted or both
- Data for real-time checks configurable in the same ruleset



Situation now

Services of Host heute							27 rows	omdadmin (admin)	14:16		
<div> 2 30s </div> <div> Export as PDF </div> <div> Availability </div> <div> Combined graphs </div> <div>...</div>											
heute											
State	Service	Icons	Status detail	Age	Checked	Perf-O-Meter					
CRIT	Check_MK		Cannot get data from TCP port 127.0.0.1:6556: Agent output is plaintext but encryption is enforced by configuration, execution time 3.5 sec	6 m	29.5 s	3.50 s					
WARN	Check_MK Discovery		3 unmonitored services (livestatus_status:1, mknotifyd:1, omd_apache:1) WARN , no vanished services found	5 m	5 m						
OK	Check_MK HW/SW Inventory		OK - found 23 entries	34 m	37.5 s						
CRIT	APT Updates		CRIT - 75 normal updates WARN , 14 security updates (chromium-browser-l10n, libnspr4, libnss3-nssdb, libnss3-1d, libnss3, chromium-browser, chromium-codecs-ffmpeg-extra, ghostscript, ghostscript-x, libgs9-common, libgs9, libxslt1.1, mysql-common, libmysqlclient20) CRIT	34 m	6 m	75/14					
OK	CPU load		OK - 15 min load 0.32 at 8 Cores (0.04 per Core)	34 m	6 m	0.350					
OK	CPU utilization		OK - user: 2.7%, system: 0.7%, wait: 0.1%, steal: 0.0%, guest: 0.0%, total: 3.6%	34 m	6 m	3.6%					
CRIT	ClusterFoo		CRIT - Das ist der neue Infotext	34 m	6 m						
			OK - Utilization: 0.5% Read: 22.06 kB/s Write: 1.57 MB/s Average Wait: 8.96 ms								





Further Werks (1)

- #3039** Added more useful debugging infos to crash reports
- #2881** Automatically restart core instead of reload after changes in local check plugins
- #3721** Host macros are now replaced in datasource program command lines
- #3342** MKP: local/lib and local/bin of sites can now be packed
- #3414** New declarator BINARY(...) for OIDs – returning a list of byte values



Further Werks (2)

- #3531 Reduced Check_MK helper size for certain dists/python versions
- #3806 Sped up „Activate Changes“
- #3580 The macro \$HOSTNAME\$ is now available for host checks which are based on service states
- #3853 cmk --list-tag can now also list offline hosts
- #4036 Measurement of time used by Check_MK now includes time waited for agent
- #3993 Some minor performance improvements during config generation



CHECK_MK
CONFERENCE #3

New WATO Web-API features

Sven Ruess



Why WATO Web-API?

- Integration of CMDBs
- Automated monitoring management
- Automated lifecycle management
- Standard interface for automated actions

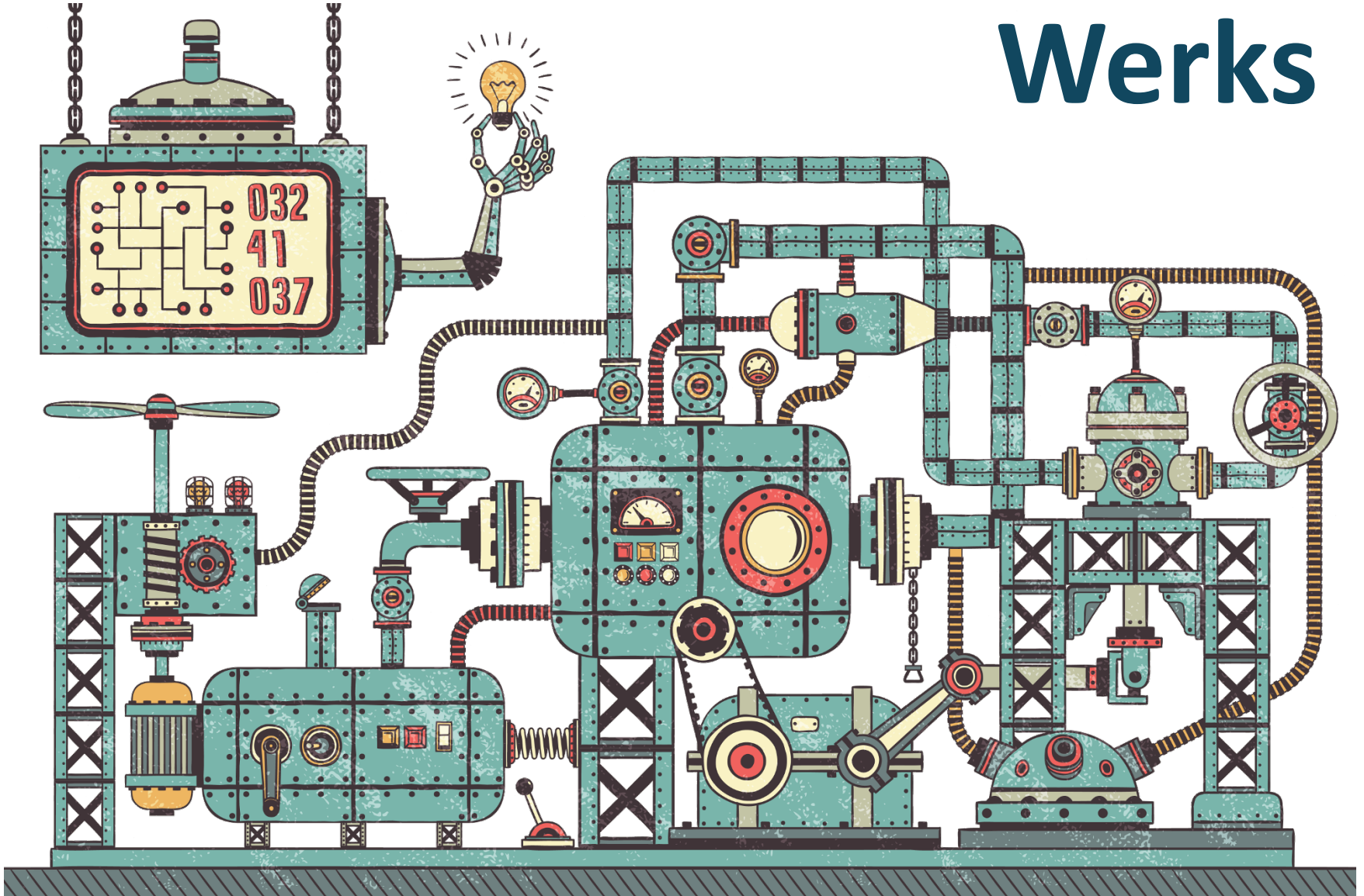


Situation in 1.2.8

- Add, edit, delete host
- Query attributes of host or hosts
- Service discovery of host
- Bake agents
- Activate changes



Werks





Werk #4023

Local user management





Werk #4018

Management of groups

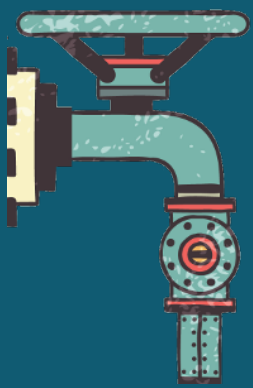




Werk #3805

Support cluster





Werk #2785

Input validation



Upcoming features



- Configuration of WATO rules
- Configuration of Host Tags
- Configuration of folders
- Configuration of distributed monitoring sites
- Configuration of Customers (Managed Services Edition)



CHECK_MK
CONFERENCE #3



Thanks for listening!

YOUR FEEDBACK IS WELCOME