

**Service Organization Control 3 (SOC 3) Report
of its
Report on Software AG's webMethods Integration
Cloud System
Relevant to Security and Availability
Throughout the Period of
April 1, 2017 to September 30, 2017**



SECTION I

Independent Service Auditor's Report

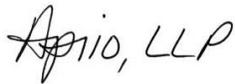
Independent Service Auditor's Report to the Management of Software AG

To the Board of Directors of Software AG:

We have examined the effectiveness of Software AG webMethods Integration Cloud System controls over Security and Availability throughout the Period of April 1, 2017 to September 30, 2017, based on the criteria set forth in the American Institute of Certified Public Accountants (AICPA) TSP section 100, Trust Services Principles and Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy. Software AG's management is responsible for maintaining the effectiveness of these controls. Our responsibility is to express an opinion based on our examination.

Because of the nature and inherent limitations of controls, Software AG webMethods's ability to meet the aforementioned criteria may be affected. For example, controls may not prevent or detect and correct error or fraud, unauthorized access to systems and information, and failure to comply with internal and external policies or requirements. Also, the projection of any conclusions based on our findings to future periods is subject to the risk that changes made to the system or controls, the failure to make needed changes to the system or controls or deterioration in the effectiveness of controls may alter the validity of such conclusions.

In our opinion, Software AG webMethods maintained, in all material respects, effective controls over the security and availability of the webMethods system to provide reasonable assurance that the WebMethods Integration Cloud System was protected against unauthorized access (both physical and logical) and was available for operation and use as committed or agreed during the period of April 1, 2017 through September 30, 2017 based on the AICPA Trust Services security and availability criteria.



Atlanta, GA

October 31, 2017

SECTION II

Management Assertion and System Description

Management of Software AG's Assertion regarding its webMethods Integration Cloud System

For the period of April 1, 2017 to September 30, 2017

October 31, 2017

Software AG maintained effective controls over the security and availability of its webMethods Integration Cloud System as defined by the following system description to provide reasonable assurance that:

- the system was protected against unauthorized access, both physical and logical, and;
- was available for operation and use as committed or agreed

during the period of April 1, 2017 through September 30, 2017 based on the AICPA trust services security and availability criteria set forth in the AICPA's TSP Section 100, Trust Service Principles and Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy.

Our attached system description identifies the aspects webMethods system covered by our assertion.

Emily Ryan

Managing Director SAG Cloud GmbH

Gerd Schneider

Head of Cloud Security

Management of Software AG Description of its webMethods Integration Cloud System

Software AG Overview

Software AG helps organizations combine existing systems on premises and in the cloud into a single platform to optimize business and serve customers. The Software AG webMethods Integration Cloud can rapidly build and deploy digital business applications to exploit real-time market opportunities. Get maximum value from big data, make better decisions with streaming analytics, achieve more with the Internet of Things, and respond faster to shifting regulations and threats with intelligent governance, risk and compliance. Software AG helps organizations achieve their business objectives faster. The company's big data, integration, business process, IT planning, portfolio and architecture management technologies enables customers to drive operational efficiency, modernize their systems and optimize processes for smarter decisions and better service. Building on over 40 years of customer-centric innovation, Software AG is fueled by core product families such as Adabas-Natural, Alfabet, Apama, ARIS, Terracotta, and webMethods.

webMethods Integration Cloud Overview

webMethods Integration Cloud is Software AG's Integration Platform as a Service (iPaaS) offering. It enables organizations to quickly and easily integrate Software-as-a-Service (SaaS) applications such as Salesforce and SuccessFactors. Additionally, it also facilitates a secure and reliable way to integrate SaaS applications with organization's on-premises hosted ERP, CRM and warehouse applications such as SAP systems and Oracle e-business suite. webMethods Integration Cloud includes the following features:

- Seamless integration of SaaS applications;
- Secure and reliable integration with on-premises hosted applications;
- User Interface supporting guided development for faster development and deployment;
- Sophisticated orchestration using easy-to-use graphical design language;
- Connectivity to many popular SaaS applications;
- Web Services with a SOAP connector;
- FTP servers for file transfers with a FTP/FTPS connector;
- Support for full development life cycle with stages;
- Multi-tenant architecture which scales elastically based on demand.

webMethods Integration Cloud provides a way to eliminate integration silos that arise when adding new cloud based applications to your SaaS environment. Customers can seamlessly integrate applications hosted in public or private clouds, as well as applications hosted on premise. With webMethods Integration Cloud, organizations can standardize a single integration technology.

Core Features:

User Interface:

webMethods Integration Cloud's user interface is built for business users and citizen developers. The user interface supports guided development and wizards to help users create integrations. The user interface runs on all latest browsers and on the tablets.

Sophisticated Service Orchestration:

webMethods Integration Cloud's graphical user interface provides easy to use graphical design language to build complex integrations involving multiple applications and other integrations. This graphical design language is easy enough to use by non-integration specialists/non-IT professionals.

Application Connectors:

webMethods Integration Cloud provides connectivity to many SaaS applications, some of which are Salesforce CRM, ServiceNow, Strikelron, Amazon SQS, Amazon S3, Microsoft Dynamics CRM and SuccessFactors HCM.

In addition, webMethods Integration Cloud provides the FTP/FTPS connector for connection to FTP servers for file transfers, and the SOAP connector to consume and communicate with Web Services.

webMethods Integration Cloud allows users to define multiple accounts to connect to these applications and define operations over these applications, which can be used in Integrations.

Mapping, Transformation & Enrichment:

Mapping, transformation, and enrichment are the core strengths of the webMethods Integration platform and now these capabilities are available to cloud users as well. Mapping and transformation capability can be utilized by simple drag-and-drop user interface, which a citizen developer can easily use.

Integration Agent:

webMethods Integration Cloud enables organizations to integrate their applications with those of their partners, as well as their own on-premises applications by providing a lightweight agent.

Stages and Development Lifecycle:

webMethods Integration Cloud allows organizations to manage their development lifecycle by providing multiple environments one for each stage in their development lifecycle. Up to three such environments called Stages can be created, i.e., Default, Test, and Live. Integrations and their referred assets, like operations, can be promoted from one stage to another enabling the organizations to implement rigorous software development life-cycle process in the cloud.

The Integration Cloud will provide the customers with stages on which versions of the integrations will work. There will always be one stage called "Default". In cases where customers are not entitled to more stages, the whole staging management process will be performed in the default stage.

Promotions from one stage to another includes a strong Change Management process, which mitigates the risk of unscheduled outages during the migration to the production environment and thereafter. A series of tests and approvals have to be passed before moving from one stage to the next. Any tests or steps that fail during a pre-production stage require a root-cause-analysis of the issue, a fix, and a retest before a passing mark and approval to move to the next stage can be received.

Components Relevant to webMethods Integration Cloud System

Infrastructure:

webMethods Integration Cloud's infrastructure is provided by Amazon Web Services (AWS), an ISO 27001 certified third-party vendor. webMethods Integration Cloud is deployed as a public cloud, multi-tenant concept where customers share central resources but are virtually segregated. Customers can purchase either Integration Cloud Basic, Advanced or Enterprise levels which grant additional dedicated virtual Integration Server instances to the tenant. The webMethods platform is available in two regions – United States and Europe. Customers can select the best region to host their tenant in order to meet their connectivity needs.

Software:

Infrastructure:

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Some or all of the following service components are provided by AWS to facilitate the delivery of Cloud services:

- **AWS VPC:**

A Virtual Private Cloud (VPC) service instance from AWS secures the customer's service installation against intrusion. Amazon VPC is used to provide a private, isolated section of the AWS Cloud where AWS resources are launched in a defined virtual network.

See <http://aws.amazon.com/vpc/>

- **AWS EC2:**

Amazon EC2 provides resizable compute capacity in the cloud. EC2 (Elastic Cloud Compute) is the virtual computing environment with the Operating System. It is used for the deployment of the Cloud software and workloads of web application, application server and additional Cloud components.

See <http://aws.amazon.com/ec2/>

- **AWS S3:**

Amazon S3 (Simple Storage Service) provides a fully redundant data storage infrastructure. The AWS S3 instance is used to securely store all log information, for example the event monitoring and application log information etc.

See <http://aws.amazon.com/s3/>
- **AWS ROUTE 53:**

Amazon Route 53 is a highly available and scalable Domain Name System (DNS) web service which is used for accelerated content delivery of the Cloud to remotely located users by setting up a dedicated domain name for the customer.

See <http://aws.amazon.com/route53/>
- **AWS Relational Database Service (RDS):**

Amazon RDS (Relational Database Service) is used to set up, operate, and scale a SQL Server database in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database administration tasks.

See <https://aws.amazon.com/rds/>
- **AWS Directory Service:**

AWS Directory Service is a managed service that is used to connect the Cloud end users with an existing on-premise Microsoft Active Directory at customer location.

See <https://aws.amazon.com/directoryservice/>
- **AWS Identity & Access Management:**

AWS Identity and Access Management (IAM) is used to securely control access to AWS services and resources for dedicated members of the Operations team, including the AWS Directory Services in which they are entitled.

See <https://aws.amazon.com/iam/>
- **AWS Key Management Service (KMS):**

AWS Key Management Service is a managed service that enables users to create and control the encryption keys used to encrypt data, and uses Hardware Security Modules to protect the security of keys. AWS Key Management Service is integrated with several other AWS services to help in protecting the data stored with these services. AWS Key Management Service is also integrated with AWS CloudTrail to provide users with logs of all key usage to help meet users' regulatory and compliance needs.

See <http://aws.amazon.com/kms/>
- **AWS Config:**

AWS Config is a fully managed service that provides users with an AWS resource inventory, configuration history, and configuration change notifications to enable security and governance.

See <http://aws.amazon.com/config/>

- **AWS Lambda:**
AWS Lambda allows users to run codes without provisioning or managing servers.
See <http://aws.amazon.com/lambda/>
- **AWS Simple Email Service (SES):**
Amazon SES (Simple Email Service) is a highly scalable and cost-effective bulk and transactional email-sending service for the cloud. It is used to configure the SMTP service related to the webMethods software and for notifications to the CSO Team related to the AWS Lambda configuration.
See <http://aws.amazon.com/ses/>
- **Amazon Simple Queue Service (SQS):**
Amazon Simple Queue Service is a fast, reliable, scalable, fully managed message queuing service.
See <http://aws.amazon.com/sqs/>
- **AWS Simple Notification Service (SNS):**
Amazon Simple Notification Service is a fast, flexible, fully managed push notification service that allows users to send individual messages or to fan-out messages to large numbers of recipients. Amazon SNS makes it simple and cost effective to send push notifications to mobile device users, email recipients, or even send messages to other distributed services.
See <http://aws.amazon.com/sns/>

Software:

Monitoring Software:

- **AWS Trusted Advisor:**
AWS Trusted Advisor helps in provisioning resources by following best practices. AWS Trusted provides a general overview of all related AWS resources regarding Cost Optimizing, Performance, Security, and Fault Tolerance.
See <https://aws.amazon.com/premiumsupport/trustedadvisor/>
- **AWS CloudTrail:**
The AWS CloudTrail web service records AWS API calls and delivers log files. These log files are being stored in the S3 instance.
See <http://aws.amazon.com/cloudtrail/>
- **AWS CloudWatch:**
Amazon CloudWatch provides monitoring for AWS cloud resources. Respective log files are stored in the S3 instance.
See <http://aws.amazon.com/cloudwatch/>

- **Trend Micro “Deep Security”:**
Deep Security is an Infrastructure Protection tool that provides Intrusion Detection and Prevention, Virus scan and vulnerabilities scanning for the customer’s environment.
See <http://www.trendmicro.com/aws/>
- **Ossec Open Source HIDS SECurity**
Ossec is used for UNIX system activity monitoring (file integrity, log files, root check and processes).
See <http://www.ossec.net/>
- **Zabbix:**
Zabbix is used for performance, and availability monitoring of customer’s Cloud Service components and resources.
See <http://www.zabbix.com/>
- **Graylog:**
Graylog is used for log management and analysis of customer’s Cloud infrastructure components and resources.
See <https://www.graylog.org/>

Operating Software:

- **webMethods Integration Server:**
webMethods Integration Server is a run-time server that provides built-in services. The Integration Server provides a platform to develop, deploy, and execute services or integrations from webMethods Integration Cloud.
- **webMethods CloudStreams:**
CloudStreams is a multi-component product that enables customers to develop and govern integration flows between software as a service (SaaS) providers such as Salesforce.com and on-premise applications such as CRM and ERP.
- **Universal Messaging:**
Universal Messaging is fast, reliable, scalable, and flexible Java message-oriented middleware (MOM) that provides messaging functionality. Universal Messaging serves as the intermediary that routes data from webMethods Integration Cloud to on-premise and vice versa.
- **Agileapps Platform:**
The Agileapps Platform is a database (MySQL 5.5.34-1) in the cloud that doubles as a PaaS (Platform as a Service). This enables customers to get a high-powered database including a suite of pre-built application templates, so customers can run, customize, and build enterprise apps "in the cloud"--applications that are driven by workflow processes and data policies and that support collaboration.

- **Memcached:**
Memcached is a third-party caching mechanism used by the platform to cache the Application Data and other required elements, which improves performance by minimizing the user response time to the server.
- **Linux Operating System:**
webMethods Integration Cloud server instances are running Linux Operating systems called cent OS 6.6 final and are licensed through AWS on their EC2 service.
- **MySQL Database:**
The product is running MySQL databases within the EC2 server instances. MySQL Server Version 5.5.xx (Community Edition or Community Enterprise Edition) Learn more details at <https://dev.mysql.com/downloads/mysql/5.5.html>
- **Labcase:**
Labcase is a project management and document management system. Cloud service operations stores all policies and important documents, as well as information for daily procedures in it. vfgb
- **KeePass:**
KeePass is a free open source password manager, which helps in managing passwords in a secure way. All passwords are kept in one database, which is locked with one master key or a key file. The database is encrypted (AES and Twofish).
- **Pivotal/Empower:**
Pivotal/Empower is the support incident tool of Software AG. All incidents of Cloud customers are logged via Empower and worked on in Pivotal. Cloud Support Manager or Cloud Support Expert checks support incidents for cloud specific properties and forwards them to Cloud Service Operations as required. The status of the incident is communicated via Empower to the customer.
- **iTrac (Jira):**
iTrac is the CSO and R&D bug fix and change management ticketing system. Customer incidents can be escalated to iTrac from Pivotal by the Global Support team or directly entered as incidents are identified.
- **Putty:**
Putty is an Open Source SSH and telnet client. Putty is used for remote log into the servers.
- **inSCP:**
WinSCP is an open source free SFTP client, FTP client, WebDAV client and SCP client for Windows. The main function of WinSCP, is file transfer between a local and a remote computer. Additionally, WinSCP offers scripting and basic file manager functionality.
- **SAML:**
The SAML component is fully compliant with the OASIS Security Assertion Markup Language v2.0 specification. See <http://www.componentspace.com/SAMLv20.aspx>

People

Organizational Structures:

webMethods Integration Cloud is administrated and managed by the Cloud Service Operations Team (CSO). Members of the CSO are located in Software AG subsidiaries in Germany, Bulgaria, and the USA. The CSO team is distributed in different time zones in order to provide follow the sun coverage for cloud product support needs and to offer maintenance windows outside of customer's standard business hours.

The Cloud Service Operations team interacts with several other Software AG teams in order to provide the webMethods Integration Cloud service.

- **Research and Development:**

R&D develops and releases new product versions on a 3 months basis. R&D is also responsible for the setup of new customers of the webMethods Integration Cloud. Once the new customer setup is complete, R&D will hand over the webMethods Integration Cloud to CSO. If an incident occurs in the environment that cannot be resolved by CSO, R&D may be asked to assist to resolve the issue.

- **Logistics:**

Logistics informs CSO about new webMethods Integration Cloud customers and sends the customer their initial welcome e-mail with links for tenant creation.

- **Global Support:**

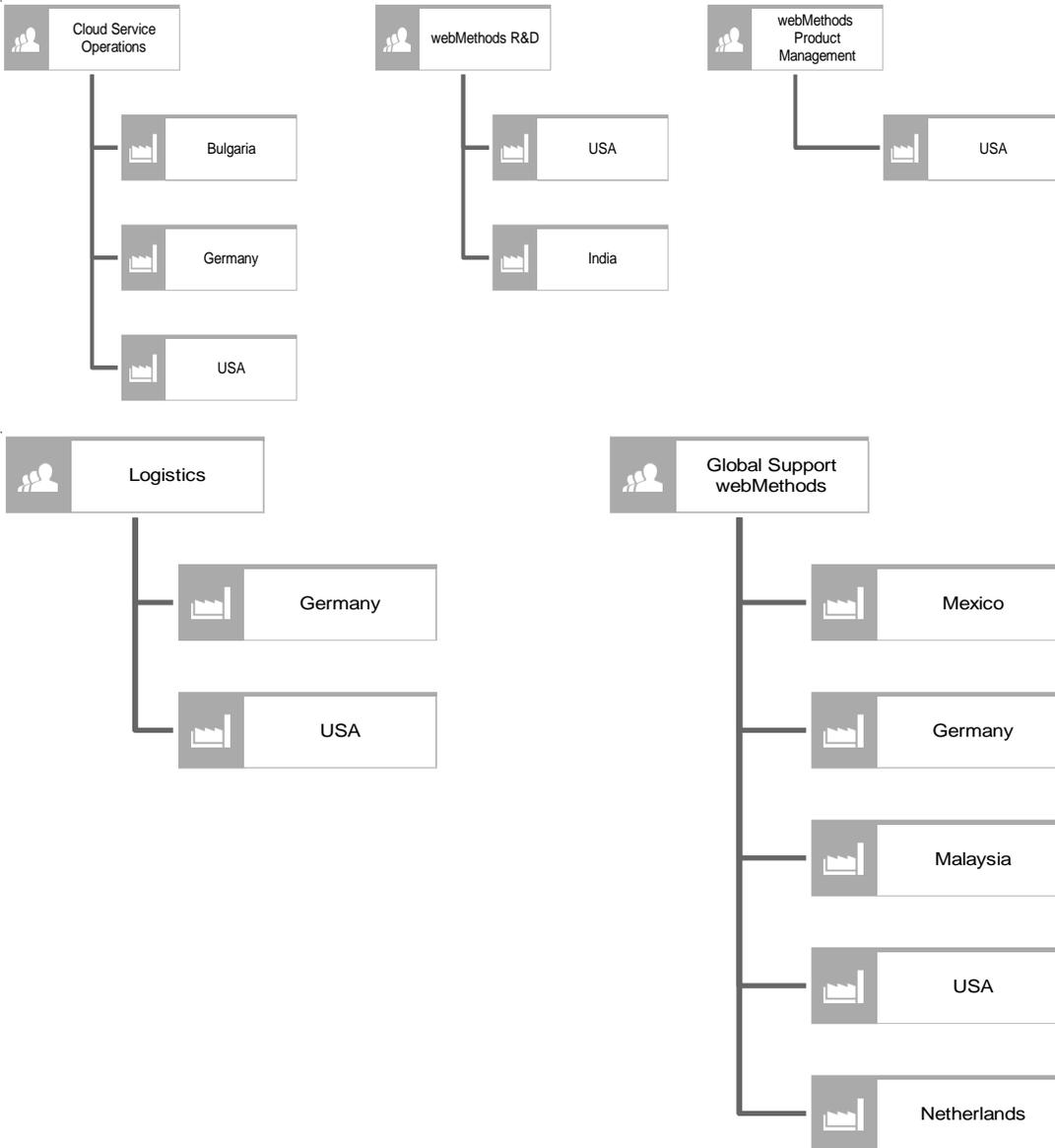
Global Support is the single point of contact for webMethods Integration Cloud customers to report support incidents. Depending on the incident and whether it can be resolved directly by Global Support, the incident may be routed to CSO or R&D.

- **webMethods Product Management:**

Product Management evaluates new features for webMethods Integration Cloud. They interface between R&D, Marketing and Sales for webMethods Integration Cloud topics.

The different locations of webMethods R&D, Global Cloud Service Operations, Logistics, webMethods Global Support and webMethods Product Management are outlined in the following diagram:

OTHER INFORMATION PROVIDED BY SERVICE AUDITOR



All teams that influence the management of the webMethods Integration Cloud platform are documented at the corporate level in an organizational chart, which is available for all employees through the company intranet. This organizational chart is maintained dynamically through Human Resources' SAP Master Data module.

Procedures

All processes and procedures are regularly reviewed by CSO Management and relevant team members. A sample of recurring reviews are listed below.

- **Organizational Structure** - Including the assignment of roles and responsibilities and yearly review. Participants include the CSO team;
- **Contract Changes** – Monthly review is conducted in case of any amendments or service updates. Participants include the CSO team, Product Management, Cloud Security, and Legal as necessary;
- **Monitoring Process** - Reviewed on a yearly basis by the CSO Management and the Monitoring experts;
- **Escalation Process** - Reviewed on a yearly basis by the CSO Management;
- **Access Control and Risk Logs** – Reviewed on a monthly basis by CSO Management.

Data

Customer tenant data is stored only inside the Amazon environment. Physical access to the AWS data centers is strictly controlled and audited according to their ISO 27001 and SOC 2 controls. Only the Cloud Service Operations (CSO) has access to the AWS hosted environment via either the Amazon Web Service console using two-factor authentication or direct SSH access to the OS-level of hosted resources using individual key-pairs. All AWS access attempts and activities within the hosted environments are logged using AWS Cloud Trail services. All customer tenant data is contained in the Platform (at runtime) and the database and file storage (at rest). Access to the technical AWS infrastructure is restricted to only required team members using least privileges and all account activities are logged and monitored. Standard HTTPS encryption with updated ciphers are used during transfer from the browser to the web server. Data-at-rest is protected using AWS S3 server-side encryption, AWS EBS volume encryption, and/or AWS RDS encryption.

CSO personnel do not have access to customer tenant data unless explicitly granted by customer. In case of a support incident, which requires access to the customer's tenant data, the customer can choose to grant access to CSO to examine the issue by providing user credentials, function privileges and client license to access the data. Software AG customers retain control and ownership of their data.