

# **TIBCO ActiveMatrix® Service Gateway**

Release Notes

*Software Release 1.1  
May 2012*

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# Preface

TIBCO ActiveMatrix Service Gateway enables dynamic policy-based partner-centric governance of SOA systems by federating heterogeneous services and regulating access by external consumers and organizations. Through a high performance events server the Service Gateway manages and enforces policies such as security, throttling, quotas, transformation and monitoring independent of service implementation and lifecycle.

With the separate purchase of Spotfire users can analyze service usage, subscriber behavior and performance.

## Topics

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- [Typographical Conventions, page vi](#)
- [Connecting with TIBCO Resources, page viii](#)

# Typographical Conventions

The following typographical conventions are used in this manual.

Table 1 General Typographical Conventions



Convention	Use
code font	<p>Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example:</p> <p>Use <code>MyCommand</code> to start the foo process.</p>
<b>bold code font</b>	<p>Bold code font is used in the following ways:</p> <ul style="list-style-type: none"><li>• In procedures, to indicate what a user types. For example: Type <b>admin</b>.</li><li>• In large code samples, to indicate the parts of the sample that are of particular interest.</li><li>• In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, <code>MyCommand</code> is enabled: <code>MyCommand [<b>enable</b>   disable]</code></li></ul>
<i>italic font</i>	<p>Italic font is used in the following ways:</p> <ul style="list-style-type: none"><li>• To indicate a document title. For example: See <i>TIBCO ActiveMatrix BusinessWorks Concepts</i>.</li><li>• To introduce new terms For example: A portal page may contain several portlets. <i>Portlets</i> are mini-applications that run in a portal.</li><li>• To indicate a variable in a command or code syntax that you must replace. For example: <code>MyCommand <i>PathName</i></code></li></ul>
Key combinations	<p>Key name separated by a plus sign indicate keys pressed simultaneously. For example: <code>Ctrl+C</code>.</p> <p>Key names separated by a comma and space indicate keys pressed one after the other. For example: <code>Esc, Ctrl+Q</code>.</p>
	<p>The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.</p>
	<p>The tip icon indicates an idea that could be useful, for example, a way to apply the information provided in the current section to achieve a specific result.</p>

Table 1 General Typographical Conventions (Cont'd)


Convention	Use
	The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken.

Table 2 Syntax Typographical Conventions

Convention	Use
[ ]	<p>An optional item in a command or code syntax.</p> <p>For example:</p> <pre>MyCommand [optional_parameter] required_parameter</pre>
	<p>A logical OR that separates multiple items of which only one may be chosen.</p> <p>For example, you can select only one of the following parameters:</p> <pre>MyCommand param1   param2   param3</pre>
{ }	<p>A logical group of items in a command. Other syntax notations may appear within each logical group.</p> <p>For example, the following command requires two parameters, which can be either the pair param1 and param2, or the pair param3 and param4.</p> <pre>MyCommand {param1 param2}   {param3 param4}</pre> <p>In the next example, the command requires two parameters. The first parameter can be either param1 or param2 and the second can be either param3 or param4:</p> <pre>MyCommand {param1   param2} {param3   param4}</pre> <p>In the next example, the command can accept either two or three parameters. The first parameter must be param1. You can optionally include param2 as the second parameter. And the last parameter is either param3 or param4.</p> <pre>MyCommand param1 [param2] {param3   param4}</pre>

## Connecting with TIBCO Resources

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### How to Join TIBCOmmunity

TIBCOmmunity is an online destination for TIBCO customers, partners, and resident experts, a place to share and access the collective experience of the TIBCO community. TIBCOmmunity offers forums, blogs, and access to a variety of resources. To register, go to <http://www.tibcommunity.com>.

### How to Access All TIBCO Documentation

You can access TIBCO documentation here:

<http://docs.tibco.com>

### How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, please contact TIBCO Support as follows.

- For an overview of TIBCO Support, and information about getting started with TIBCO Support, visit this site:

<http://www.tibco.com/services/support>

- If you already have a valid maintenance or support contract, visit this site:

<https://support.tibco.com>

Entry to this site requires a user name and password. If you do not have a user name, you can request one.



# Release Notes

Check the TIBCO Product Support web site at <https://support.tibco.com> for product information that was not available at release time. Entry to this site requires a username and password. If you do not have a username, you can request one. You must have a valid maintenance or support contract to use this site.

## Topics

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- [New Features, page 2](#)
- [Changes in Functionality, page 11](#)
- [Deprecated and Removed Features, page 12](#)
- [Migration and Compatibility, page 13](#)
- [Closed Issues, page 14](#)
- [Known Issues, page 15](#)

## New Features

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This section lists the new features of the product for this release.

### Release 1.1

In this release, the following functionality has been introduced:

#### Installation and Packaging

##### **Separation of software program files and configuration data**

The Installer allows you to input a configuration folder which stores all the configuration files at one place making it separate from the software installation files. This promotes to have one single product installation directory with multiple configurations (for example, one for test environment, another one for production environment).

#### User Interface

A new graphical user interface for configuration of operations, services, mappings, throttles, schemas, partner data, partner groups, partner operations, web services security, keystores, and error maps has been introduced in this release. See *TIBCO ActiveMatrix Service Gateway User's Guide* for details.

#### TIBCO ActiveMatrix Service Gateway Studio

TIBCO ActiveMatrix Service Gateway Studio provides a design time environment for adding custom extensions to a project. It is an Eclipse-based user interface, which is used to build, maintain, configure and modify deployments for the project. It is integrated into the standard Eclipse menus wherever appropriate, and works with many established Eclipse UI methodologies and plug-ins.

#### Design and Develop Custom Extensions

TIBCO ActiveMatrix Service Gateway Studio allows users to customize the default engine behavior by modifying the Default Implementation project. Using this functionality, users can develop their own extensions and integrate the custom extensions with the core functionality of the gateway engine.

## Caching

### Association Caches

TIBCO ActiveMatrix Service Gateway provides a mechanism to cache the previous acquired information and uses that information later to optimize the time taken for routing.

TIBCO ActiveMatrix Service Gateway uses the cache agents to store and serve cache data for all the objects of TIBCO ActiveMatrix Service Gateway cluster. The cache agents participate in distribution, partitioning, and storage of the objects in the cluster.

### Cache Clearing Manager

TIBCO ActiveMatrix Service Gateway Cache Clearing Manager provides mechanism to clear the cache. The Cache Clearing Manager manages the eviction of entries in the association cache, especially for the entries that are not often referenced.

## Extension Mechanism

Extension mechanism allows you to add custom code in the TIBCO ActiveMatrix Service Gateway Studio using the rules language. This functionality provides the capability to add the new stages to the default transaction processing pipeline.

Following features have been implemented using the extension mechanism:

### Field Translation

TIBCO ActiveMatrix Service Gateway allows the look ups of the fields from the external systems for data enrichments and cross referencing, which can use the association caching functionality for faster processing of requests.

### Content Based Authorization Policy

This functionality allows you to authorize the partner identities or the customer references of the requestor. The references are sent by the requestor in the content of the request message, which are then identified against LDAP system using a set of LDAP catalog functions.

### Response Cache

Response cache is implemented using association caches to store the responses of requests and uses these responses for later requests. Using this functionality, TIBCO ActiveMatrix Service Gateway supports :

- Faster processing of requests.
- Offloading of service endpoints.

### **Sequential Orchestration**

TIBCO ActiveMatrix Service Gateway supports light weight sequential orchestration. Sequential orchestration allows you to access multiple service endpoints by making a number of sequential calls to fulfill or authorize a request.

## **Security**

### **Support for SSL Authentication**

TIBCO ActiveMatrix Service Gateway supports:

- Mutual authentication

### **WS Security Authentication**

TIBCO ActiveMatrix Service Gateway supports the web services security authentication as follows:

- Authentication of northbound requests with the username token
- SAML based authentication of northbound requests
- X.509 based signature of northbound requests
- Process the signature and encryption of northbound requests
- Sign and encrypt elements, as specified, in the northbound response

## **Mapping Capabilities**

### **Mapping of Transport Headers (Outbound and Inbound)**

For any request and response message, the full access to the request context is available to the mapper, which provides you the option to:

- Map the transport level header fields and pass it through to the next stage in the processing pipeline
- Set the protocol level properties. For example, setting the JMS priority field in the protocol header.

## Enumeration Orchestration

TIBCO ActiveMatrix Service Gateway supports enumeration or parallel orchestration, a technique useful for requests with the repeating fields. This functionality is supported using the mapping capability.

## Validation of Requests With Error Code

For any request message, if the responseType is set as Full for mapper registration, this functionality allows you to validate the message content using Xpath and update the request context with an appropriate error code. The transaction completes with error processing path in the request processing pipeline and returns the error message to the requestor.

## Routing

### Transport/Protocol bridging between SOAP versions and XML/REST

The gateway engine is capable of bridging the messages between various standard protocol formats supported on the northbound and southbound side.

On the northbound (client) side, the gateway supports SOAP/HTTP, XML/HTTP, REST/HTTP, and XML/JMS message formats.

On the southbound (back end services) side, the gateway can invoke services over SOAP/HTTP, XML/HTTP, REST/HTTP, and XML/JMS.

For example, the common bridging cases, as follows are supported:

- REST/HTTP requests bridged to SOAP/HTTP
- SOAP/HTTP requests bridged to XML/JMS

### Custom Routing

This functionality allows you to overwrite the routing key in mapping. The generation of routing key based on the request content and context is supported.

## Audit log and Reporting

- Error logging policy for security faults
- Statistics aggregation (KPI generation)

## Operational Features

- Load balancing across:
  - multiple gateway engines
  - multiple back end service endpoints
- Fault Tolerance
- Hot deployment of new configuration changes:

TIBCO ActiveMatrix Service Gateway allows you to reload the project configuration changes without having to shut down the gateway engine.

## Monitoring and Management Server

The Monitoring and Management Server is the central management component that enables you to monitor the status of TIBCO ActiveMatrix Service Gateway cluster. It also allows you to manage the operational tasks of TIBCO ActiveMatrix Service Gateway cluster.

## Release 1.0

The following are the new features in this release.

## TIBCO ActiveMatrix Service Gateway Operational Features

This section explains the gateway operational features.

## Module for Apache HTTP Server

TIBCO ActiveMatrix Service Gateway uses Apache HTTP web server to terminate the http(s) transport. The module for Apache web server communicates with the TIBCO ActiveMatrix Service Gateway server to pass the consumer requests and partner responses.

## Core Engine Features

### Event Based Service Request Routing Engine

TIBCO ActiveMatrix Service Gateway is a high-performance event-based service-request routing engine. It treats requests and responses as events and implements the logic of a gateway layer using simple event-condition-action rules.

## Routing Capabilities

TIBCO ActiveMatrix Service Gateway uses a staged event-driven architecture in its router component.

The router component of the TIBCO ActiveMatrix Service Gateway receives request as events and uses the rules engine to determine where requests are handled. The router implements rule logic to select the service handler. The selection of the service handler depends on the parameters, such as, service endpoint location, version, load, message content, operation and so on.

### Transport Bridging between HTTP and JMS

This functionality allows you to route the http transport northbound operation and southbound JMS operation.

## Secure Multi-protocol and Multi-transport Support

TIBCO ActiveMatrix Service Gateway supports multiple protocols (HTTP or JMS, HTTPS or JMS SSL) for service abstraction. This allows the gateway to integrate with multiple web services over various transports such as HTTP(S), JMS, and REST or SOAP at the backend.

## Authentication and Authorization Support

TIBCO ActiveMatrix Service Gateway requires positive identification of requestors. This functionality allows requestors to access the service interfaces in a secure fashion. Authorization rules determine whose requests are handled, and provides:

- Access control granularity down to service endpoint
- Single-edit configuration changes

TIBCO ActiveMatrix Service Gateway provides multiple authentication and authorization mechanisms, including:

- HTTP Basic and Digest Authentication
- Public Key Authentication
- Access policies based on consumer and partner certificate configuration

## Throttle and Throttle Chain Capabilities

Throttling models determine whether the requests are handled or they are rejected. Throttles have a type and a metric against which some condition is checked.

TIBCO ActiveMatrix Service Gateway supports following throttle types:

- Rate
- High-Water Mark
- Quota
- Error
- Group Logical

Example of metrics associated with throttle type include:

- Partner
- Operation
- Service
- Time-of-day

### **Throttle Chain Support**

TIBCO ActiveMatrix Service Gateway allows you to assemble throttles into a throttle chain.

### **Mapping and Transformation Capabilities**

TIBCO ActiveMatrix Service Gateway provides message transformations using mappings. The transformations allows you to:

- Add semantic content validation rules to the incoming requests
- Access the multiple versions and formats of service APIs
- Access the fields from the request context and payload
- Protect the service end-points using service validation policies

TIBCO ActiveMatrix Service Gateway supports the transformations of both request and response messages using:

- Forward mapping - The transformations are done from request canonical form to backend service API as per defined mapping.
- Reverse mapping - The transformations are done from backend service API to response canonical form as per defined mapping.

### **Policy Based Gateway**

TIBCO ActiveMatrix Service Gateway supports policies including logging, throttling, quotas, routing, authentication, authorization and transformation.



TIBCO ActiveMatrix Service Gateway allows you to apply policies by service/operation, by partner/partner group, by message content and so on. Policies can be fully extended through business rules.

TIBCO ActiveMatrix Service Gateway allows you to change policies with respect to access, quotas, service level agreements independent of service implementation.

## **Ping Operation Support**

TIBCO ActiveMatrix Service Gateway can be configured to provide an implicit ping operation for each service.

The sample configuration contains an overall ping service for the gateway.

## **Gateway Management**

TIBCO ActiveMatrix Service Gateway contains the following management components:

### **Central Logger**

The TIBCO ActiveMatrix Service Gateway provides centralized logging via the Central Logger component.

### **Global Throttle Manager**

The Global Throttle Manager component maintains the state of all global throttles in both Façades (Façade Throttles) and Routers (Service Throttles). The Global Throttle Manager exchanges the states of global throttles with active Façade Throttle Managers and Service Throttle Managers.

### **Reporting Capabilities**

TIBCO ActiveMatrix Service Gateway is capable of generating reports based on the data from the Central Logger component. The central logger database contains the transaction level data and the key performance indicators for each transaction.

### **TIBCO Spotfire Integration**

TIBCO ActiveMatrix Service Gateway provides a sample TIBCO Spotfire analysis based on data captured by the Central Logger component. The sample shows the following metrics:

- Transaction rate per partner and service

- Throttle violation, Service quality, and Service timeouts failures
- Load Visualization for operations and management
  - Volume
  - Latency
  - Peaks
- Defect detection
- System Usage

## Operational Features

### Gateway Scalability

TIBCO ActiveMatrix Service Gateway is capable of managing large transaction volumes without any large specialized hardware.

As the rate of transactions to be processed by the gateway increases, it can rapidly scaled up and down through the addition or removal of additional gateway server instances.

TIBCO ActiveMatrix Service Gateway architecture has been designed so that when multiple gateway server instances are deployed, key management functions including throttle management and logging are co-ordinated across servers.

TIBCO ActiveMatrix Service Gateway uses a “shared nothing” model between the active gateway server instances to ensure that there is no shared state.

### Resilience

TIBCO ActiveMatrix Service Gateway provides:

- No single-point-of-failure
- Deployment of multiple instances across multiple hosts
- Deployment across data centres for geo-resilience
- Instance-count can be scaled dynamically to address peak demand

## Changes in Functionality

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This section lists changes in functionality since the last major release of this product.

### Release 1.1

There are no changes in functionality in this release.

## Deprecated and Removed Features

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This section describes deprecated features (if any), and lists features, if relevant, that may be useful alternatives to the deprecated features. Any use of a deprecated feature should be discontinued as it may be removed in a future release. You should avoid becoming dependent on deprecated features and become familiar with the suggested alternative features.

This section also lists features that are removed (if any).

### Release 1.1

#### Deprecated Features

No features are deprecated in this release.

#### Removed Features

No features are removed in this release.

## Migration and Compatibility

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This section explains how to migrate from a previous release to this release.

### Release 1.1

A new graphical user interface has been introduced in this release, which allows the users to enter the configuration. Users should use the configuration UI to manually enter the data from the old configuration files to ensure that the old configuration data is stored in a new format.

## Closed Issues

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No issues are closed in this release.

## Known Issues

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The table in this section lists known issues in this release.

Key	Summary/Workaround
ASG-546	<p><b>Summary</b> When the properties for both signing and encrypting the response documents are specified in a single property file, then encryption does not work as the the type of keystore can only be specified as subject or trust.</p> <p><b>Workaround</b> Create different property files for signing and encrypting the response messages.</p>
ASG-512	<p><b>Summary</b> For the configuration of XSLT files, when the <b>New File</b> option is used to browse and select a file which was previously selected and is present in the <b>Existing Files</b> drop down list box, the configuration UI throws an error when the configuration is saved.</p> <p><b>Workaround</b> Pick the file from the <b>Existing Files</b> drop down list box and save the configuration.</p>
ASG-506	<p><b>Summary</b> When the user imports the <i>TIBCO_HOME/asg/1.1/projects/ASG_DefaultImplementation</i> project in ActiveMatrix Service Gateway Studio and builds the EAR file, the following error is displayed:</p> <p>Project Library: Unable to resolve CustomFunctions</p> <p><b>Workaround</b> Clean the project one or two times by using the Project -&gt; Clean menu option.</p>
ASG-455	<p><b>Summary</b> Rule and Rule Functions source cannot be viewed directly from the <i>asg_core.projlib</i> project library under the <i>TIBCO_HOME/asg/1.1/lib/projectlib</i> directory.</p> <p><b>Workaround</b> Uncompress the project library contents and view it in ActiveMatrix Service Gateway Studio or with any text editor.</p>

Key	Summary/Workaround
ASG-310	<p><b>Summary</b> When the JMS-XML is used as a backend service, the following NumberFormatException is thrown by the gateway engine:</p> <p>Message: java.lang.NumberFormatException: For input string: "ID:EMS-SERVER.9C84F8F785911F0:18"</p> <p>where, "ID:EMS-SERVER.9C84F8F785911F0:18", is the message ID of the request message and will vary for each request.</p> <p><b>Workaround</b> Map the correlationID from the request message to the correlationID of the JMS response message.</p>
ASG-221	<p><b>Summary</b> The installer logs the following harmless error in the log files created in the .<b>TIBCO</b> directory located under the home directory of the user:</p> <pre>ERROR::, ClassNotFoundException: com.tibco.installer.wizard.action.TIBCOUpdateBELegacyRegistryWizardAction not found., class com.tibco.installer.util.TIBCOUniversalInstallerAction  ERROR::, com.tibco.installer.wizard.action.TIBCOUpdateBELegacyRegistryWizardAction, class com.tibco.installer.util.TIBCOUniversalInstallerAction  java.lang.ClassNotFoundException: com.tibco.installer.wizard.action.TIBCOUpdateBELegacyRegistryWizardAction at java.net.URLClassLoader\$1.run(Unknown Source)</pre> <p><b>Workaround</b> None</p>
ASG-115	<p><b>Summary</b> The installer fails to start the bundled JRE on some 64-bit Linux distributions including Ubuntu 11.04 with the following error:</p> <pre>Initializing Wizard..... Extracting Bundled JRE. Bundled JRE is not binary compatible with host OS/Arch or it is corrupt.Testing bundled JRE failed.</pre> <p><b>Workaround</b> Install 32 bit oracle JRE. Set JAVA_HOME environment variable.</p> <p>For example, Java executable is installed in <b>/opt/oracle/jre/1.6.0/bin</b>, set JAVA_HOME as:</p> <pre>export JAVA_HOME=/opt/oracle/jre/1.6.0</pre>