New in 2.3:

Powerful & efficient monitoring of web services

Marcel Arentz
Senior Product Manager & Team Lead Knowledge
Checkmk GmbH

Monitoring web services with Checkmk

check_http

Availability
Do the services respond?

✓

Performance
How is the response quality?

✓

Functionality
Does the system provide the expected functionality?

✓
basic

Checkmk
Conference

But, it is missing some features...

checkmk Forum

Check_http2 Support ✏️

🟦 General

CoLa F. L.

Hello,

with the current "check_http" no HTTP/2 can be checked (TIMEOUT), with "check_curl" you don't get clean performance data.

check_http: a plugin by monitoring-plugins.org
Workflow to fix things

Bug discovered? → **Raise issue on monitoring-plugins**

External process at monitoring-plugins or nagios-plugins

After weeks or months: included in a Checkmk release

The solution space

Use Nagios Plugins

Use another plugin
(e.g. check_curl)

Participate as
contributor

Checkmk
Conference

The solution space

Use Nagios Plugins
Use another plugin (e.g. check_curl)
Participate as contributor

➡️ 🔒 No direct bug fixes or new features

Checkmk
Conference

The solution space

Use Nagios Plugins

Use another plugin (e.g. check_curl)

Participate as contributor

➡️ 🔒 No direct bug fixes or new features

Implement the plugin ourselves

➡️ You get bug fixes faster

You get a service output in Checkmk style

You get new features

Checkmk
Conference

Rule   **Related**   **Display**   **Help**

⌄ Value

HTTP web service endpoints to monitor (required)

Service name

Prefix

[Use "HTTP(S)" as service name prefix ⌄]

Name (required)

[My service name]

URL

[https://subdomain.domain.tld:port/path/to/filename?parameter=value#anchor]

☐ Individual settings to use for this endpoint

[**Add new endpoint**]

Standard settings for all endpoints
☐ Connection buildup

Multiple services per rule

New configuration design

8

Add rule: Check HTTP web service

Monitor

Customize

Setup

Help

Rule   **Related**   **Display**   **Help**

Value

HTTP web service endpoints to monitor (required)

Service name

Prefix	Name (required)
Use "HTTP(S)" as service name prefix ▾	My service name

URL

https://subdomain.domain.tld:port/path/to/filename?parameter=value#anchor

☐ Individual settings to use for this endpoint

Add new endpoint

Standard settings for all endpoints
☐ Connection buildup

Easy service name configuration

New configuration design

10

9

Rule   **Related**   **Display**   **Help**   ⌄   ✓   ✕   ⬆

⌄ **Value**

HTTP web service endpoints to monitor **(required)**

Service name

Prefix

Use "HTTP(S)" as service name prefix   ⌄

Name **(required)**

My service name

⇕ ✕

URL

https://my.domain.tld:8443/path/file.html?arg=example

☐ Individual settings to use for this endpoint

Add new endpoint

Standard settings for all endpoints
☐ Connection buildup

Complete URL in one single field
New configuration design

Monitor

Customize

Setup

Help

Rule   **Related**   **Display**   **Help**

∨ Value

HTTP web service endpoints to monitor **(required)**

Service name

Prefix

Use "HTTP(S)" as service name prefix ▾

Name **(required)**

My service name

URL

https://$HOSTNAME$:$HOST_CUSTOMPORT$/path/file.html?arg=example

☐ Individual settings to use for this endpoint

Add new endpoint

Standard settings for all endpoints
    ☐ Connection buildup

Macros supported for flexible rules
New configuration design

Monitor

Customize

Setup

Help

checkmk

11

Add rule: Check HTTP web service

Setup > Services > HTTP, TCP, Email, ... > Check HTTP web service > Add rule: Check HTTP web serv

Rule   **Related**   **Display**   **Help**

URL

https://subdomain.domain.tld:port/path/to/filename?parameter=value#anchor

☐ Individual settings to use for this endpoint

Add new endpoint

Standard settings for all endpoints
☐ Connection buildup
☐ Response time
☐ Status code
☐ Certificate validity
☐ How to handle the document
☐ Search for strings

Common settings for all endpoints
New configuration design

Add rule: Check HTTP web service

Rule   **Related**   **Display**   **Help**

URL

https://my.domain.tld:8443/path/file.html?arg=example

✖ Individual settings to use for this endpoint

☐ Connection buildup

✖ Response time

Fixed levels ▾

Warning at   0   s   100   ms

Critical at   0   s   200   ms

☐ Status code

☐ Certificate validity

☐ How to handle the document

☐ Search for strings

Overrides for individual endpoints
New configuration design

10

Add rule: Check HTTP web service

Monitor

Customize

Setup

Help

Rule   **Related**   **Display**   **Help**

URL

https://my.domain.tld:8443/path/file.html?arg=example

✖ Individual settings to use for this endpoint

☐ Connection buildup

✖ Response time

No levels ▾

Do not impose levels, always be OK

☐ Status code

☐ Certificate validity

☐ How to handle the document

☐ Search for strings

Overrides for individual endpoints
New configuration design

10

Monitor

Customize

Setup

Help

Add rule: Check HTTP web service

Rule   **Related**   **Display**   **Help**   ⌄   ✓   ✗   ↑

✖ Individual settings to use for this endpoint

☐ Connection buildup

☐ Response time

☐ Status code

✖ Certificate validity

Fixed levels ▼

Warning below   40   days

Critical below   20   days

☐ How to handle the document

☐ Search for strings

Availability & certificate in a single service
New configuration design

10

15

Add new endpoint

Much more helpful and simpler summary ...

munich

Host	State	Service	Icons	Summary	Age	Checked	Perf-O-Meter
checkmk.com	OK	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK			
forum.checkmk.com	OK	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK			

No information overload
Simple summary, if OK

Checkmk
Conference

Much more helpful and simpler summary …

munich

Host	State	Service	Icons	Summary	Age	Checked	Perf-O-Meter
checkmk.com	OK	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK			
forum.checkmk.com	OK	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK			
muenchen.de	WARN	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK, Server certificate validity: 36 days (warn/crit below 40 days/20 days) **WARN**			
grasbrunn.de	CRIT	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK, Response time: 0.489 seconds (warn/crit at 0.1 seconds/0.2 seconds) **CRIT**			

No information overload
Simple summary, if OK

Focus on relevant information
Only alert parameters visible

checkmk

Monitor

Customize

Setup

Checkmk Conference

16

Much more helpful and simpler summary …

munich

Host	State	Service	Icons	Summary	Age	Checked	Perf-O-Meter
checkmk.com	OK	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK			
forum.checkmk.com	OK	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK			
muenchen.de	WARN	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK, Server certificate validity: 36 days (warn/crit below 40 days/20 days) WARN			
grasbrunn.de	CRIT	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK, Response time: 0.489 seconds (warn/crit at 0.1 seconds/0.2 seconds) CRIT			
google.com	WARN	HTTPS Website	☰ 📈	Version: HTTP/2.0, Status: 200 OK, Response time: 0.153 seconds (warn/crit at 0.1 seconds/0.2 seconds) WARN, Expected string in body: fastest web search (not found) WARN			
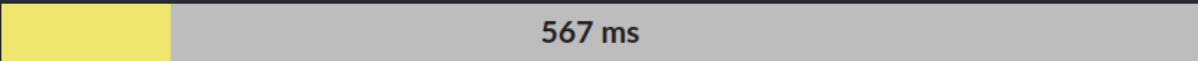
No information overload
Simple summary, if OK

Focus on relevant information
Only alert parameters visible

Know what went wrong
Visibility for multiple alerts

checkmk

Monitor

Customize

Setup

Checkmk Conference

16

Much more helpful and simpler summary ...

… and much better service details

Service state	OK
Summary	Version: HTTP/2.0, Status: 200 OK
Details	URL to test: 🌐 Method: GET Version: HTTP/2.0 Status: 200 OK Response time: 0.567 seconds Page age: 0 seconds Page size: 732868 Bytes Server certificate validity: 55 days User agent: checkmk-active-httpv2/2.3.0 Expected HTTP header: x-content-type-options:nosniff (found) Expected string in body: Join us for the highlight of the year (found)
Service Perf-O-Meter	567 ms

An overall much better web service monitoring

New features for HTTP endpoint monitoring

Token based authentication

HTTP/2, TLS 1.3 support

Certificate monitoring in same service

...

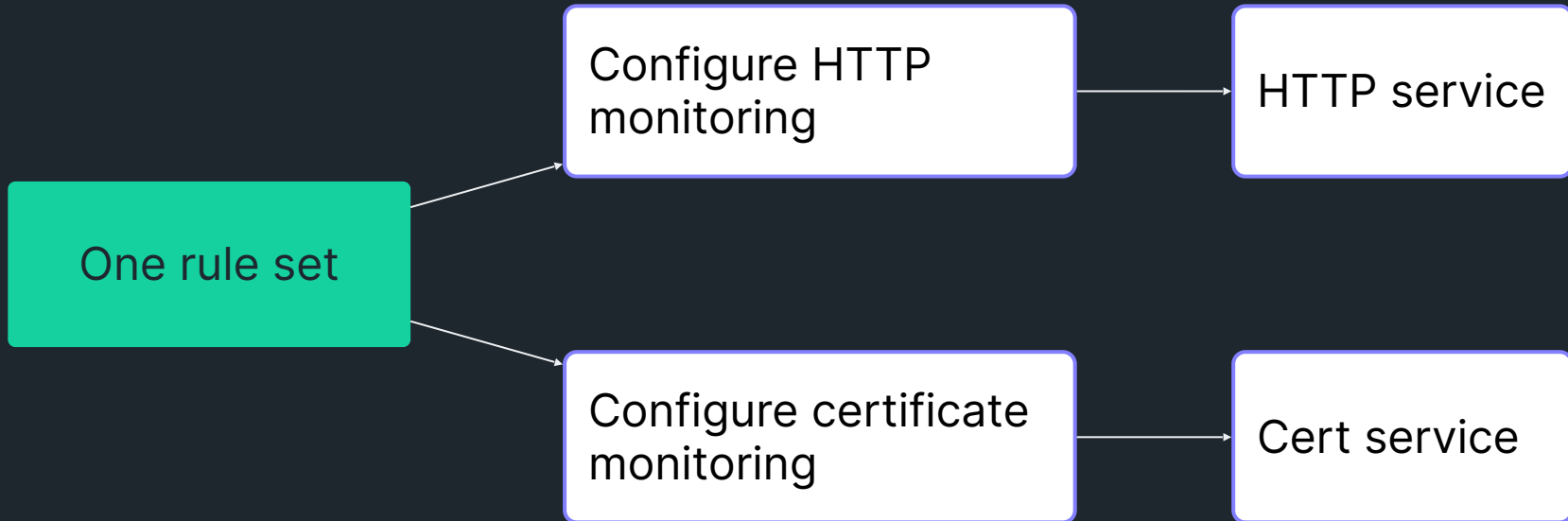**Better configuration** including multiple endpoints per rule

Easily readable service summary and details

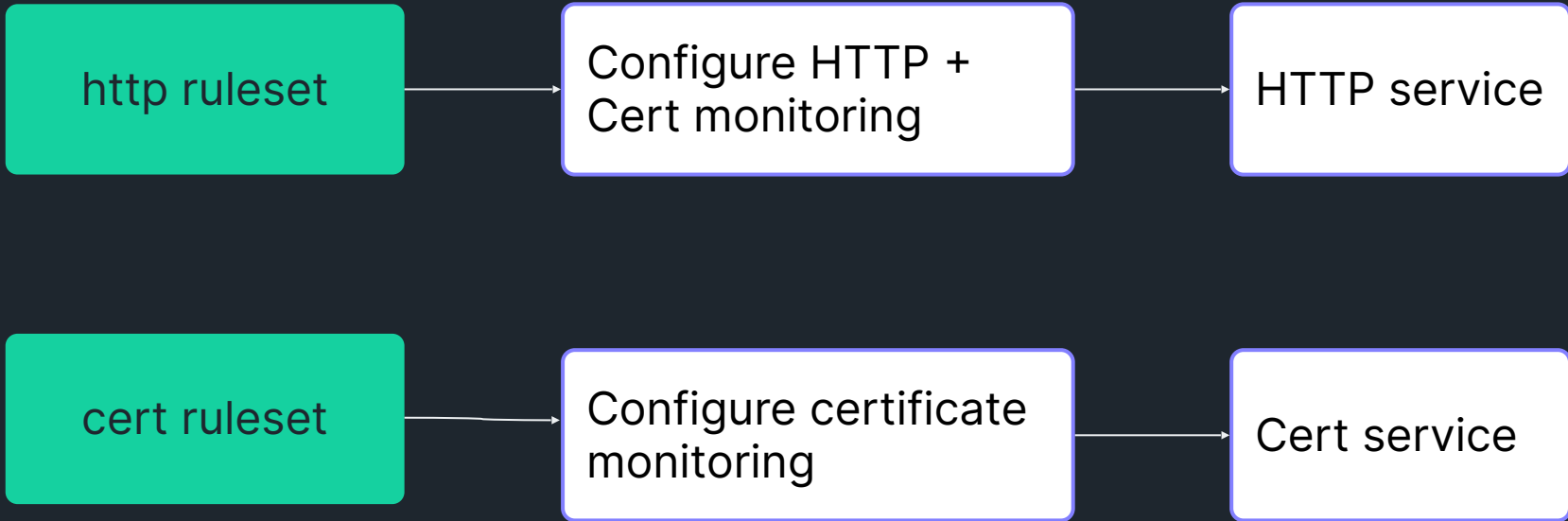**Better performance** (and improved maintainability, resulting in faster bug fixes and extensions)

Checkmk 2.2 and before: Monitoring certificates
One rule to create two different service types?

```
                    ┌─────────────────────┐        ┌─────────────────────┐
              ┌────▶ │ Configure HTTP      │ ────▶  │ HTTP service        │
              │      │ monitoring          │        │                     │
              │      └─────────────────────┘        └─────────────────────┘
┌──────────────┐
│ One rule set │
└──────────────┘
              │      ┌─────────────────────┐        ┌─────────────────────┐
              └────▶ │ Configure certificate│ ────▶ │ Cert service        │
                     │ monitoring          │        │                     │
                     └─────────────────────┘        └─────────────────────┘
```

New: Monitoring certificates
Split the rule sets and let each do one thing

| http ruleset | → | Configure HTTP + Cert monitoring | → | HTTP service |

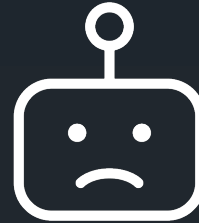| cert ruleset | → | Configure certificate monitoring | → | Cert service |

Checkmk
Conference

Monitoring certificates?

The old plugin only monitored validity

Check certificate validity

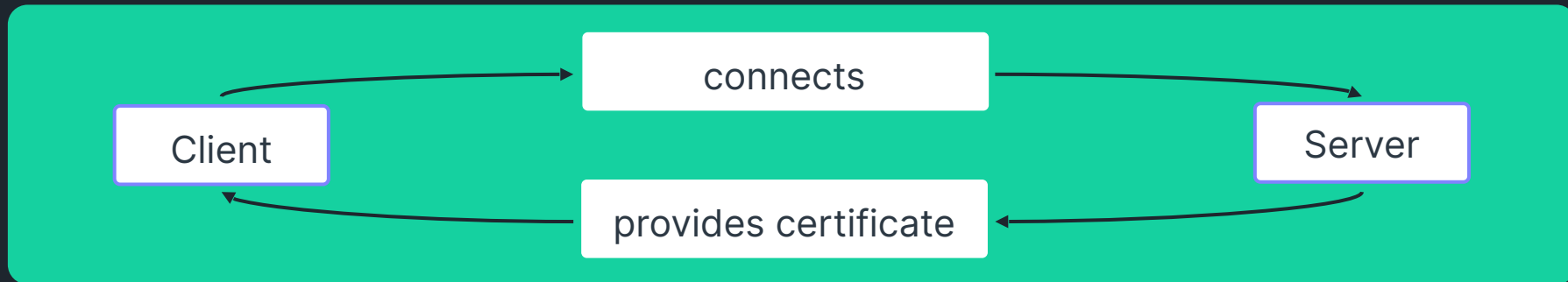✖ Remaining validity time

Fixed levels ▾

Warning below   40   days

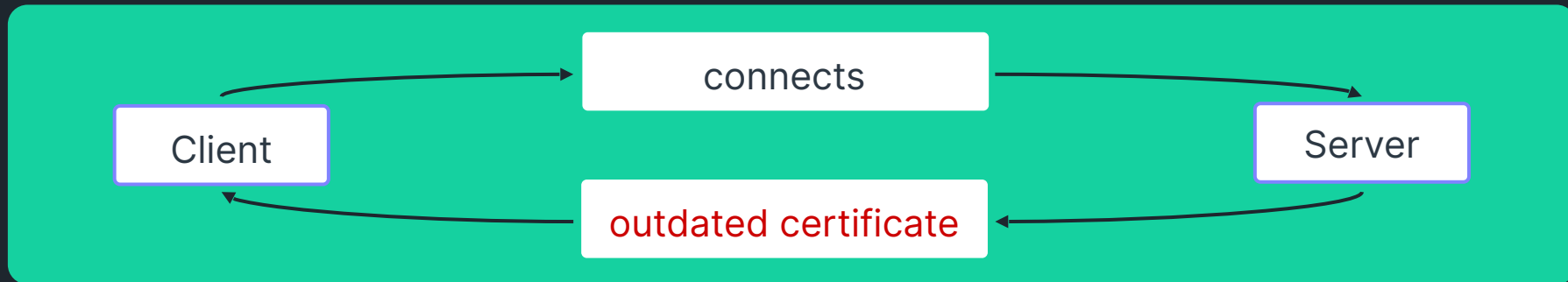Critical below   20   days

Why you should monitor more than the validity
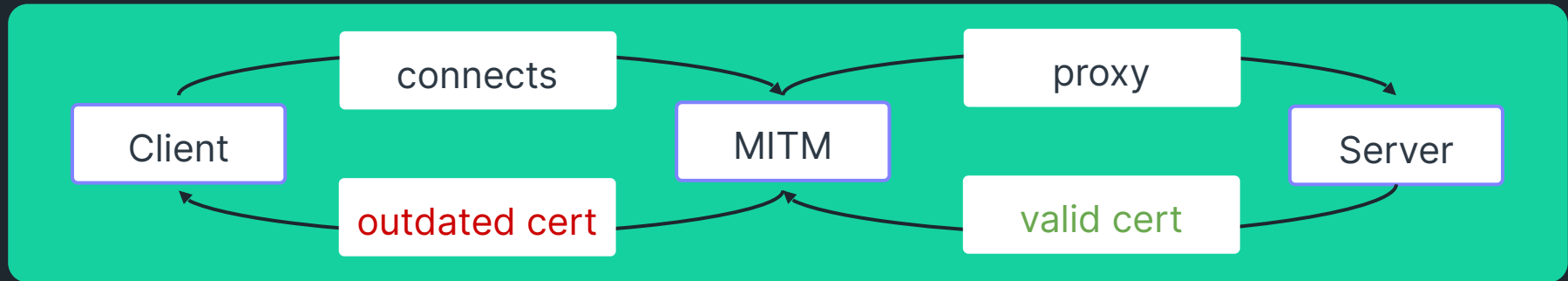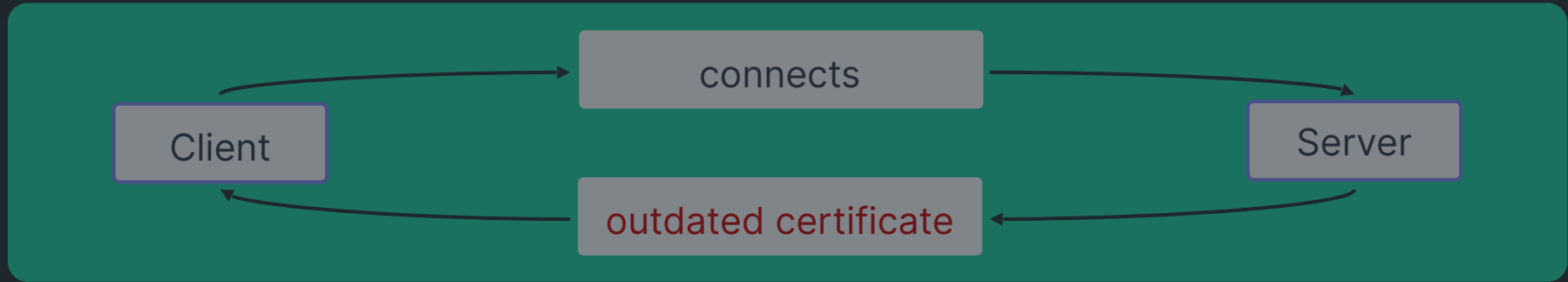Example: jabber.ru

Why you should monitor more than the validity
Example: jabber.ru

Why you should monitor more than the validity
Example: jabber.ru

Monitoring expiration date may not be enough

Check certificate validity

☒ Remaining validity time

Fixed levels ▾

Warning below   40   days

Critical below   20   days

Port

636

☐ Response time
✖ Check certificate validity
  ☐ Remaining validity time
  ☐ Maximum allowed validity
  ☐ Allow self-signed certificates

✖ Check for specific values
  ☐ Serial number
  ☐ Certificate signature algorithm
  ✖ Issuer
    ☐ Common name (CN)
    ☐ Organization (O)
    ☐ Organizational unit (OU)
    ☐ State (ST)
    ☐ Country (C)
  ✖ Subject
    ☐ Common name (CN)
    ☐ Organization (O)
    ☐ Organizational unit (OU)
    ☐ Public key algorithm
    ☐ Public key size
  ✖ Certificate subject alternative name

New certificate check

Complete new check for all certificates provided over TCP

Wide range of configuration options, e.g.

- Validity (remaining and maximum)
- Certificate signature algorithms
- Issuer, subject, alternative names
- Public key algorithm + key size

New certificate check

| OK | Certificate checkmk.com | ≡ | OK - Certificate obtained in 48 ms, Verification: OK, Certificate expires in 42 day(s) (Jul 17 06:58:11 2024 +00:00) |

OK Certificate checkmk.com ≡ OK - Certificate obtained in 48 ms, Verification: OK, Certificate expires in 42 day(s) (Jul 17 06:58:11 2024 +00:00)

WARN Certificate grasbrunn.de ≡ WARNING - Certificate obtained in 253 ms, Verification: OK, Certificate expires in 149 day(s) (Oct 31 12:06:35 2024 +00:00), Max validity is 395 days but expected at most 90 **WARN**

WARN Certificate self-signed.badssl.com ≡ WARNING - Certificate obtained in 675 ms, Certificate chain verification failed: self-signed certificate **WARN**, Certificate expires in 712 day(s) (May 17 17:59:33 2026 +00:00), Max validity is 730 days but expected at most 90 **WARN**

CRIT Certificate sha384.badssl.com ≡ CRITICAL - Certificate obtained in 509 ms, Certificate chain verification failed: certificate has expired **WARN**, Certificate expired (Apr 1 12:00:00 2022 +00:00) **CRIT**, Max validity is 739 days but expected at most 90 **WARN**

Checkmk
Conference

Where can I find the new rules?

How to migrate?

Checkmk 2.3

- New HTTP check: more strict + requires polishing for edge cases → No auto-migration for 2.3

- New ruleset structure does not allow a guaranteed way to migrate all rules

- Recommended: manual migration
  - Opportunity to consolidate rules and improve your HTTP checks

Checkmk 2.4

- Proper deprecation of old check_http in 2.4 (no more new rules possible)

- Removal of old check_http rule set in 2.5

- Existing rules will be migrated, where possible, in 2.4 (migration script will be available in Q3/24)

- Remaining rules need to be manually migrated, latest in 2.4

Checkmk
Conference