

Keeping PLM at Full Throttle: Teamcenter Monitoring in Rally Car Manufacturing

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Presenter background

26 YEARS ACROSS PLM DOMAINS AND 10 YEARS WITH ZABBIX

PERSONAL CONTEXT

A monitoring story built from real production experience

The goal is not only to show what Zabbix can collect, but why each Teamcenter signal became worth monitoring after operational incidents and lessons learned.

26

years of PLM domain experience

4

major PLM platforms used over time

10

years of Zabbix experience

eMatrix
(MatrixOne)



2000

Windchill
(PTC)



2009

VariPDM
(Variantum)



2013

Teamcenter
(Siemens)



2024

My Chronological PLM path

Zabbix



2016

Zabbix 3.0
Certified
Specialist



2017

Zabbix 4.0
Certified
Specialist &
Professional



2018

Zabbix 6.0
Certified
Specialist &
Professional



2023

Zabbix Summit
Speaker



2026

My Chronological Zabbix path

TGR-WRT product context

RALLY CARS AND PRODUCTION-CRITICAL ENGINEERING

Monitoring Teamcenter matters because it supports daily engineering and operations around rally car products.

GR Yaris Rally 1



GR Yaris Rally 2



Our designers and engineers are producing and maintaining our product data in Teamcenter. There are many integrated tools and applications which are utilizing data stored in Teamcenter.

Teamcenter production system in TGR-WRT

CRITICAL PLM SERVICE PROFILE

14.2

Teamcenter release with RAC and Active Workspace clients

~230

named users across the organization

~100

maximum concurrent users seen almost every weekday

24×7

availability target for production use

Teamcenter is used broadly across the organization

Design

Engineering

Purchase

Quality

Workshop

Warehouse

Monitoring needs to reflect how the business actually depends on the system, not only generic server health

From OOTB checks to Teamcenter-specific sensors

WHAT IS STANDARD, WHAT HAD TO BE CUSTOMIZED

OOTB Zabbix templates

*Server availability and resource baseline
Database / OS / network monitoring
Standard triggers for capacity or outages
Foundation for alerting and dashboards*

*Production
experience*

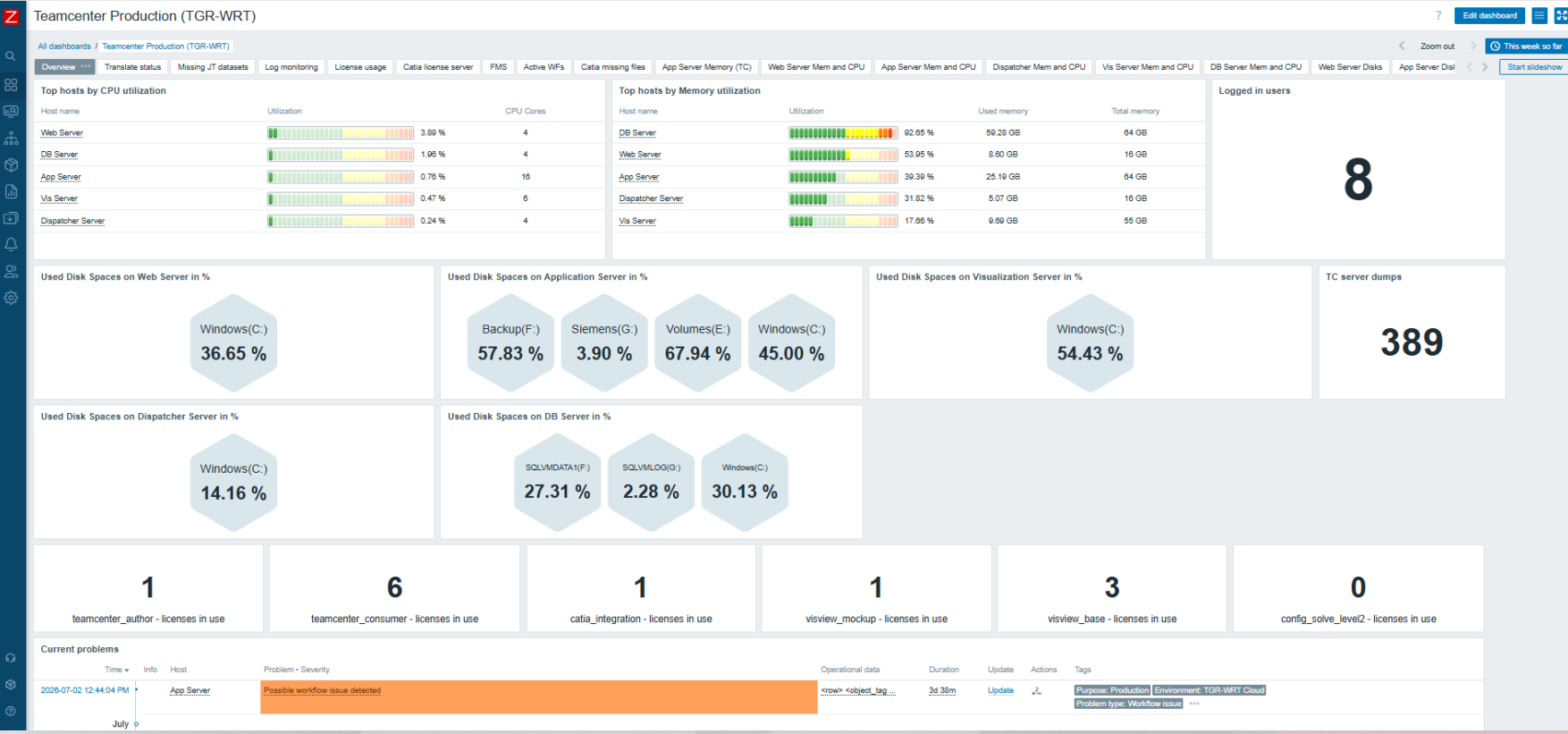
Customized Teamcenter templates based on Teamcenter utilities and common binaries

*License usage via FLEXlm and LLD
Translation health and active workflows
Application process level memory monitoring
Detect missing files from file vault
License expiration times for each license feature
Windows event log monitoring
Application logs monitoring*

*Every monitored item has a reason: it was selected because the team has seen issues around
that topic before.*

Single pane of glass for Teamcenter

PRODUCTION DASHBOARD CONCEPT



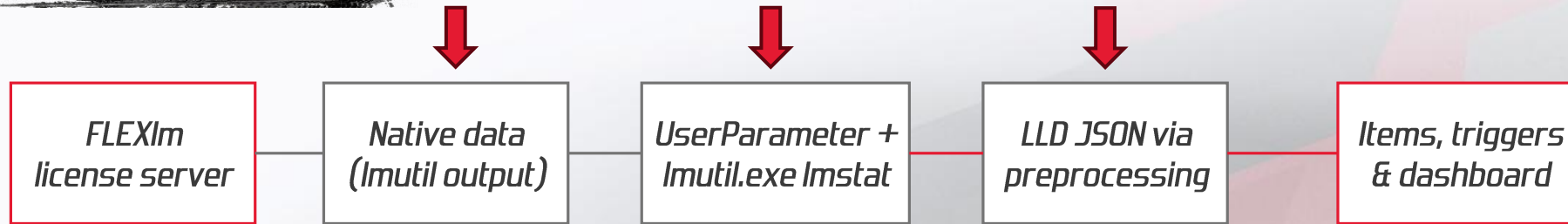
Dashboard subpages

- License usage
- Translations health
- Active workflows
- Feature-specific health
- Overall environment condition

Purpose: quick situational awareness, with drill-down pages when a specific Teamcenter feature needs attention.

Teamcenter license monitoring approach

FLEXLM → LLD → ITEMS, TRIGGERS, DASHBOARD



Main implementation point: collect in the native license-server format first, then transform only what Zabbix needs for discovery.

Native Data (Imutil.exe Imstat)

Users of change_user: (Total of 2 licenses issued; Total of 0 licenses in use)

Users of config_solve_level2: (Total of 22 licenses issued; Total of 0 licenses in use)

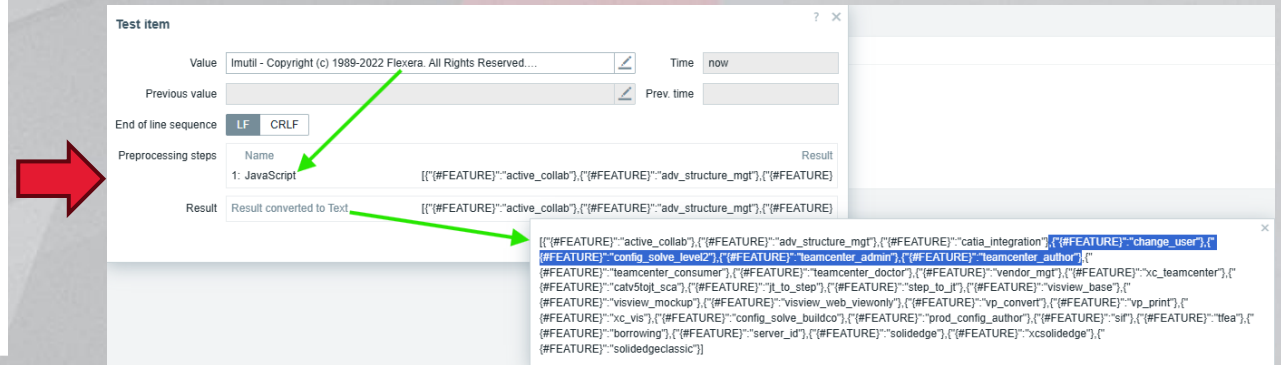
Users of teamcenter_admin: (Total of 2 licenses issued; Total of 2 licenses in use)

"teamcenter_admin" v2025.12, vendor: ugsiml, expiry: 02-jan-2027 floating license

infodba TcServer infodba (v14.0) (██████████-1/28000 3003), start Sun 7/5 13:08
dcproxy TcServer dcproxy (v14.0) (██████████-1/28000 7957), start Sat 7/4 17:22

Users of teamcenter_author: (Total of 68 licenses issued; Total of 1 license in use)

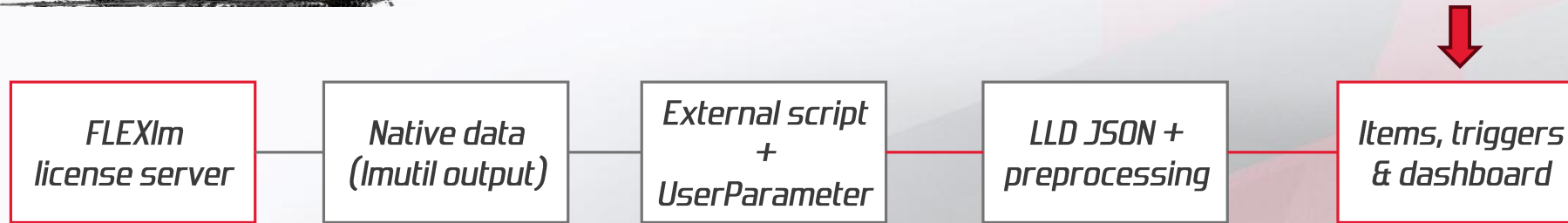
LLD Discovery Rule preprocessing provides features in JSON format



Reusable beyond Teamcenter: the same pattern can monitor any FLEXlm-based license server.

Teamcenter license monitoring approach

FLEXLM → LLD → ITEMS, TRIGGERS, DASHBOARD



When license feature list has been created by LLD, now we just need to collect total amount of licenses and licenses in use for each license feature

Item prototype

Item prototype Tags 2 Preprocessing 1

* Name

Type

* Key

Type of information

* Master item

Preprocessing steps ?

Name	Parameters
1: Regular expression	Users of {#FEATURE}.*Total \1

[Add](#) Users of {#FEATURE}.*Total of \d+ license.*issued;.*Total of (\d+) license.*in use

Type of information

Item prototype

Item prototype Tags 2 Preprocessing 1

* Name

Type

* Key

Type of information

* Master item

Preprocessing steps ?

Name	Parameters
1: Regular expression	Users of {#FEATURE}.*\1Total \1

[Add](#) Users of {#FEATURE}.*\1(Total of (\d+) license.*issued;

Type of information

Teamcenter license monitoring approach – License Usage Dashboard

FLEXLM → LLD → ITEMS, TRIGGERS, DASHBOARD

Teamcenter Production (TGR-WRT)

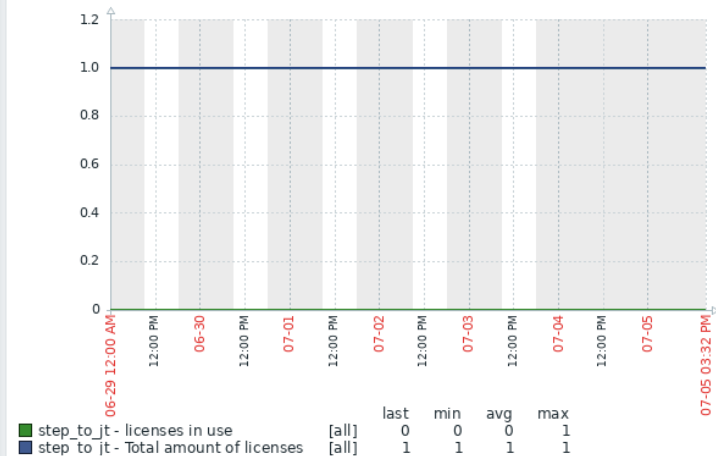
All dashboards / Teamcenter Production (TGR-WRT)

Overview Translate status Missing JT datasets Log monitoring **License usage** Catia license server FMS Active WFs Catia missing files App Server Memory (TC) Web Server Mem and CPU App Server Mem and CPU Dispatcher Mem and CPU Vis Server I

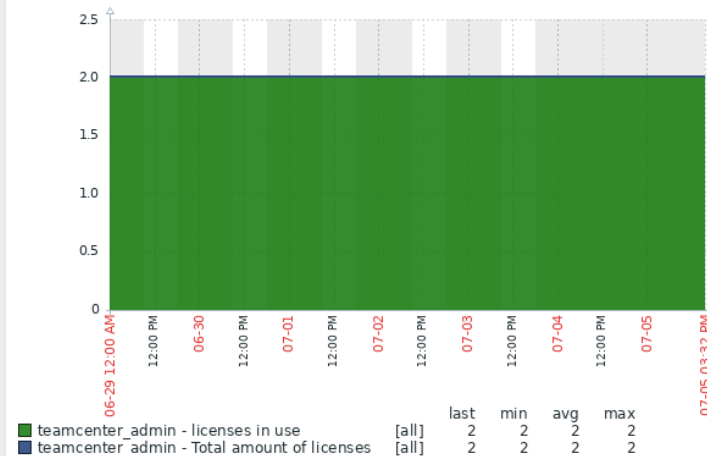
Zoom out This week so far

Start slideshow

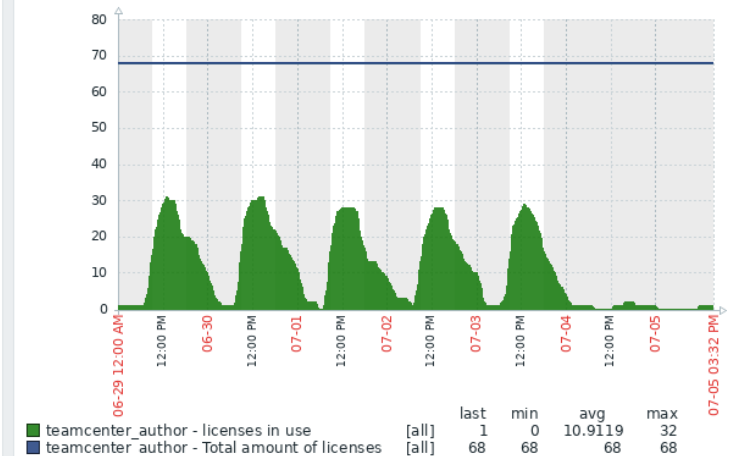
Web Server: License usage for step_to_jt



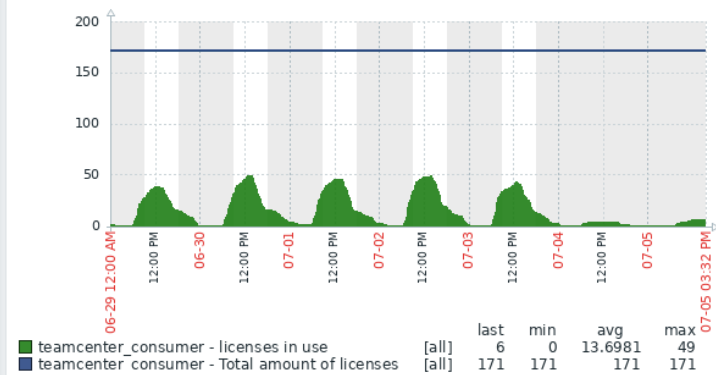
Web Server: License usage for teamcenter_admin



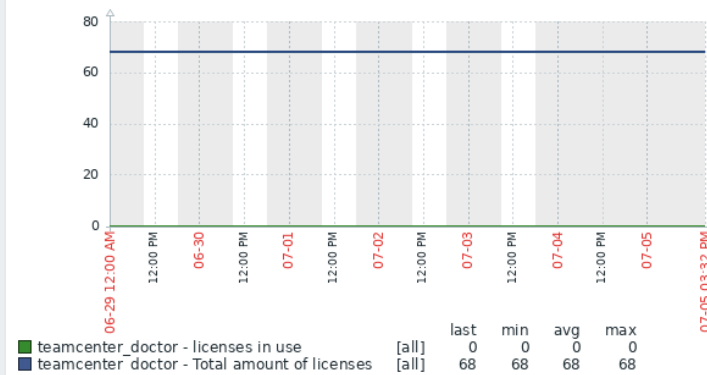
Web Server: License usage for teamcenter_author



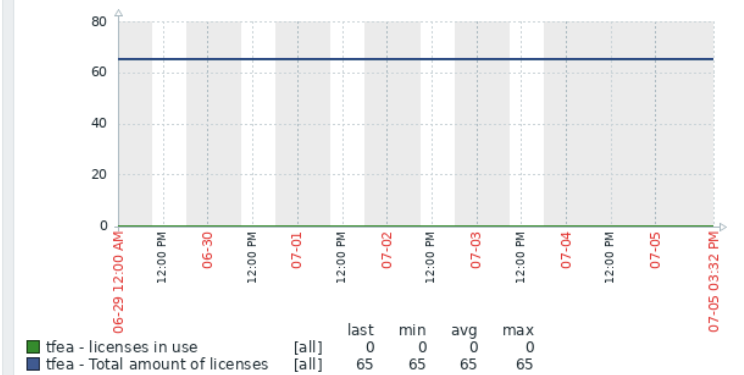
Web Server: License usage for teamcenter_consumer



Web Server: License usage for teamcenter_doctor



Web Server: License usage for tfea



Teamcenter query monitoring approach

Teamcenter Query → User Parameter → ITEMS, TRIGGERS, DASHBOARD

1 User parameters

Bind the Zabbix agent to Teamcenter-aware checks while keeping the item key stable and reusable.

User Parameter example

```
UserParameter=execute.tc.query[*],C:\zabbix\scripts\WRTPROD_execute_tc_query.bat
```

2 External scripts

Call Teamcenter query_xml utility or other common binaries and normalize raw output outside the item definition.

WRTPROD_execute_tc_query.bat

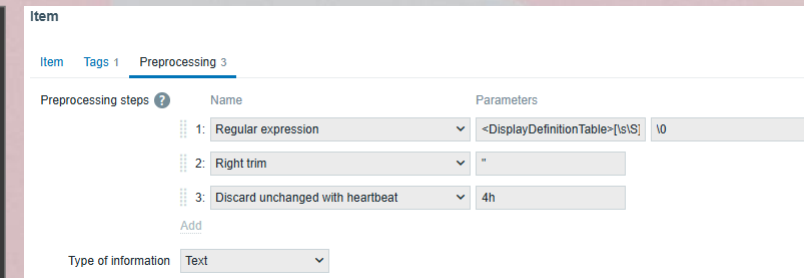
```
set UserID=infodba
set Group=dba
set
inputfile="C:\zabbix\scripts\query_input.xml"
set outputfile="C:\zabbix\output.xml"

if exist %outputfile% del /Q %outputfile%

query_xml -u=%UserID% -
pf="%TC_ROOT%\security\WRTPROD_infodba.pwf" -
g=%Group% -f=%inputfile%
if exist %outputfile% (type %outputfile%)
else (echo "<DisplayDefinitionTable>Objects
not found</DisplayDefinitionTable>")
```

3 Preprocessing

Make needed preprocessing for data received from external script. Regular expression used to capture DisplayDefinitionTable data



The screenshot shows the Zabbix Item configuration interface. The 'Preprocessing steps' tab is active, displaying a list of three steps:

Preprocessing steps	Name	Parameters
1:	Regular expression	<DisplayDefinitionTable>[t s] \0
2:	Right trim	*
3:	Discard unchanged with heartbeat	4h

Below the list, there is an 'Add' button and a 'Type of information' dropdown menu set to 'Text'.

This same pattern has been utilized a lot in our Teamcenter monitoring. Next example dashboards are utilizing this monitoring approach

Teamcenter query monitoring approach – Missing JT datasets

Teamcenter Query → User Parameter → ITEMS, DASHBOARD

Teamcenter Production (TGR-WRT)

All dashboards / Teamcenter Production (TGR-WRT)

- Overview
- Translate status
- Missing JT datasets ***
- Log monitoring
- License usage
- Catia license server
- FMS
- Active WFs
- Catia missing files
- App Server Memory (TC)
- Web Server Mem and CPU
- App Server Mem and CPU
- Dispatcher Mem ar

List of WRT Part missing JT file in WORK DONE, CHECK DONE and APPROVED states	
Timestamp	Query Result
2026-07-05 12:19:34 PM	Objects not found
2026-07-04 06:19:32 PM	Objects not found
2026-07-04 06:19:30 AM	Objects not found
2026-07-03 12:19:34 PM	Objects not found
2026-07-03 12:19:34 AM	Objects not found
2026-07-02 12:19:31 PM	Objects not found

List of Design Revisions with empty JT Dataset	
Timestamp	Query Result
2026-07-05 12:19:27 PM	Objects not found
2026-07-04 06:19:35 PM	Objects not found
2026-07-04 06:19:32 AM	Objects not found
2026-07-03 12:19:27 PM	Objects not found
2026-07-03 12:19:26 AM	Objects not found
2026-07-02 11:19:31 AM	Objects not found

Teamcenter query monitoring approach – Missing files for CATIA datasets

Teamcenter Query → User Parameter → ITEMS, DASHBOARD

Teamcenter Production (TGR-WRT)

All dashboards / Teamcenter Production (TGR-WRT)

Overview

Translate status

Missing JT datasets

Log monitoring

License usage

Catia license server

FMS

Active WFs

Catia missing files

App Server Memory (TC)

Web Server Mem and CPU

App Server Mem and CPU

Dispatcher Mem and CPU

Vis Server I

Zoom out

This week so far

Start slideshow

Problems

Time	Recovery time	Status	Info	Host	Problem • Severity	Operational data	Duration	Update	Actions
2026-06-28 08:34:52 PM	2026-06-28 09:20:13 PM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume	<rows></rows>	45m 21s	Update	2
2026-06-28 07:04:52 PM	2026-06-28 07:50:12 PM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume	<rows></rows>	45m 20s	Update	2
2026-06-16 08:50:13 AM	2026-06-16 09:04:52 AM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume	<rows></rows>	14m 39s	Update	2
June									
2026-05-29 10:20:13 AM	2026-05-29 11:04:52 AM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume	*UNKNOWN*	44m 39s	Update	✓ 1 5
2026-05-06 08:19:52 PM	2026-05-06 09:04:51 PM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume	*UNKNOWN*	44m 59s	Update	✓ 1 5
May									
2026-02-20 08:04:52 PM	2026-02-20 08:50:12 PM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume				
2026-02-18 11:34:52 AM	2026-02-18 12:20:12 PM	RESOLVED		App Server	Potentially missing files from Catia datasets in volume				

Timestamp	Name	Value
2026-07-05 03:20:16 PM	Missing files in volume	
2026-07-05 07:04:52 AM	Missing files in volume	
2026-07-04 11:04:52 PM	Missing files in volume	
2026-07-04 03:04:52 PM	Missing files in volume	
2026-07-04 07:04:52 AM	Missing files in volume	
2026-07-03 11:04:52 PM	Missing files in volume	
2026-07-03 03:04:52 PM	Missing files in volume	

Time	User	Message
2026-05-07 08:59:44 AM		I checked Item and CGR dataset. Missing file issue was fixed by end-user when CATPart was saved again this morning and cgr was created again and saved into volume

What has been achieved with Zabbix Monitoring

1+ YEAR without unexpected downtime

All monitored services have remained available 24×7, significantly strengthening Teamcenter uptime.

01 Early anomaly detection

Slow-developing risks such as disk-space growth are detected early enough for planned corrective action.

02 Immediate end-to-end view

A single pane shows server-side service health and overall Teamcenter condition immediately.

03 Faster issue resolution

Clear service-level signals reduce the time needed to analyze system issues and restore normal operation.

04 License foresight

Feature-level monitoring flags rising usage and upcoming expirations early enough to act.

Outcome: earlier intervention, faster resolution and immediate operational visibility.