

# Custom Crafted Management Pack Use Cases

## Atlassian Bitbucket Monitoring on Microsoft SCOM

### Content

1. Atlassian Bitbucket Monitoring
2. Key Aspects for Microsoft SCOM Admins
3. About NiCE



---

# Content

<b>Atlassian Bitbucket Monitoring.....</b>	<b>3</b>
What is Bitbucket?.....	3
Why Monitor Bitbucket?.....	3
<b>Top Areas to Monitor in Bitbucket.....</b>	<b>4</b>
Availability.....	4
Performance.....	4
Security & Access.....	4
<b>Monitoring Bitbucket Cloud vs Data Center.....</b>	<b>5</b>
Cloud vs Data Center Monitoring Matrix.....	5
<b>Key-Areas for Microsoft SCOM Admins .....</b>	<b>7</b>
Discovery & Inventory.....	7
Health State Monitoring.....	7
Log File Monitoring.....	7
Performance Monitoring.....	8
Dashboards & Views.....	8
Alerting & Integration.....	8
SCOM Admin Quick Checklist for Bitbucket Monitoring.....	9
<b>Bitbucket Monitoring Use Cases .....</b>	<b>10</b>
Avoiding CI/CD Pipeline Failures Due to Git Operation Latency.....	10
Detecting Unauthorized Access Attempts and Potential Security Breaches.....	10
Maintaining Continuous Access in Bitbucket Data Center Deployments.....	11
Planning Capacity Before Repository Growth Impacts Performance.....	11
<b>NiCE Services and Training for Microsoft SCOM.....</b>	<b>13</b>
<b>About NiCE.....</b>	<b>14</b>

---

# Atlassian Bitbucket Monitoring

As part of a customer project, we developed a **custom Bitbucket Management Pack for Microsoft System Center Operations Manager (SCOM)**. This tailored solution enables IT operations teams to monitor key performance and health metrics of Bitbucket environments, ensuring planning and bug-tracking platforms remain available and performant.

With this Use Case paper, we want to share our knowledge with the SCOM Community to highlight the possibilities of advanced monitoring on Microsoft SCOM, helping teams get better in their day-to-day tasks.

---

## What is Bitbucket?

Bitbucket is Atlassian's Git-based source code repository hosting service, widely used by development teams for managing source code and enabling collaborative software development. It supports both cloud and on-premise (Bitbucket Data Center) deployments and integrates tightly with tools like Jira, Bamboo, and Confluence to support DevOps workflows.

Core features include Git repository management, pull request workflows and code reviews, branch permissions and access controls, integrated CI/CD pipelines (especially in Bitbucket Cloud), and REST API for automation and integrations

---

## Why Monitor Bitbucket?

Bitbucket is mission-critical for teams practicing CI/CD and agile software delivery. If Bitbucket becomes slow, unresponsive, or misconfigured, it can significantly disrupt development pipelines.

### Monitoring Bitbucket ensures:

- **Availability:** The service is accessible to users at all times.
- **Performance:** Developers experience low latency in clone, pull, and push operations.
- **Scalability:** The infrastructure supports load from concurrent users and automated systems.
- **Security:** Unauthorized access is detected, and configuration drift is minimized.
- **Integration Health:** Dependencies on systems like databases, application servers, and CI tools are functioning.

---

# Top Areas to Monitor in Bitbucket

---

## Availability

**Service and process uptime:** Ensures the Bitbucket service (including web interface and background services) is up and responsive, which is critical for developer productivity and CI/CD reliability.

**Node and cluster availability:** In multi-node or Data Center deployments, monitors the health of individual nodes to maintain high availability and failover readiness.

**Repository accessibility:** Validates that users can access repositories without errors or latency, ensuring development teams aren't blocked.

**Integration status (e.g., with Jira, Bamboo):** Monitors the availability of linked Atlassian or third-party tools, which are often tightly integrated into developer workflows.

---

## Performance

**API response times:** Tracks latency for REST and internal APIs, helping identify slow endpoints that could impact integrations, automation scripts, or UI performance.

**Web UI response latency:** Measures user-facing performance for code browsing, pull requests, and repo settings to catch slowdowns early.

**Repository clone/push/pull duration:** Monitors Git operation speeds to detect network, disk, or load-related issues affecting developers.

**Background job execution time (e.g., indexing, garbage collection):** Tracks how long critical background tasks take, ensuring system health and responsiveness are not impacted over time.

**Queue length and processing rate (hooks, CI triggers):** Detects bottlenecks in job queues, which could delay build pipelines or webhook responses.

---

## Security & Access

**User login activity and anomalies:** Tracks logins and failed attempts, highlighting unusual access patterns or potential brute-force behavior.

**Permission changes (repo/project level):** Monitors admin-level permission adjustments for auditing, compliance, and rollback if misconfigurations occur.

**SSH and personal access token usage:** Detects potentially risky access patterns or misused tokens, especially useful in tightly secured environments.

**Failed Git operations due to permission issues:** Identifies misconfigurations or unintended access restrictions affecting user productivity.

---

## Monitoring Bitbucket Cloud vs Data Center

Bitbucket is available in two deployment models: **Bitbucket Cloud**, a fully managed SaaS offering hosted by Atlassian, and **Bitbucket Data Center**, an on-premise solution designed for enterprise scalability and control. While both platforms support core version control and collaboration features, the monitoring requirements differ significantly due to their operational models.

This section outlines the key areas that IT administrators or monitoring engineers, such as those using SCOM or other enterprise monitoring tools, should focus on when ensuring the health, performance, and security of their Bitbucket environments. The table below compares critical monitoring considerations for both Bitbucket Cloud and Bitbucket Data Center, helping teams establish the right observability practices based on their deployment type.

---

### Cloud vs Data Center Monitoring Matrix

Category	Bitbucket Cloud	Bitbucket Data Center (On-Premise)
<b>Service Availability</b>	Monitor Atlassian status page (status.atlassian.com)	Ping/health checks on web/UI, REST API endpoints
<b>Authentication</b>	Monitor SSO/OAuth integrations (e.g., Atlassian Access)	Monitor LDAP/SSO integration, Kerberos failures, auth latency
<b>Performance Metrics</b>	Limited (API rate limits, user-perceived latency)	JVM metrics (CPU, GC, memory), thread pools, DB query times
<b>Repository Access</b>	Monitor REST API access, webhook delivery	Monitor Git I/O latency, repo size growth, NFS share usage

<b>Build/CI/CD Integration</b>	Monitor pipeline status via Bitbucket Pipelines	Monitor integration with Jenkins/Bamboo, webhook queues
<b>Error Logs</b>	Only visible in audit logs (limited)	Access to application logs (bitbucket.log, atlassian-bitbucket.log)
<b>User Management</b>	Audit Atlassian org user changes	Monitor user provisioning/de-provisioning, permissions audit
<b>Security &amp; Compliance</b>	Audit logs (via Atlassian admin console)	Monitor failed logins, permission changes, custom auditing
<b>Infrastructure</b>	Not applicable	Monitor host OS (CPU, RAM, disk), database (PostgreSQL, etc.)
<b>Backup &amp; Recovery</b>	Managed by Atlassian	Monitor backup jobs, replication health, disaster recovery
<b>Update &amp; Patch Management</b>	Atlassian managed updates	Monitor version drift, patching schedules, upgrade readiness
<b>Integrations/Plugins</b>	Managed via Atlassian Marketplace	Monitor add-on health, compatibility, resource usage
<b>Network Connectivity</b>	Monitor access to Atlassian domains, proxy/firewall logs	Monitor internal DNS, VIP load balancers, latency between nodes
<b>Scalability/Cluster Health</b>	Not applicable	Monitor node health, Hazelcast cluster status, replication
<b>Alerting &amp; Notification</b>	Use Atlassian tools/webhooks to notify	Integrate with alerting tools (e.g., SCOM, Zabbix, Prometheus)

---

# Key-Areas for Microsoft SCOM Admins

For System Center Operations Manager (SCOM) administrators, integrating Bitbucket into the monitoring fabric requires a purpose-built Management Pack that understands both the infrastructure and application layers of Bitbucket.

---

## Discovery & Inventory

**Discover Bitbucket nodes and cluster topology:** Automatically maps out all nodes in Bitbucket Data Center deployments to ensure full visibility and alert coverage.

**Inventory of repositories and projects:** Provides an up-to-date overview of hosted codebases, useful for capacity planning, license audits, and configuration tracking.

**Plugin/module discovery (e.g., Code Insights, Smart Mirroring):** Helps track which features and add-ons are active and subject to monitoring, ensuring no functionality is missed.

---

## Health State Monitoring

**Monitor core service status (e.g., Bitbucket Server, Elasticsearch):** Confirms all underlying services are operational, ensuring reliable access and search functionality.

**Track JVM health (memory, GC activity, thread pools):** Detects memory leaks, thread starvation, and GC issues, which are frequent causes of performance degradation in Java-based services.

**Cluster node heartbeat and sync status:** Ensures all cluster nodes are online and synchronized, preventing inconsistent behavior or degraded performance.

---

## Log File Monitoring

**Parse Bitbucket logs for error patterns and warnings:** Surfaces runtime issues that aren't always exposed through metrics — e.g., plugin failures, config issues, or background job exceptions.

**Track integration failures with Jira/Bamboo:** Detects communication or authentication errors that can silently break end-to-end DevOps workflows.

**Highlight security-related log events (e.g., failed login attempts):** Enables early detection of potential security threats, like brute-force attacks or misuse of credentials.

---

## Performance Monitoring

**Monitor Git operation latency (clone, push, pull):** Helps maintain high developer productivity by catching delays related to server load or network issues.

**API call performance (REST endpoints):** Enables visibility into which API routes are slow or failing, often used in automation and CI tools.

**Track job queue length and scheduler delays:** Identifies congestion in processing queues for tasks like indexing, builds, and hooks, enabling tuning or scaling decisions.

---

## Dashboards & Views

**Pre-built SCOM dashboards for Bitbucket health:** Offer real-time visibility into system status, alert trends, and key performance indicators for fast situational awareness.

**Breakdowns by project, repo, and node:** Helps quickly isolate issues to specific teams or infrastructure segments, improving troubleshooting efficiency.

**Trend views of error rates, response times, and usage:** Supports historical analysis and capacity planning based on usage growth and stability trends.

---

## Alerting & Integration

**Configurable alerts for performance thresholds and service degradation:** Notifies operations early about emerging issues, reducing MTTR (mean time to resolution).

**Log-based alerting for critical errors and security incidents:** Enhances detection beyond simple metrics by leveraging log intelligence for nuanced event monitoring.

**Integration with ServiceNow or ITSM platforms:** Automates incident creation and triage workflows for seamless integration with enterprise support systems.

---

# SCOM Admin Quick Checklist for Bitbucket Monitoring

Category	What to Monitor	SCOM Feature
Availability	Bitbucket service status, web/API endpoints	Availability Monitors
Performance	JVM heap, GC, thread count, response times	Performance Counters
Logs	Log file parsing for error patterns	Event Collection Rules
Repositories	Repo count, size, active/inactive state	Custom Rules
Security	Audit log anomalies, login failures	Alerting & Event Correlation
Integrations	Webhook status, plugin health	Dependency Views
Dashboards	Ops & Dev-friendly dashboards	Custom SCOM Dashboards

By integrating Bitbucket into SCOM using a tailored management pack, organizations can unify infrastructure and DevOps monitoring under one platform. This enables proactive detection of issues, ensures high availability of developer tooling, and contributes to better collaboration between IT operations and engineering teams.

---

# Bitbucket Monitoring Use Cases

---

## Avoiding CI/CD Pipeline Failures Due to Git Operation Latency

### Use Case

A DevOps team begins to see intermittent failures in automated build jobs triggered via Bitbucket. Developers assume it's a CI issue, but after investigation, the root cause is slow Git clone and pull operations from the Bitbucket server, leading to timeouts in downstream CI tools like Bamboo or Jenkins.

### How Monitoring Helps

- Tracks Git operation durations (clone, push, pull) to identify rising latency trends.
- Correlates slowness with load spikes, JVM memory pressure, or job queue congestion.
- Alerts admins when thresholds are crossed before timeouts occur in dependent systems.

### Benefits

- Reduces build pipeline disruptions and developer downtime.
- Helps maintain trust in CI/CD automation by catching issues upstream.
- Improves collaboration between DevOps and infrastructure teams.

---

## Detecting Unauthorized Access Attempts and Potential Security Breaches

### Use Case

Security teams notice suspicious login attempts targeting Bitbucket accounts, raising concerns about potential brute-force attacks or credential leaks.

### How Monitoring Helps

- Tracks login attempts and failed authentications in real time.
- Flags unusual access patterns such as repeated failures or logins from unexpected locations.
- Monitors changes in repository permissions and SSH token usage.

### Benefits

- Enables early detection of security threats before data exfiltration occurs.
- Supports compliance by auditing access and permission changes.

- Protects source code integrity and developer credentials.

---

## Maintaining Continuous Access in Bitbucket Data Center Deployments

### Use Case

A multi-node Bitbucket Data Center cluster experiences intermittent node failure, causing occasional outages and degraded performance for users accessing repositories.

### How Monitoring Helps

- Monitors node heartbeats, cluster synchronization, and failover readiness.
- Alerts IT teams immediately when nodes become unreachable or cluster sync is lost.
- Provides health metrics on load distribution across nodes.

### Benefits

- Minimizes downtime by enabling rapid response to node failures.
- Ensures high availability for critical developer workflows.
- Supports planned maintenance without unexpected service interruptions.

---

## Planning Capacity Before Repository Growth Impacts Performance

### Use Case

The engineering organization rapidly expands, with repository counts and user activity growing steadily. Without proactive monitoring, performance degradation starts appearing in Git operations and API calls.

### How Monitoring Helps

- Tracks repository counts, user sessions, and operation latencies over time.
- Provides trend analysis to forecast when additional infrastructure or tuning will be needed.
- Identifies resource bottlenecks such as JVM heap usage or job queue backlogs.

### Benefits

- Enables proactive scaling decisions, preventing unexpected slowdowns.
- Supports smooth onboarding of new teams and projects.
- Maintains developer productivity despite growth.

We hope this Atlassian Bitbucket Monitoring Use Case paper inspires you to extend your monitoring on Microsoft SCOM. Feel free to reach out for help building your next custom Management Pack.

---

# NiCE Services and Training for Microsoft SCOM

NiCE Services & Training for Microsoft System Center Operations Manager (SCOM) offers specialized expertise in enhancing IT monitoring through the development of custom Management Packs tailored to an organization's unique infrastructure and business needs.

By leveraging NiCE's deep knowledge of SCOM, their services empower IT teams to extend native monitoring capabilities, enabling precise, scalable, and efficient oversight of complex environments. The custom management packs crafted by NiCE address specific applications, devices, and services not covered by default SCOM templates, ensuring comprehensive visibility and proactive issue detection.

In addition to bespoke management pack creation, NiCE provides targeted training to equip IT professionals with the skills to maintain, customize, and optimize SCOM environments independently. This combination of tailored solutions and knowledge transfer significantly improves operational reliability, reduces downtime, and maximizes the return on investment in Microsoft SCOM deployments.

For more information please visit <https://www.nice.de/nice-services-for-microsoft-system-center/>.

---

# About NiCE

NiCE Services for Microsoft System Center encompass consulting services tailored to System Center Operations Manager, Configurations Manager, and Service Manager. Our offerings include SCOM Health Assessments, advice and provisioning for third-party SCOM tools, as well as SCOM-centric monitoring solutions for business elements such as applications, databases, operating systems, services, and custom applications.

**NiCE Management Packs for SCOM** and **Azure Monitor SCOM Managed Instance** (SCOM MI) are available for AIX, Azure AD Connect, Entra ID, Citrix VAD & ADC, Custom Applications, HCL Domino, IBM Db2, IBM HMC & VIOS, IBM Power HA, Linux on Power Systems, Log Files, MariaDB, Microsoft 365, Microsoft Teams, Microsoft SharePoint, Microsoft Exchange, Microsoft OneDrive, Mongo DB, NetApp ONTAP, Oracle, Veritas Clusters, VMware, VMware Horizon, and zLinux.

## Our commitment

1. Ongoing development, incl. latest version support
2. Top required metrics come out-of-the-box
3. Integrated source knowledge to solve issues faster
4. Custom development & coaching
5. Highly responsive support team
6. Easy onboarding & renewals
7. Largest set of Microsoft SCOM Management Packs

## About Microsoft System Center Operations Manager (SCOM)

Microsoft SCOM is a powerful IT management solution designed to help organizations monitor, troubleshoot, and ensure the health of their IT infrastructure. SCOM provides comprehensive infrastructure monitoring, offering insights into the performance, availability, and security of applications and workloads across on-premises, cloud, and hybrid environments. With its robust set of features, SCOM enables IT professionals to proactively identify and address potential issues before they impact the business, improving overall operational efficiency and reducing downtime. By leveraging SCOM, businesses can achieve greater control over their IT environment, ensuring a seamless user experience and enhancing the reliability of their services.

Take advantage of all the benefits of advanced monitoring using NiCE Management Packs for Microsoft System Center Operations Manager. Contact us at [solutions@nice.de](mailto:solutions@nice.de) (EMEA, APAC), or [solutions@nice.us.com](mailto:solutions@nice.us.com) (US, LATAM) for a quick demo, and a free 30 days trial.

### NiCE IT Management Solutions GmbH

Liebigstrasse 9  
71229 Leonberg  
Germany  
[www.nice.de](http://www.nice.de)  
[solutions@nice.de](mailto:solutions@nice.de)

### NiCE IT Management Solutions Corporation

3478 Buskirk Avenue, Suite 1000  
Pleasant Hill, CA 94523  
USA  
[www.nice.us.com](http://www.nice.us.com)  
[solutions@nice.us.com](mailto:solutions@nice.us.com)