NASTEL®

Driving Business Transaction Performance

M6/TRV 225.003.1

AutoPilot M6® Plug-in for TIBCO RV®

Version 2.4.9

Installation and User's Guide

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Chapter 1: Introduction

Welcome to the *Nastel AutoPilot M6 for TIBCO Rendezvous (RV) Guide*, hereinafter referred to as M6 for TIBCO RV. This guide describes installation and uses of the M6 for TIBCO RV. Please review this guide carefully before using the product.

1.1 How This Guide is Organized

Chapter 1: Identifies the users and history of the document. System requirements are outlined in addition to supplying support and reference information.

Chapter 2: Contains a brief functional description of M6 for TIBCO RV.

Chapter 3: Provides instructions for new installations of M6 for TIBCO RV.

Chapter 4: Provides post-installation set-up and configuration instructions.

Chapter 5: Defines TIBCO RV metrics.

Chapter 6: Outlines TIBCO RV business view and configuration.

Appendix A: Provides a detailed list of all reference information helpful for the installation and use of AutoPilot M6 and TIBCO RV.

Appendix B: Contains conventions used in this document.

Glossary: Contains a listing of unique and common acronyms and words and their definition.

1.2 History of This Document

Table 1-1. Document History

Release Date:	Document Number	For AutoPilot Versions:	Summary
July 2008	M6/TRV 110.002	6.0 and higher	Initial release
January 2012	M6/TRV 225.001	6.0 and higher	Added Sampling Expert
December 2012	M6/TRV 225.002	6.0 and higher	Added Listener
April 2013	M6/TRV 225.003	6.0 and higher	Enhanced functional description
June 2022	M6/TRV 225.003.1		Changed title to *AutoPilot M6® Plug-in for TIBCO RV® Installation and User's Guide*

1.2.1 User Feedback

Nastel encourages all users and administrators of AutoPilot to submit comments, suggestions, corrections and recommendations for improvement for all AutoPilot documentation. Please send your comments via e-mail. Send messages to: support@nastel.com. You will receive a written response, along with status of any proposed change, update, or correction.

1.3 Related Documents

The complete listing of related and referenced documents is listed in Appendix A of this guide.

1.4 Release Notes

See README.HTM files on installation media or AutoPilot installation directory. Release notes and updates are also available through the Nastel Resource Center

1.5 Intended Audience

This document is intended for personnel installing and customizing AutoPilot M6. The installer should be familiar with:

- TIBCO RV version 7.1 and higher
- Java Run Time Environment 1.5.1 (JRE 1.5.1) or higher (included in AutoPilot M6)
- Target operating system environment.
- Procedures for installing software on the target platform such as Windows, UNIX, etc.

The installer may need administrative privileges for the target platform.

1.6 System Requirements

- TIBCO RV version 7.1 and higher.
- At least one AutoPilot managed node must be installed on the machine where TIBCO RV Server will be monitored.
- Can be installed on a separate AutoPilot M6 managed node, but will require manual copying of the JAR files.
- Approximately 1M of disk space.

1.7 Terms and Abbreviations

A list of terms and abbreviations used in this document is located in the Glossary.

1.8 Technical Support

If you need additional technical support, you can contact Nastel by telephone or e-mail. To contact Nastel technical support by telephone, call **(800) 963-9822 ext. 1.** If you are calling from outside the United States dial **001-631-761-9100 (x9190)** or **+44 20 7084 6205**. To contact Nastel technical support by e-mail, send a message to support@nastel.com. You can also contact Nastel support via the support website. Contact your M6-WMQ Administrator for access information. To access the Nastel automated support system (user ID and Password required) go to http://support.nastel.com/btracker. Contact your local AutoPilot Administrator for further information.

1.9 Conventions

Refer to Appendix B for typographical and naming conventions used in all AutoPilot documentation.

Chapter 2: About M6 for TIBCO RV

TIBCO Rendezvous® (RV) is the leading low latency messaging product for real-time high throughput data distribution applications. It ensures consistent microsecond low latency every time, with proven predictability that can be tuned to meet your specific needs.

This chapter describes Nastel's M6 for TIBCO RV and its application with AutoPilot M6.

2.1 Functional Description

M6 for TIBCO RV is a plugin consisting of three experts that collect Tibco RV system information, listen to system and custom events, and report the collected data as AutoPilot facts.

The three experts are:

- **Advisories** – Subscribes to `HOST.STATUS` (`_RV.INFO.SYSTEM.HOST.STATUS.>`) messages that are being automatically generated by TIBCO RV. These messages contain key daemon statistics, such as number of packets received/sent, number of bytes received/sent, inboundDataLoss, outboundDataLoss, etc. (Refer to section 4.2.1 and section 5.3.)
- **Sampling** (HttpGroup) – Using HTTP-based polling, reports metrics from the core TIBCO RV's components such as services, transports, and routers. The expert can monitor both local and remote TIBCO RV daemons, using either HTTP or SSL. (Refer to section 4.2.2.)
- **Listener** – Subscribes to events on a specified TIBCO RV subject. This expert is useful for sending to and reporting in AutoPilot custom messages. (Refer to section 4.2.3.)

Sampling expert is based on TIBCO RV's Config API libraries that are included in the expert's pkg. Advisories and Listener experts use standard TIBCO RV libraries and require that these libraries are installed on the CEP server. The most efficient way to monitor a server is to have both TIBCO RV and AutoPilot Server installed on it.

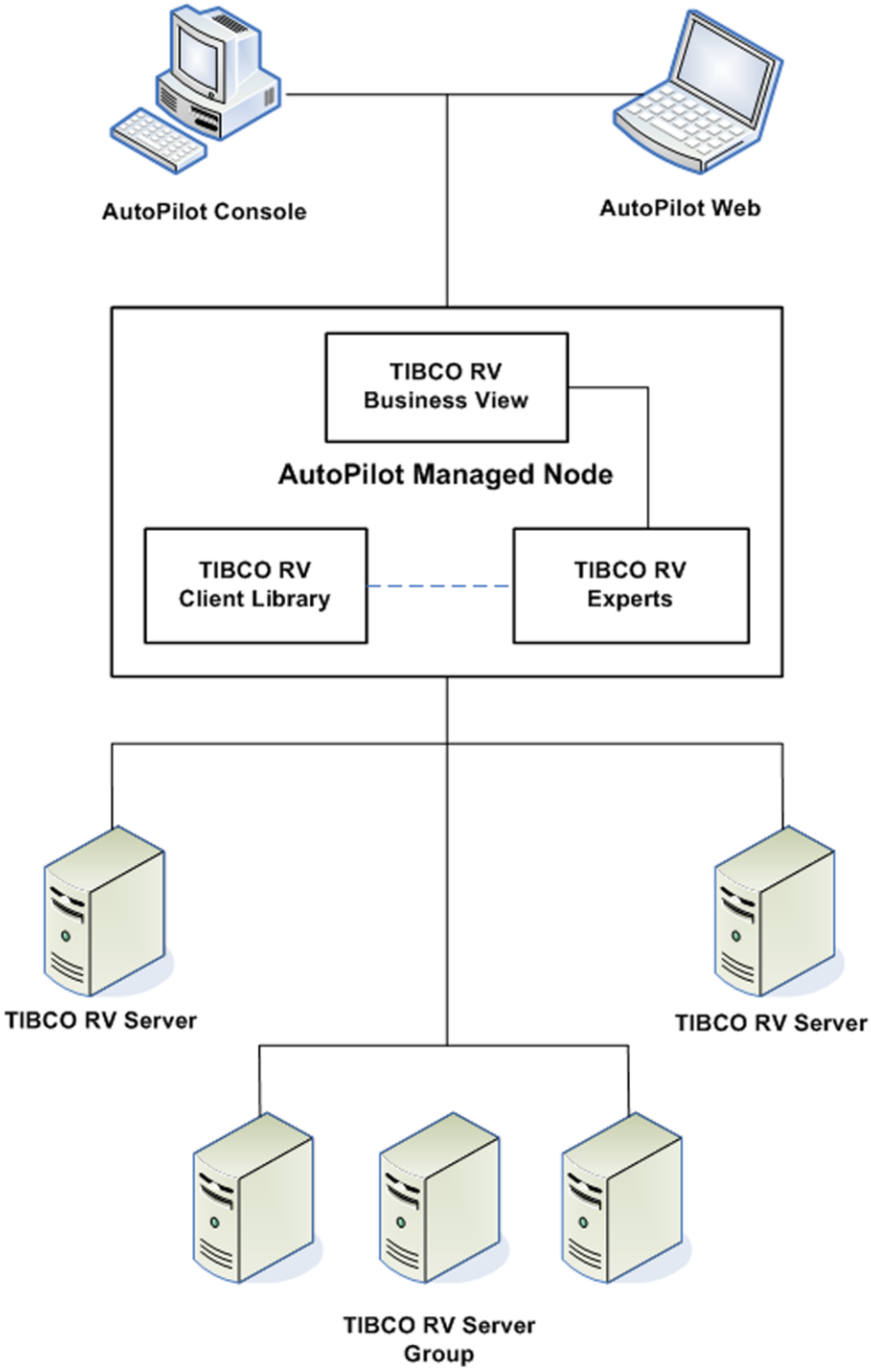

Figure 2-1. Typical M6 for TIBCO RV Deployment

Chapter 3: M6 TIBCO RV Installation

This chapter covers the installation and setup requirements for M6 TIBCO RV.

3.1 Before Installation

3.1.1 Technical Documents

Prior to installation you should review all text files and installation procedures on the installation media or files provided. You should print all of the installation related materials to give yourself quick access to any required information during any installation or migration procedures.

Additional sets of printed documents are available from your Nastel representative or Nastel Support.

3.1.2 Installation Recommendations

Nastel recommends that you observe the following update sequence when updating AutoPilot with patches, updates, and service packs:

- Machines running the Domain Server
- Machines running the managed nodes.

In order to install the product, the following pre-requisite products must be installed.

- Group Expert Framework (GEF) plugin 2.2.0
- AutoPilot with SU17
- TIBCO RV 7.5.3 or later installed on CEP Server where previous version of AutoPilot for TIBCORV must be uninstalled prior to installation.

3.1.3 Download M6 TIBCO RV

Download M6 TIBCO RV from the Nastel Resource Center, or copy from your installation media.

3.2 Installing M6 TIBCO RV

	NOTE:	There are no specific logoff procedures required to exit AutoPilot Console.

1. Save your work and logoff M6 or M6 for WMQ.
2. Stop the managed nodes and/or Domain Servers that will be updated as specified in the *AutoPilot M6 User's Guide*. (Stop the CEP server including the web server. Stop any consoles which are connected to the server to ensure they get the latest version.)
3. Copy AP_TIB_RV-2.4.9.pkg into the `[AUTOPILOT_HOME]\updates` directory.
4. At the command prompt run:
   `[AUTOPILOT_HOME]\bin\pkgman ..\updates\ AP_TIB_RV-2.4.9.pkg`
5. You will be required to add the file path to the TIBCO RV client `jars`. These libraries are usually located in `%TIBCO_RV_HOME%\lib`. If there are multiple versions of TIBCO RV installed, make sure to specify the same `%TIBCO_RV_HOME%` that is in *Path* environment variable; otherwise, the expert will fail with error:

   `Failed to open Tibrv in native implementation: Cause: Version mismatch`

   If the file path is not input, the installation will not continue.

   Example: `C:\TIBCORV\lib`

   The `rvconfig.nastel.jar, tibrvj.jar,` and `tib-rv-plugin.jar` are copied into `[AUTOPILOT_HOME]\lib`.
6. If GEF 2.2.0 is not installed, install it as well.
7. Verify installation:
   a. Verify the installation by listing the installed packages:
      `[AUTOPILOT_HOME]\localhost ..\bin\pkgman -info`

      Example:

```
C:\nastel\AutoPilotM6\localhost>..\bin\pkgman -info
Loaded 7 packages from "packages.xml"
Package                                  Version    Size(KB)   Time
---------------------------------------- ---------- ---------- -------------------
AutoPilot M6(NA)                         6.0        NA         2012-11-15 14:45:36
JRE(NA)                                  1.6.0_16   NA         2012-01-17 14:27:58
AIM-Plugin(NA)                           6.0.20     69         2010-04-07 10:42:29
ServiceUpdate(AP60_SU13.pkg)             6.0.13     2764       2010-04-07 10:42:29
Core-GEF(AP_CORE_GEF-2.2.0.pkg)          2.2.0      4904       2012-11-12 14:21:00
TIBCO-RV-Plugin(AP_TIB_RV-2.4.9.pkg)     2.4.9      215        2012-11-12 14:22:01
SOLACE-Plugin(AP_SOLACE-2.4.0.pkg)       2.4.0      1933       2012-11-13 13:48:45
```

   b. Using the exact TIBCO package name, verify the required jar and xml files have been installed. If there is a problem, uninstall and install again. If still a problem, contact Nastel.
   c. Verify the library: `[AUTOPILOT_HOME]\bin\pkgman -libinfo`. The details of the library are listed. Verify that the following files have been copied into the lib directory:

      `tibrvj.jar`
      `tib-rv-plugin.jar`
      `rvconfig_nastel.jar`

	NOTE:	Make sure there are no errors posted at the bottom of the screen.

8. Restart the CEP Server instance and other AutoPilot M6 services on the server.

Chapter 4: Using M6 for TIBCO RV

4.1 Deploying TIBCO RV Experts

The following procedure is used to configure TIBCO RV expert within M6 managed node.

1. Open your AutoPilot Console.
2. Right-click on managed node that has AutoPilot/TIBCO_RV agent installed.
3. Click **Deploy Expert > TibcoRv > TibRv[*expert*]**. The *Create TibRV[expert]* dialogue box *(Figure 4-2)* is displayed. All TIBCO RV experts use the same properties, expect for the Advisories expert which has an additional property – *JDBC Options (Figure 4-6)*. This example is for Advisories.

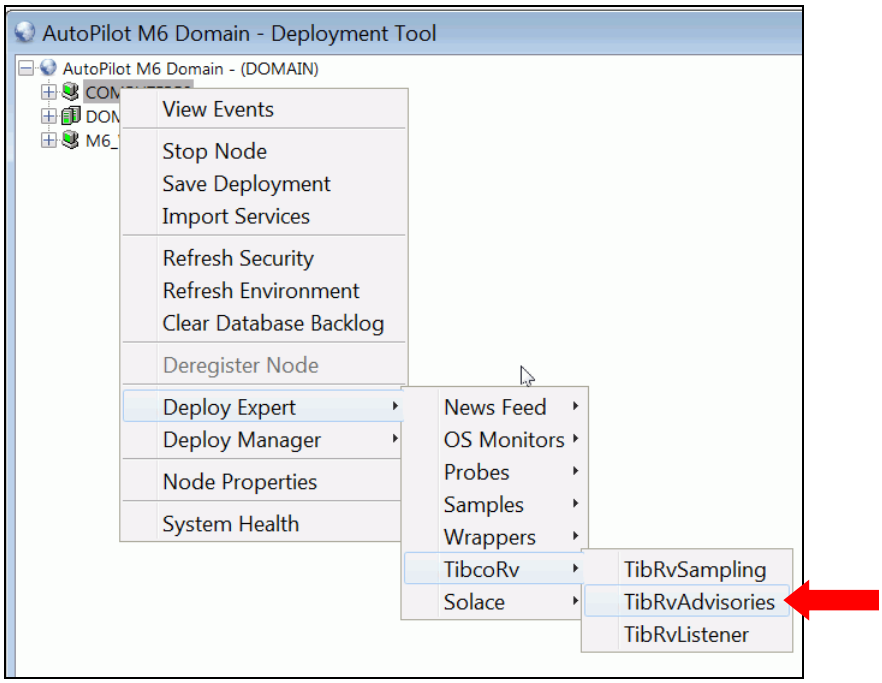

Figure 4-1. Deploy TIBCO RV Expert

4. The *General* tab is displayed. It is recommended that you update all general properties to define your expert. At a minimum apply a definitive name to your agent.

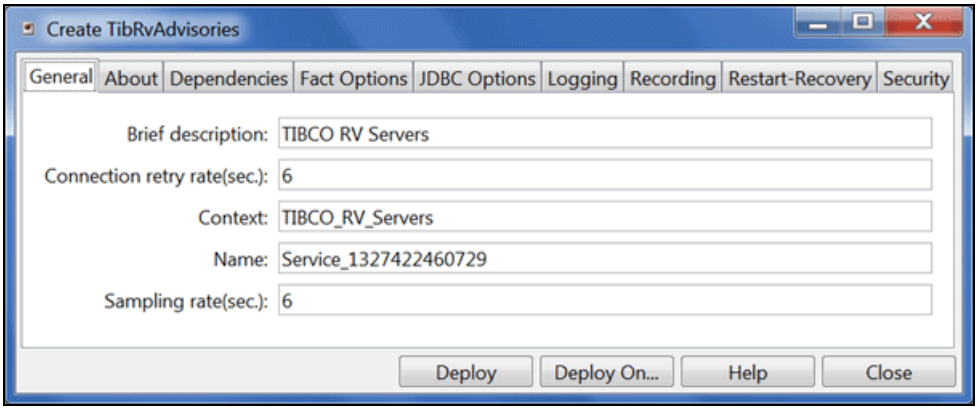

Figure 4-2. TIBCO RV Expert: General

Table 4-1. Common Properties: General	
Property	**Description**
Brief description	A short, user defined description of the service. The default is the subject expert name (example: TibcoRv Server).
Connection retry rate(sec)	Rate in seconds at which the expert will attempt to reconnect to the target server, in seconds if connection failed. Default is **6**.
Context	A user defined category that will be registered with the domain server. The default is: TIBCO_RV.
Name	Name that uniquely identifies the service in the domain. The default name is system assigned with the word service and twelve random digits. (Example: Service_123456789012). You can change the name to anything that suits your needs.
Sampling rate(sec)	Rate in seconds of fact samplings interval in seconds. Default is **6**.

5. Click the *About* tab. These parameters are common to all experts and cannot be edited.

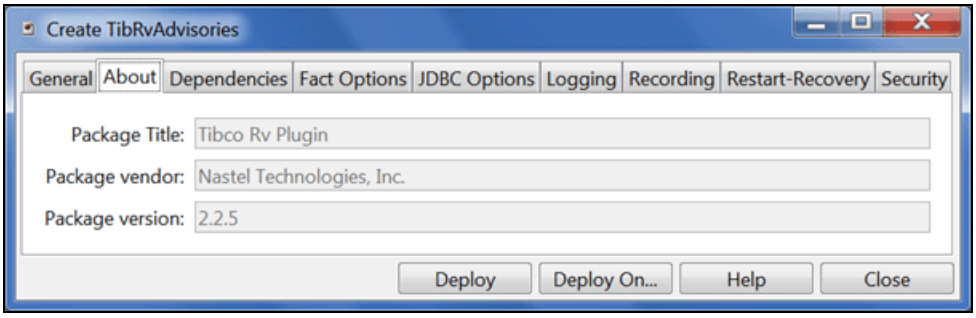

Figure 4-3. TIBCO RV Expert: About

Table 4-2. Common Properties: About	
Property	**Description**
Package Title	Implementation title of the source package.
Package vendor	Name of implementation vendor.
Package version	Package version as assigned by the vendor.

6. Click the *Dependencies* tab. Edit properties described in the table below, as required. These parameters are common to all experts.

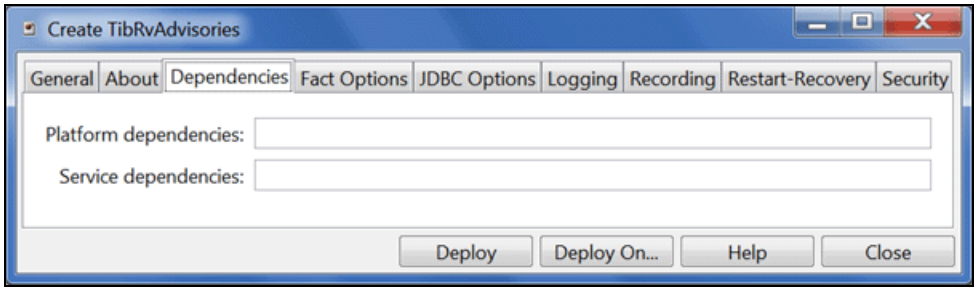

Figure 4-4. TIBCO RV Expert: Dependencies

Table 4-3. Common Properties: Dependencies	
Property	**Description**
Platform dependencies	Dependencies on operating system platforms, which is expressed in a comma separated list.
Service dependencies	Dependencies on other services, which is expressed in a comma separated list.

7. Click the *Fact Options* tab. Edit properties described in the table below, as required. These parameters are common to all experts.

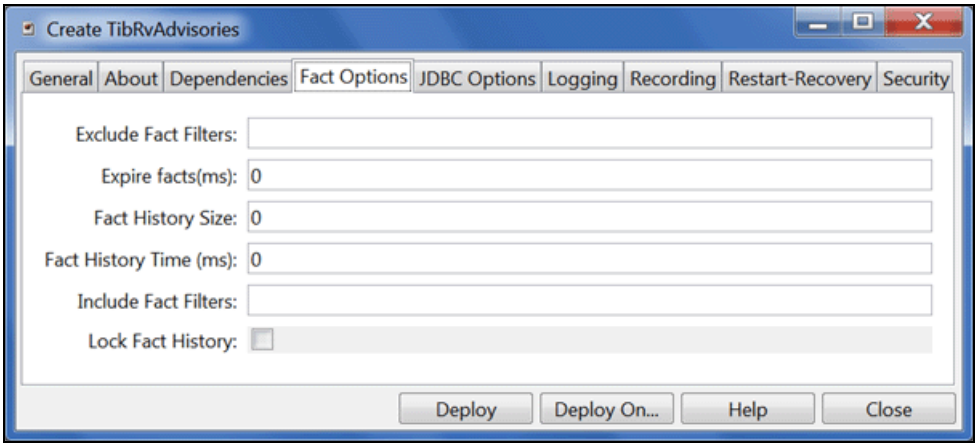

Figure 4-5. TIBCO RV Expert: Fact Options

Table 4-4. Common Properties: Fact Options	
Property	**Description**
Exclude Fact Filters	Comma separated list of fact paths to exclude during publishing.
Expire facts(ms)	Automatically expires facts that have not been updated in the specified time (ms).
Fact History Size	Automatically maintains specified number of samples for each published fact in memory
Fact History Time (ms)	Automatically maintain fact history not exceeding specified time in milliseconds.
Include Fact Filters	Comma separated list of fact paths to include during publishing. For example: *SYSTEM*, *FactName*
Lock Fact History	Enables/disables history collection after accumulating the first history batch up to **Fact History Time** or **Fact History Size** which ever limit is reached first. If disabled newer history samples replace older on a rolling basis.

8. Click the *JDBC Options* tab. Edit properties described in the table below, as required. **These parameters are for Advisories experts only.**

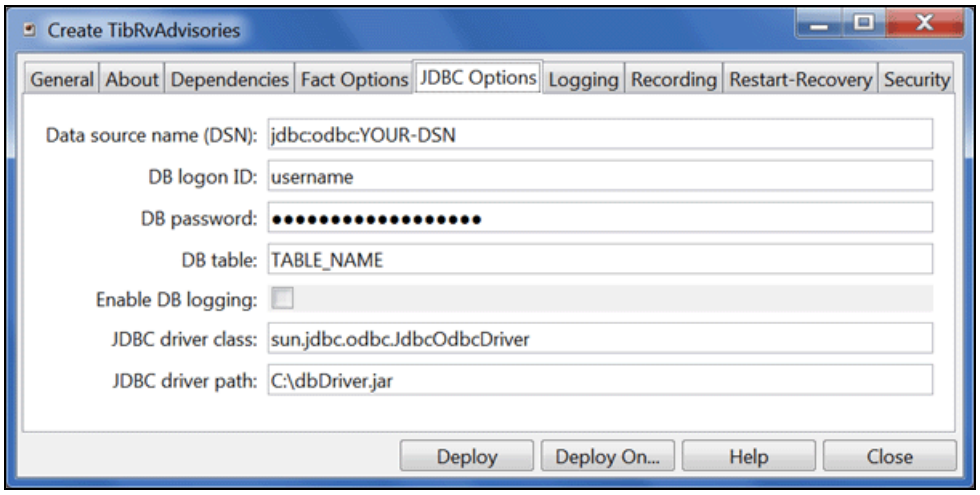

Figure 4-6. TIBCO RV Expert: JDBC Options

Table 4-5. Common Properties: JDBC Options	
Property	**Description**
Data source name (DSN)	A string describing the connection to a database.
DB logon ID	Logon ID to access the database.
DB password	Logon password to access the database.
DB table	The database table name.
Enable DB logging	Select to enable logging metrics to the database.
JDBC driver class	The driver's Java class used to connect to the database.
JDBC driver path	The path to the JDBC driver.

9. Click the *Logging* tab. Edit properties described in the table below, as required. These parameters are common to all experts.

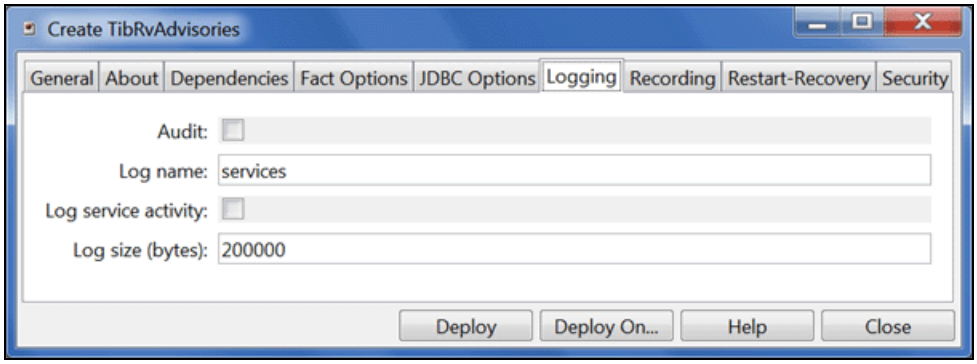

Figure 4-7. TIBCO RV Expert: Logging

Table 4-6. Common Properties: Logging

Property	Description
Audit	Enable/disable service audit trace.
Log name	Log name associated with the service.
Log service activity	Enable/disable service activity trace.
Log size (bytes)	Enter log file size if the activity is enabled. Default value is 200000.

10. Click the *Recording* tab. Edit properties as defined in the table below, as required. These parameters are common to all experts.

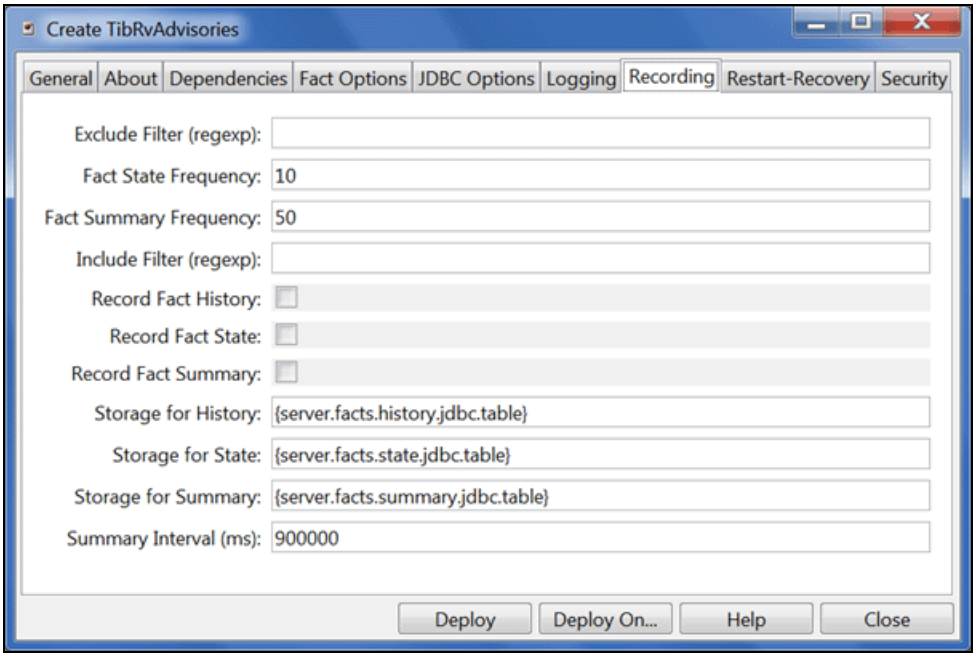

Figure 4-8. TIBCO RV Expert: Recording

Table 4-7. Common Properties: Recording

Property	Description
Exclude Filter (regexp)	A regular expression filter to exclude certain facts from being written to the database. Facts have the format `expert\class\instance\leaf=value` such as in the example `Servers\Linux\Serv7\processes=40`.
Fact State Frequency	If **Record Fact State** is enabled, the value entered here specifies how often the Fact State is updated.
Fact Summary Frequency	If **Record Fact Summary** is enabled, used to write an intermediate summary record every Xth update to the fact during the Summary Interval. In this example, every 50th update to the fact an intermediate summary record is recorded. This is done to avoid waiting 15 minutes for a summary record to appear in the summary table.
Include Filter (regexp)	A regular expression filter to include certain facts being written to the database. Same format as described for the exclude filter.
Record Fact History	If enabled, records every fact change into the History database. The exclude/include filters are respected. To define database tables and set AutoPilot options, refer to *AutoPilot M6 User's Guide*, section 4.5.4.1.
Record Fact State	If enabled, records the last value published (current state) into the state database and restores that value when the CEP Server is stopped and restarted. The exclude/include filters are respected. To define database tables and set AutoPilot options, refer to *AutoPilot M6 User's Guide*, section 4.5.4.1.
Record Fact Summary	If enabled, records summary record at the interval designated in the **Summary Interval (ms)** field into the Summary database. The exclude/include filters are respected. To define database tables and set AutoPilot options, refer to *AutoPilot M6 User's Guide with Service Update 8,* section 4.5.4.1.
Storage for History	Database table where the Fact History data is stored.
Storage for State	Database table where the Fact State data is stored.
Storage for Summary	Database table where the Fact Summary data is stored.

Table 4-7. Common Properties: Recording	
Property	**Description**
Summary Interval (ms)	If **Record Fact Summary** is enabled, designates the interval of time in ms for which baseline numbers for each numeric fact are computed. Summary Interval is only in affect when CEP instance is running in record mode (ATPNODE –record). Default 900000 is 15 minutes, which means maintain a baseline of statistics for each numeric fact for a period of 15 minutes and write a record to the database. At the end of interval fact statistics is reset and the baseline collection starts again.

11. Click the *Restart-Recovery* tab. Edit properties as defined in the table below, as required. These parameters are common to all experts.

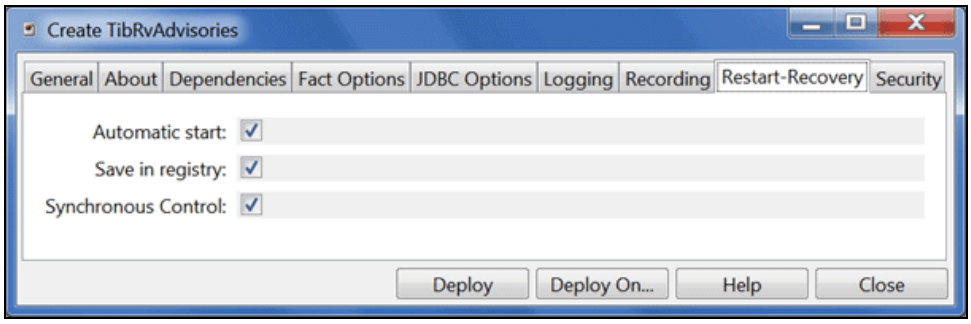

Figure 4-9. TIBCO RV Expert: Restart-Recovery

Table 4-8. Common Properties: Restart-Recovery	
Property	**Description**
Automatic start	Check to enable automatic start.
Save in registry	Check to enable saving persistent services in registry .xml file.
Synchronous Control	Check to enable synchronous service initiation.

12. Click the *Security* tab. Edit properties as defined in the table below, as required. These parameters are common to all experts.

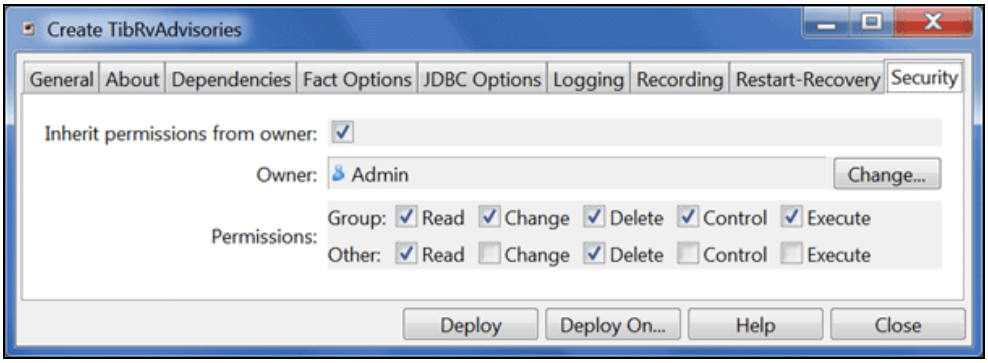

Figure 4-10. TIBCO RV Expert: Security

Table 4-9. Common Properties: Security

Property	Description	
Inherit permissions from owner	Enable/disable inherit permission from owner's permission masks.	
Owner	User that owns the object.	
Permissions	Permissions for users in same group and in other groups. Enable/disable as required.	
	Group	**Other**
Read	Group members may read/view attributes of an object.	Other users may read/view attributes of an object.
Change	Group members may change the attributes of an object.	Other users may change the attributes of an object.
Delete	Group members may delete the object.	Other users may delete the object.
Control	Group members may execute control actions such as start, stop, and disable.	Other users may execute control actions such as start, stop, and disable.
Execute	Group members may execute operational commands on the object.	Other users may execute operational commands on the object.

13. Click **Deploy**. The deployment message will confirm the name and location of the expert. Click **OK**.

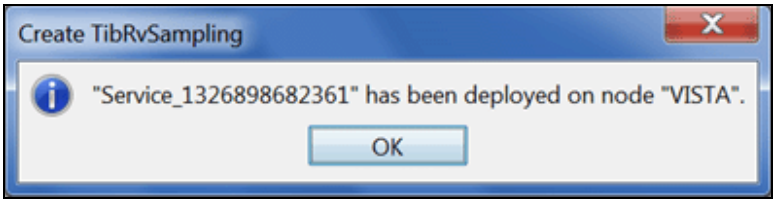

Figure 4-11. Service Deployed

14. The deployed expert(s) will be displayed under the node they were deployed on, as in the sample below. The facts produced by each expert are defined in: Chapter 5: M6 for TIBCO RV Metrics.

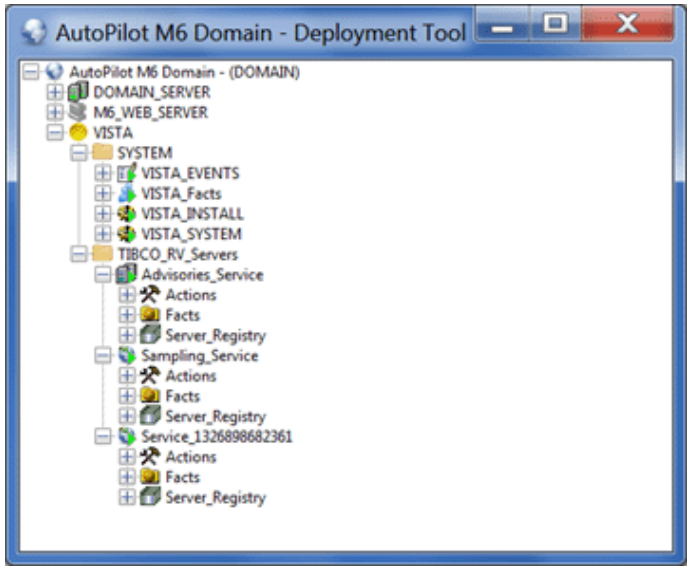

Figure 4-12. Deployed Experts

4.2 Adding TIBCO RV Server Group Experts

Once deployed the context of the expert can be found in the TIBCO_RV_Servers folder. The expert is not fully functional at this point. The servers to be monitored must be registered (or deregistered) individually before facts are collected (or not collected).

- **TIBCO RV Servers:** Contains deployed server group experts. Any number of experts can be deployed to support the required groups.
- **Facts:** The facts collected by the expert. Complete listings of facts are defined in Chapter 5.
- **Server_Registry:** A folder used to register TIBCO RV servers to the group. The default settings for one server are shown in the Figure below.

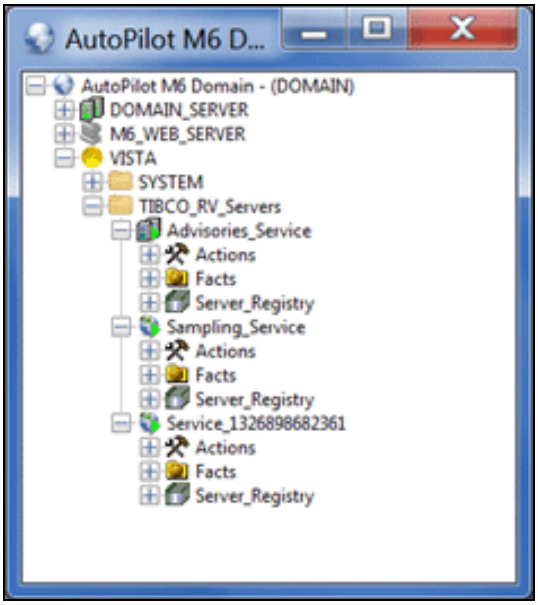

Figure 4-13. TIBCO RV Servers Default Installation

4.2.1 Adding TIBCO RV Server for Advisories Expert

1. Under **Advisories_Service**, right click **Server_Registry > Add Server**. The *Server profile* dialogue box *(Figure 4-15)* is displayed.

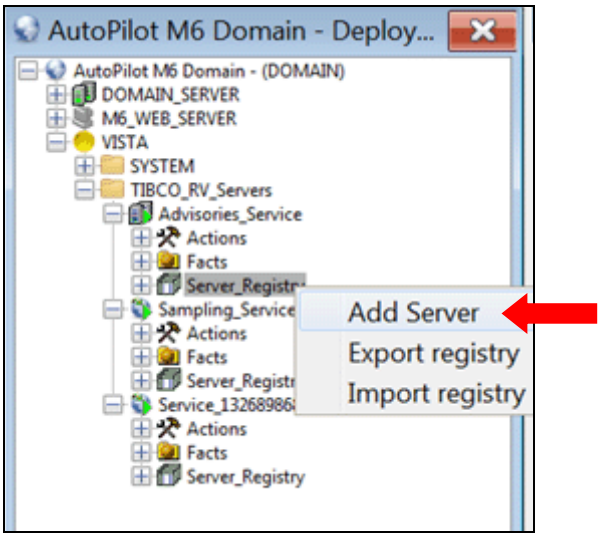

Figure 4-14. Adding TIBCO RV Servers for Advisories Expert

2. Configure the profile properties as defined in the table below.

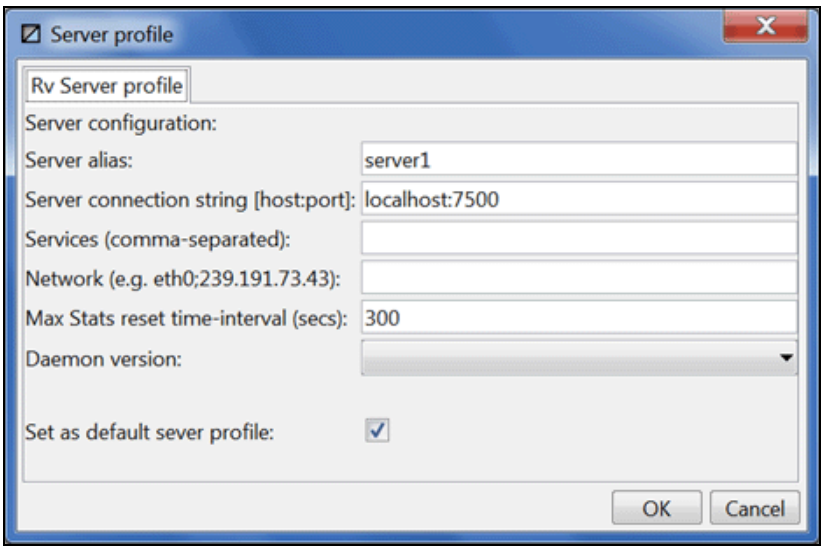

Figure 4-15. TIBCO RV Server Profile for Advisories

Table 4-10. TIBCO RV Server Profile Properties for Advisories

Property	Description
Server alias	Name of the server hosting the services. **Required**
Server connection string [host:port]	Connection string to connect the TIBCO RV instance. **Required**
Services (comma-separated)	Comma-delimited list of services. A service is identified either by its service name, e.g., "rendezvous" or by its port number, e.g., 7343. If the value is not specified, TIBCO RV searches for the serve name rendezvous. If such service is not found, the default value of 7500 is used for TRDP daemon or 7550 for PGM daemon.
Network (e.g. eth0;239.191.73.43)	The network parameter consists of up to three parts separated by semicolons: network, multicast groups, send address as in these examples: "lan0" network only "lan0;224.1.1.1" one multicast group "lan0;224.1.1.1,224.1.1.5;224.1.1.6" two multicast groups, send address "lan0;;224.1.1.6" no multicast group, send address If value is not specified, default network is used. Note: for any given daemon, each service may only be associated with one network
Max Stats reset time-interval (secs)	Maximum reset time interval in seconds.
Daemon version	Daemon version number.
Set as default server profile	Select to set default profile.

3. Click **OK** to save settings.
4. After deploying new servers or making changes to existing setups, right-click the CEP server and select **Save Deployment** *(Figure 4-16)* to ensure all changes have been saved.

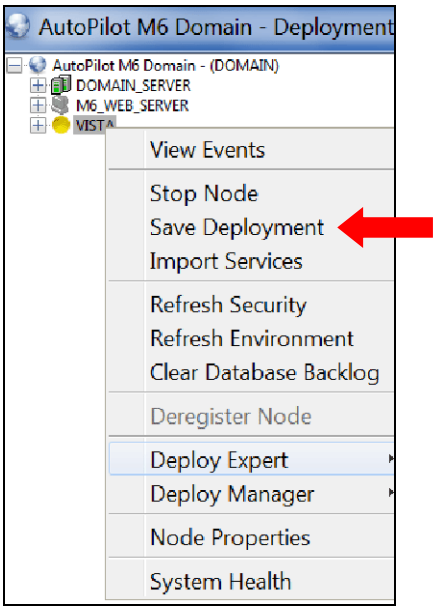

Figure 4-16. Save Deployment

4.2.2 Adding TIBCO RV Server for Sampling Expert

1. Under **Sampling_Service**, right-click **Server Registry** > **Add Daemon**, the *Server profile* screen *(Figure 4-18)* is displayed.

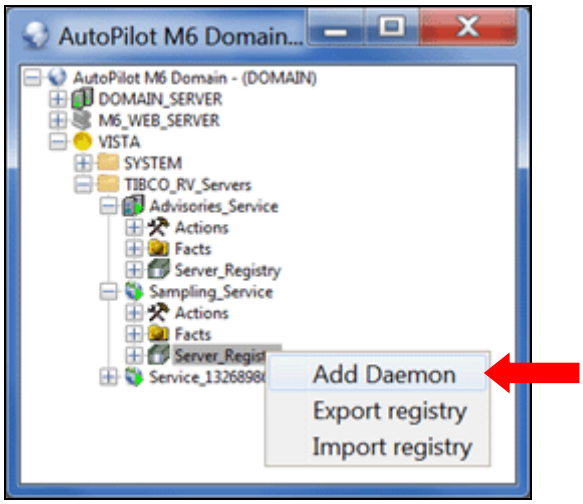

Figure 4-17. Adding TIBCO RV Servers for Sampling Expert

2. Configure the profile properties and select the monitors, as defined in table below, to be deployed for the server(s) in the group.

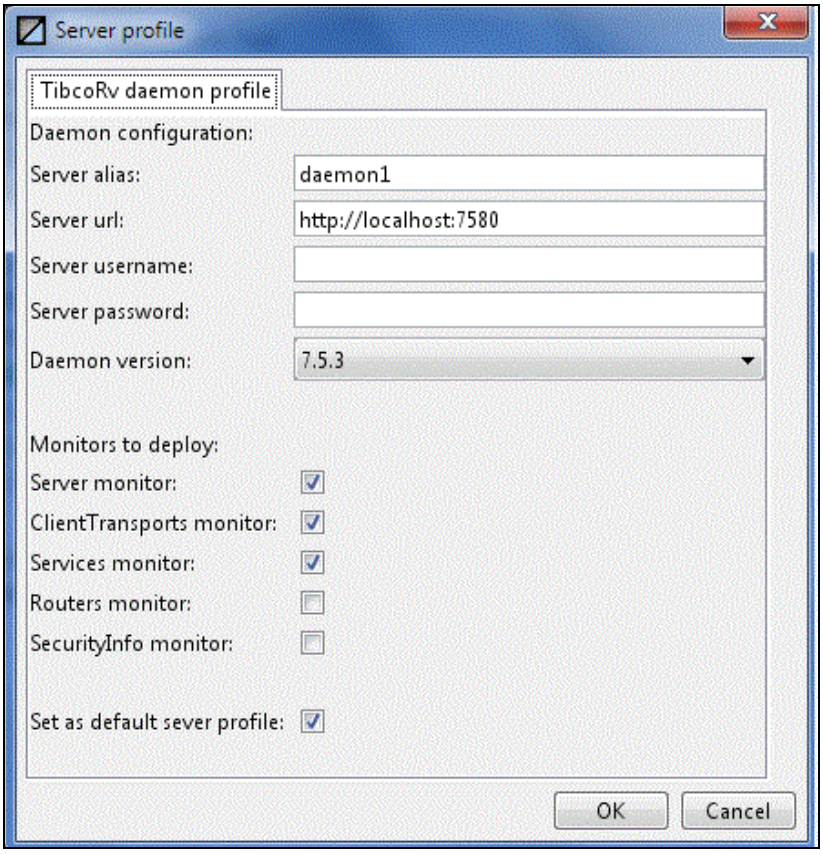

Figure 4-18. TIBCO RV Server Profile for Sampling

Table 4-11. TIBCO RV Server Profile Properties for Sampling	
Property	**Description**
Daemon configuration:	
Server alias	The alias for RV Server profile configuration. It should be unique within an instance of TIBCO RV Group expert.
Server url	The URL of TIBCO RV server. The default value is http://localhost:7580. Enter the RV Server IP if the server is on a different machine.
Server username	User ID used to connect to machine running the TIBCO RV server. The user name is your RV admin group user name.
Server password	Password used to connect to the machine running TIBCO RV server. The password for the RV server is the RV Server admin group user password.
Daemon version	The version of TIBCO RV server you are monitoring.
Monitors to deploy:	
Monitor	**Expert Deployed**
Server monitor	TIBCO RV Server Expert
ClientTransports monitor	TIBCO RV ClientTransports Expert
Services monitor	TIBCO RV Services Expert
Routers monitor	TIBCO RV Routers Expert
SecurityInfo monitor	TIBCO RV SecurityInfo Expert
Set as default server profile	Select to set default server profile

3. Click **OK** to save settings.
4. After deploying new servers or making changes to existing setups, right-click the CEP server and select **Save Deployment** *(Figure 4-16)* to ensure all changes have been saved.

4.2.3 Adding TIBCO RV Server for Listening Expert

1. Right click the CEP Server and select **Deploy Expert > TibcoRv > TibRvListener**. The *Create TibRvListener* dialogue box *(Figure 4-20)* is displayed.

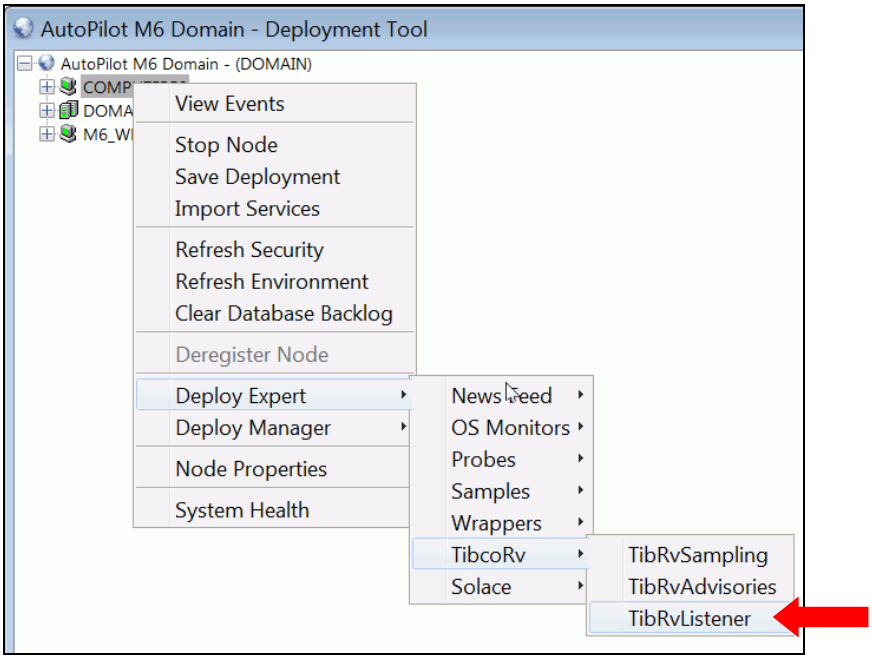

Figure 4-19. Deploy Listener

2. You can leave the defaults, but you may want to change the **Name** to something more meaningful. **Connection retry rate(sec)** and **Sampling rate(sec)** do not apply to the subject listening expert. The other options and tabs are standard for all experts. *(Refer to section 4.1.)* Click **Deploy**.

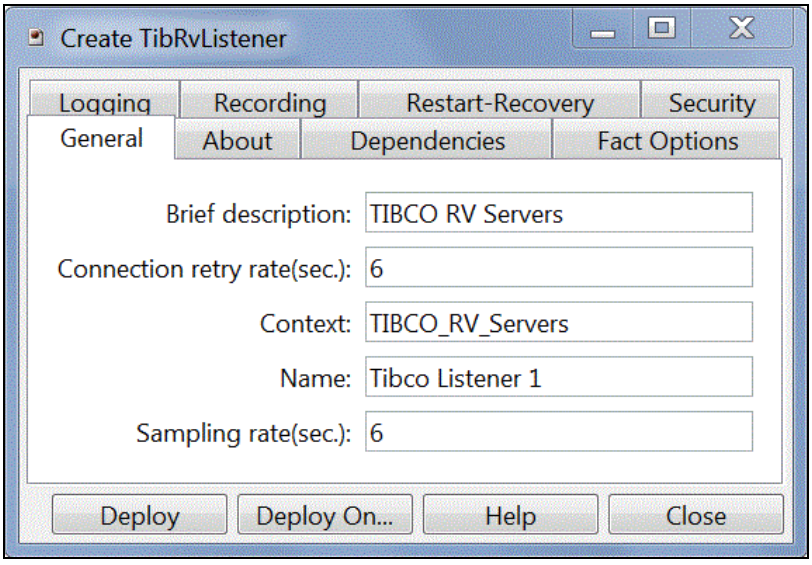

Figure 4-20. Create TibRvListener

3. In the AutoPilot tree, navigate to the new expert **Subject_Registry**. In this example, navigate to **Tibco Listener 1** > **Subjects_Registry** > **Add Subject**. Select **Add Subject** to display the *Rv Listener profile* dialogue box *(Figure 4-22)*.

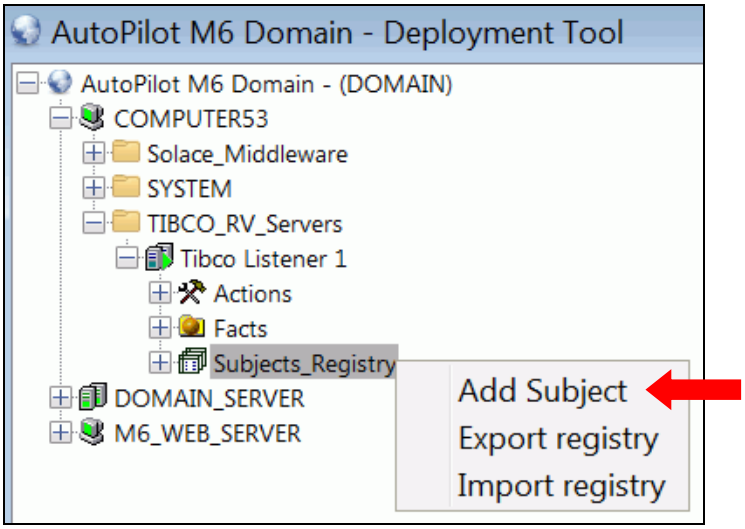

Figure 4-21. Subject Registry – Add Subject

4. Complete the input fields as described in Table 4-12.

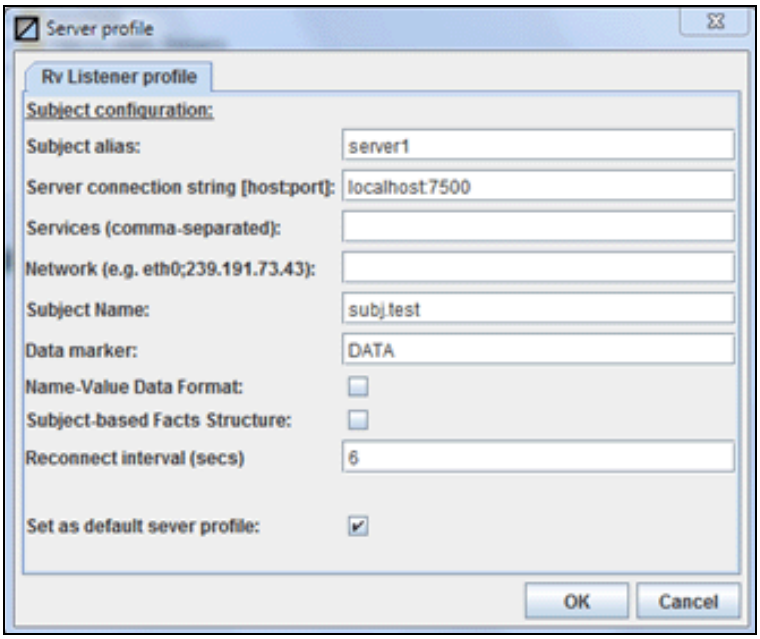

Figure 4-22. Rv Listener Profile

Table 4-12. TIBCO RV Listener Profile	
Property	**Description**
Subject alias	The name given to the set of facts created as a result of this listener. **Required**
Server connection string	Connection string to connect to the TIBCO RV instance. **Required**
Services	Comma-delimited list of services. A service is identified either by its service name (e.g., rendezvous) or by its port number (e.g., 4899). If the value is not specified, TIBCO RV searches for the service name rendezvous. If such service is not found, the default value of 7500 is used for TRDP daemon or 7550 for PGM daemon.
Network	Parameters consist of up to three parts, separated by semicolons: network; multicast groups; send address. For example: **"lan0"** network only **"lan0;224.1.1.1"** – one multicast group **"lan0;224.1.1.1,224.1.1.5;224.1.1.6"** – two multicast groups, send address **"lan0;;224.1.1.6"** – no multicast group, send address If a value is not specified, default network is used. **Note:** For any given daemon, each service may only be associated with one network.
Subject Name	The subject to listen for on the service and port. The name follows standard RV subscriptions and can be a specific or generic topic. **Required.** For example: NASTEL.TEST – only "NASTEL.TEST" NASTEL.> – any subject beginning with "NASTEL"
Data marker	TIBCO RV message property that contains data payload. The sender of TIBCO RV message should add this property, along with the data payload, to the message. The listener will use the data marker property to extract the payload from the received message. Default is "DATA". **Required.**
Name-Value Data Format	If selected, data is expected in the format A=1, B=5 and facts will be published for each fact. If not selected, each set of data elements (separated by commas) is published with the name fact1, fact2, and so on. *(See Figure 4-23.)*
Subject-based Facts Structure	If selected, the facts are published including the entire subject path. If not selected, the facts are published directly under the subject alias. *(See Figure 4-23.)* For example, if selected and the Subject is NASTEL.TEST.MESSAGE with a data value of "A=5". The facts will be published as: Subject Alias + NASTEL ++ TEST +++ MESSAGE ++++ A=5
Reconnect interval	The time in seconds the expert will wait before retrying if RV is not available on startup. Default is "6" seconds. **Required**
Set as default server profile	If selected, the options set are saved as the default value for future use.

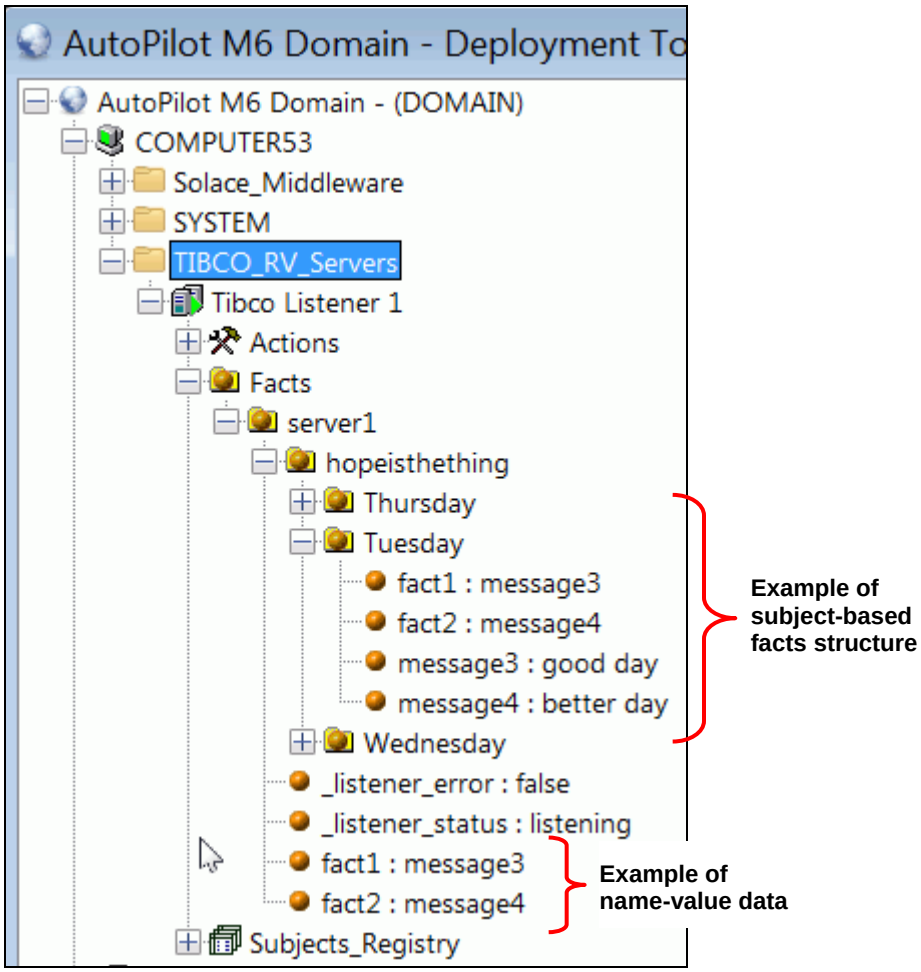

Figure 4-23. Rv Listener Examples

4.2.4 After RV Server Registration

Editing/Removing Existing Server Instance

1. Expand the **Server_Registry** folder.
2. Right-click the RV server alias to be edited or removed.
3. To remove, click **Remove server profile**. The confirmation dialog box *(Figure 4-25)* is displayed.
   To edit, click **Show server properties**. The Server profile dialog box *(Figure 4-15* for Advisories or *Figure 4-18* for Sampling) is displayed.

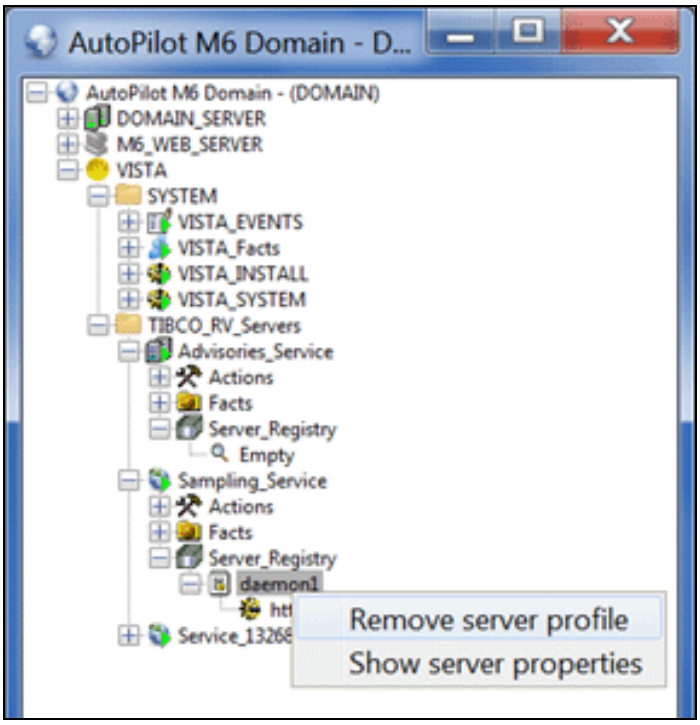

Figure 4-24. Removing Registered Profiles

4. Click **Yes** to remove the selected server profile, or **No** to cancel the deletion.

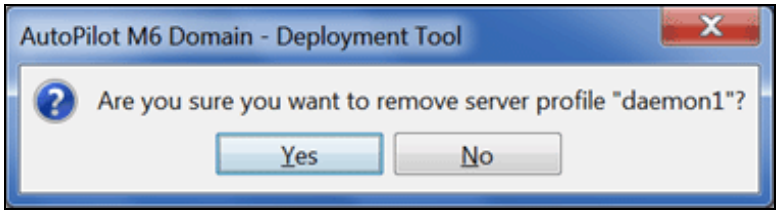

Figure 4-25. Confirm Profile Removal

5. Collapse and expand **Server_Registry** to refresh the server listing.

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Chapter 5: M6 for TIBCO RV Metrics

This section describes the TIBCO RV metrics collected by the AutoPilot experts: **Advisories** and **Sampling**. They are published as facts and are available under each expert as shown below. The facts represent the last interval of data. Fact recording *(Figure 4-8)* can be used to record a collection history.

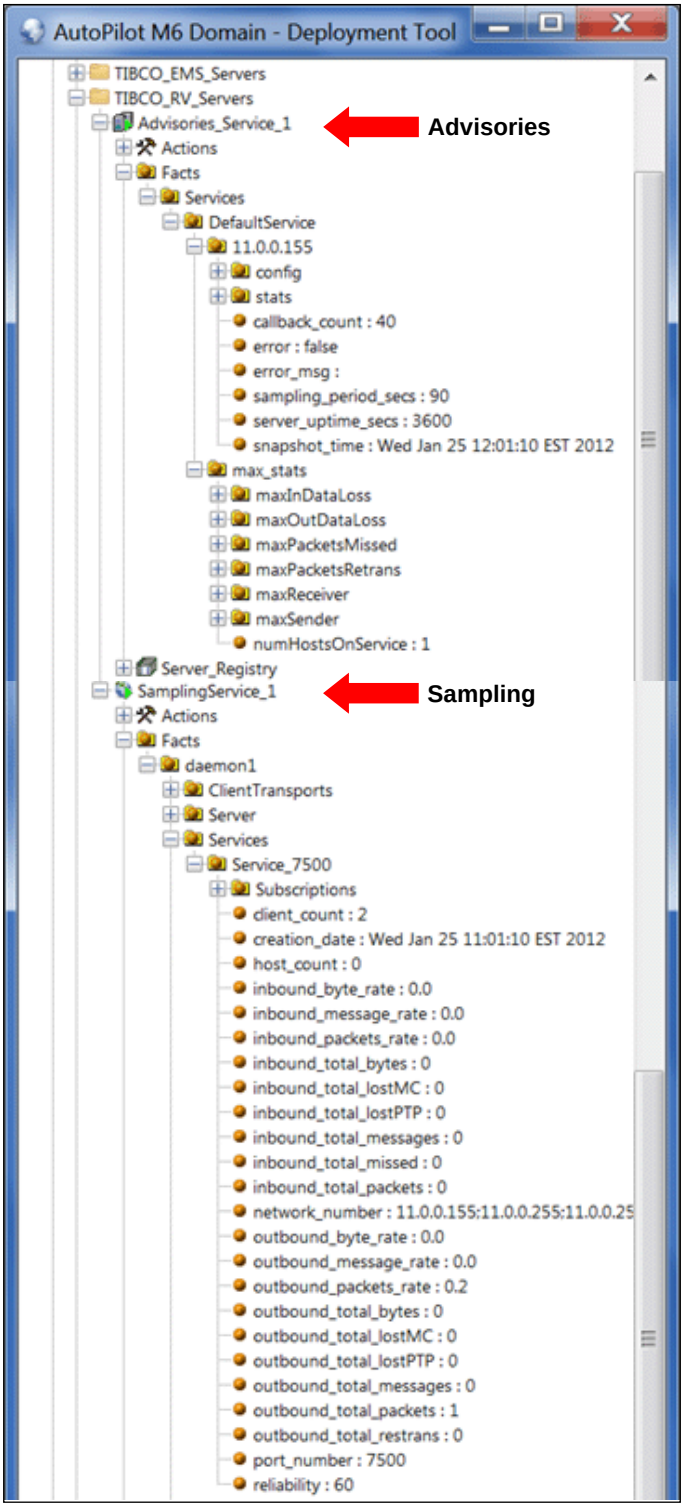

Figure 5-1. TIBCO RV Metrics Collected by AutoPilot's TIBCO RV Experts

Once published, these facts can be included in one or more business views for validation, automation, notifications, logging, and alerts.

5.1 M6/TIBCO RV Metrics Tables

The TIBCO RV Expert gets performance data from the TIBCO RV Server(s) and uses this data in business views for validation, automation, notifications, logging and alerts etc.

There is no preset limit to the number of TIBCO RV servers you can monitor. However, performance issues will arise if a single managed node monitors too many servers. To ensure maximum efficiency distribute the monitoring load across multiple managed nodes.

5.1.1 TIBCO RV Experts

The following experts are available in M6/TIBCO RV:

- TibRvSampling – Refer to section 5.2.
- TibRvAdvisories – Refer to section 5.3.

5.2 M6/TIBCO RV Sampling Metrics Tables

The following facts are published by the Sampling expert:

- Server *(Table 5-1)*
- Client Transport *(Table 5-2)*
- Service *(Table 5-3)*
  - Host *(Table 5-4)*
- Router *(Table 5-5)*
  - Local Network Interface *(Table 5-6)*
- Security Info *(Table 5-7)*
  - Network Service Pair *(Table 5-8)*
  - User Certificate *(Table 5-9)*

Table 5-1. Facts Published by Sampling Server Monitor

Metric	Data Type	Description
hostname	string	Name of the host computer where the component is running.
ipAddress	string	IP address of the host computer where the component is running.
licenseTicket	string	Rendezvous license ticket that validates the component.
name	string	Component name.
processId	long	Process id.
version	string	Version number of the component.
clientPort	integer	TCP port where the daemon listens for client connections.
networkServices	string	Network services on which this daemon's clients communicate.
username	string	Login name of the user that started the component process.

Table 5-2. Facts Published by Sampling ClientTransport Monitor		
Metric	**Data Type**	**Description**
description	string	Description string of the transport object (client programs set this string using an API call).
expiration	date	Expiration date of the Rendezvous license ticket.
host	string	IP address of the client's host computer.
pid	long	Process ID of the client (on its host computer).
serialNumber	string	Serial number of the Rendezvous license ticket that validates this client connection.
version	string	Version number of the Rendezvous API library that this client uses.
identifier	string	Globally unique identifier for the transport object.
service	string	UDP or PGM service on which the transport communicates.
subscriptions	integer	Number of subscriptions that this client transport has registered with rvd.
username	string	User name string of the user that started the client program process.

Table 5-3. Facts Published by Sampling Service Monitor		
Metric	**Data Type**	**Description**
creation_date	date	Date and time that this service became active.
reliability	long	Rvd retains outbound message data for retransmission. After this interval, it discards the data.
client_count	integer	Number of client transports that use this service.
service_details	string	Detailed information about the network service.
host_count	integer	Number of other host computers with daemons that communicate on this network and service.
inbound_msgs_rate	double	Most recent rate (per second) at which the daemon received inbound messages.
inbound_bytes_rate	double	Most recent rate (per second) at which the daemon received inbound bytes.
inbound_pkts_rate	double	Most recent rate (per second) at which the daemon received inbound packets.
inbound_msgs_total	long	Number of messages accumulated since the start of the daemon process.
inbound_bytes_total	long	Number of bytes accumulated since the start of the daemon process.
inbound_pkts_total	long	Number of packets accumulated since the start of the daemon process.
inbound_missed_total	long	Number of missed packets (detected as a packet sequence gap) since the start of the daemon process.
inbound_lostMc_total	long	Number of multicast packets lost (because the sending daemon could not retransmit them) since the start of the daemon process.
inbound_lostPtp_total	long	Number of point-to-point packets lost (because the sending daemon could not retransmit them) since the start of the daemon process.
outbound_msgs_rate	double	Most recent rate (per second) at which the daemon sent outbound messages.

Table 5-3. Facts Published by Sampling Service Monitor		
Metric	**Data Type**	**Description**
outbound_bytes_rate	double	Most recent rate (per second) at which the daemon sent outbound bytes.
outbound_pkts_rate	double	Most recent rate (per second) at which the daemon sent outbound packets.
outbound_msgs_total	long	Number of messages accumulated since the start of the daemon process.
outbound_bytes_total	long	Number of bytes accumulated since the start of the daemon process.
outbound_pkts_total	long	Number of packets accumulated since the start of the daemon process.
outbound_retrans_total	long	Number of packets retransmitted (multicast and point-to-point) since the start of the daemon process.
outbound_lostMc_total	long	Number of multicast packets the daemon could not retransmit (too old) since the start of the daemon process.
outbound_lostPtp_total	long	Number of point-to-point packets the daemon could not retransmit (too old) since the start of the daemon process.
network_number	string	Network number.
port_number	integer	UDP or PGM service number.

Table 5-4. Facts Published by Sampling Host (Part of Service) Monitor		
Metric	**Data Type**	**Description**
hostname	string	Hostname of the computer that this object represents.
http_address	string	Address where the host computer listens for HTTP (browser interface) connections.
ip_address	string	IP address of the computer.
license_serial	string	Serial number of the Rendezvous license ticket.
uptime	long	Elapsed time that the daemon has been using the UDP or PGM service.
version	string	Version of the Rendezvous daemon running on a host.

Table 5-5. Facts Published by Sampling Router Monitor		
Metric	**Data Type**	**Description**
name	string	Router name of a routing table entry.
max_backlog	integer	Backlog is outbound data awaiting transmission to a neighbor. When the maximum permissible backlog (in kilobytes) is reached, rvrd. automatically disconnects from that neighbor, clears the corresponding outbound data buffer, and attempts to reconnect to the neighbor.
ip_address	string	IP address of the computer.
license_serial	string	Serial number of the Rendezvous license ticket.
uptime	long	Elapsed time that the daemon has been using the UDP or PGM service.
version	string	Version of the Rendezvous daemon running on a host.

Table 5-6. Facts Published by Sampling LocalNetworkInterface (Part of Router Monitor)		
Metric	**Data Type**	**Description**
name	string	Name of a local network. Local network names must be globally unique.
network	string	Network specification for a local network.
cost	integer	Path cost for routing between a local network and the routing daemon.
service	integer	The UDP or PGM service for communication on a local network. Programs within the local network communicate using this service.
export_subjects	String[ ]	Subjects that can flow out from the local network to the routing daemon and from there to other networks.
import_subjects	String[ ]	Subjects that can flow into the local network from the routing daemon.
import_subject_weight	integer	When a message could travel two paths with equal cost, import weights break the tie. Routing protocols seek the path with the greatest weight.

Table 5-7. Facts Published by Sampling SecurityInfo Monitor		
Metric	**Data Type**	**Description**
default_network	string	When a client transport does not specify particular network and service parameters, it automatically communicates over this default network.
default_service	integer	When a client transport does not specify particular network and service parameters, it automatically communicates over this default service.
listen	String[ ]	Subjects authorized for listening. All authenticated users can subscribe to any of the subjects in the array.
send	String[ ]	Subjects authorized for sending. All authenticated users can send to any of the subjects in the array.
users	String[ ]	Users that can connect to a secure daemon.

Table 5-8. Facts Published by Sampling NetworkServicePair (Part of SecurityInfo Monitor)		
Metric	**Data Type**	**Description**
network	string	Network and service pair that all authenticated users may access through this secure daemon.
service	integer	Network and service pair that all authenticated users may access through this secure daemon.

Table 5-9. Facts Published by Sampling UserCertificate (Part of SecurityInfo Monitor)		
Metric	**Data Type**	**Description**
assignment_date	date	Date that daemon registered the certificate and assigned its ID.
file_name	string	The name of the certificate file.
issuer	string	The certificate authority that issued the certificate.
public_key_engine	string	The name of the public key algorithm that the certificate uses to create digital signatures.
serial_number	string	The internal serial number of the certificate.
subject	string	Information describing the authorized certificate holder
valid_not_after	date	The certificate's expiration date.
valid_not_before	date	The date that the certificate is first valid for use.
version	string	The certificate version number assigned by the issuer.
id	string	The certificate ID assigned by the daemon.
index	integer	The index of the certificate.

5.3 M6/TIBCO RV Advisories Metric Table

The following facts are published by the Advisories expert.

Table 5-10. Facts Published by Advisories

Metric	Data Type	Description
hostAddr	String	The IP address of the daemon's host computer.
serialNum	Long	Serial number from the daemon's license key.
operatingSys	Short	A code number denoting the operating system of the daemon's host computer.
daemonVersion	String	The software release number (version) of the daemon.
httpAddr	String	IP address where the daemon listens for HTTP connections.
httpPort	String	HTTP port where the daemon listens for HTTP connections.
httpsAddr	String	IP address where the daemon listens for HTTPS secure connections.
httpsPort	String	HTTP port where the daemon listens for HTTPS secure connections.
snapshot_time	String	Time of this snapshot (Zulu time).
uptime	Long	Elapsed time since the daemon began operating on this service.
msgsSent	Long	Messages sent by the daemon on this service.
bytesSent	Long	Bytes sent (summed over all messages tallied in ms).
msgsReceived	Long	Messages received by the daemon on this service.
bytesReceived	Long	Bytes received (summed over all messages tallied in mr).
packetsSent	Long	Packets sent (outbound).
packetsReceived	Long	Packets received (inbound).
packetsRetransmitted	Long	Packets retransmitted (outbound).
packetsMissed	Long	Packets missed (inbound).
inboundDataLoss	Long	Inbound data loss (in packets).
outboundDataLoss	Long	Outbound data loss (in packets).
ipPort	String	IP port where the daemon listens for client connections. This is identical to the transport daemon parameter.
service	String	Service for which this advisory presents a snapshot. This is identical to the transport service parameter.
network	String	Network for which this advisory presents a snapshot. This is identical to the transport network parameter.

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Chapter 6: Business Views

M6/TIBCO RV comes with a business view that can be user customized. The TIBCO_RV business view is located in directory:

`[AUTOPILOT_HOME]\Naming\Policies\TIBCO_RV`

Table 6-1. Default Business Views

Business View	Filename	Description
TIBCO_RV_HEALTH	Rv_MONITOR.bsv	Generic business view that monitors TIBCO RV server health status and messages.

This business view can be found in the *Business View Explorer* at:

`ds:/TIBCO_Rv/Rv_MONITOR.bsv`

Business views are configured based on Server Expert.

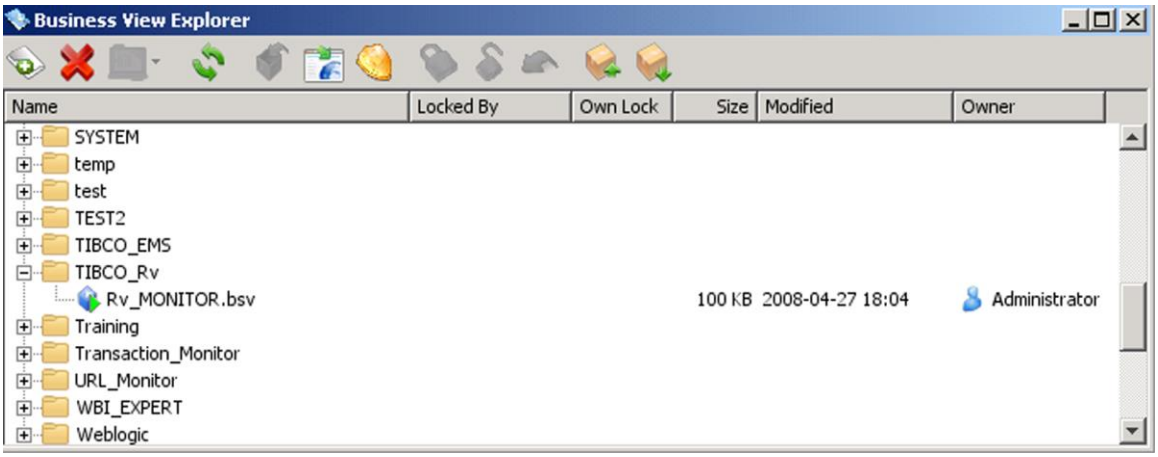

Figure 6-1. Business View Explorer

RV Server setting for corresponding experts should be changed and re-configured according to current deployment environments. The user can deploy this business view to any M6 managed node or domain server. Like all business views, it can be copied, customized, and named to best serve your business needs.

6.1 Default RV Server Settings

The following TIBCO RV server settings are used by the RV_Monitor business view *(Figure 6-2)*.

Table 6-2. TIBCO RV Server Default Settings

Property	Value
Connection Retry	60 seconds
Server Host Name	localhost
Server Password	admin
Server Port	7580
Server Protocol	http
Server User Name	admin
Server Version	7.5.2 V4

6.2 TIBCO RV Monitor

The TIBCO RV Monitor monitors the health of the TIBCO RV Server environment. Below is a sample of a running TIBCO_RV_HEALTH business view, which:

- Monitors RV Server health state
- Monitors inbound and outbound Multicast lost messages
- Monitors inbound and outbound Point-to-Point lost messages
- Reports number of clients using a particular service
- Reports number of hosts using a particular service
- Monitors rate of inbound and outbound traffic
- Monitors amount of inbound and outbound data
- Monitors number of missed inbound messages.

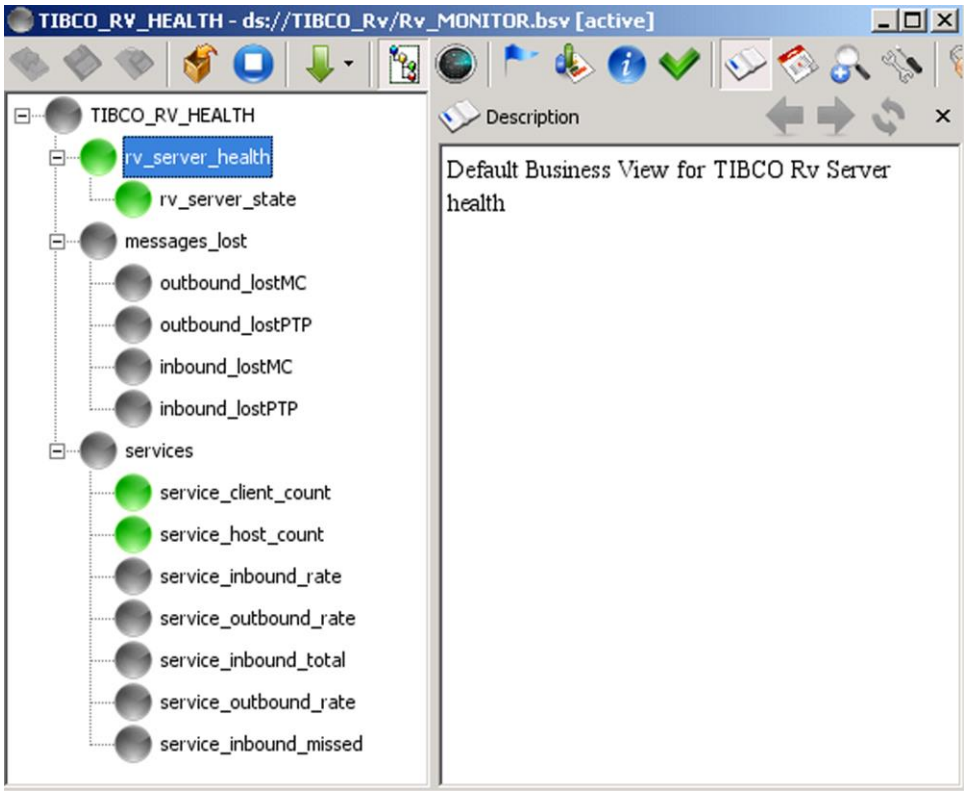

Figure 6-2. Sample TIBCO_RV_Health Business View

The TIBCO RV business view can be deployed in the same way as all business views. See the *AutoPilot M6 User's Guide*, Chapter 4 for details about customizing and deploying business views.

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Appendix A: References

A.1 Nastel Documentation

Table A-1. Nastel Documentation	
Document Number (or higher)	**Title**
M6-INS 600.007	*AutoPilot M6 Installation Guide*
M6/USR 600.010	*AutoPilot M6 User's Guide*
M6WMQ-ADM 620.003	*AutoPilot M6 for WebSphere MQ Administrator's Guide*
M6WMQ-INS 620.005	*AutoPilot M6 for WebSphere MQ Installation Guide*
M6WMQ-SM 600.002	*AutoPilot M6 for WebSphere MQ Security Manager User's Guide*
M6/WMQ 600.001	*AutoPilot M6 Plug-in for WebSphere MQ*

A.2 TIBCO Rendezvous™ Documentation

http://power.tibco.com/pubslib/

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Appendix B: Conventions

B.1 Typographical Conventions

Table B-1. Typographical Conventions

Convention	Description
Blue/Underlined	Used to identify links to referenced material or websites. Example: support@nastel.com
Bold Print	Used to identify topical headings, glossary entries, and toggles or buttons used in procedural steps. Example: Click **EXIT**.
Italic Print	Used to place emphasis on a title, menu, screen name, user inputs, or other category.
`Monospaced Bold`	Used to identify keystrokes/data entries, file names, directory name etc.
`Monospaced Italic`	Used to identify variables in an address location. Example: `[C:\AutoPilot_Home]\documents`, where the portion of the address within the brackets [ ] are variable.
`Monospaced Text`	Used to identify addresses, commands, scripts, etc.
Normal Text	Typically used for general text throughout the document.
Table Text	Table text is generally a smaller size to conserve space. 10, 9, and 8 point type is used in tables through the AutoPilot product family of documents.

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Glossary

AutoPilot M6: Nastel Technologies' Enterprise Application Management Platform. AutoPilot M6 monitors and automates the management of *e*Business integration components such as middleware application, application servers and user applications.

AP-WMQ: Nastel Technologies' WebSphere MQ management solution. Re-designated as AutoPilot M6 for WebSphere MQ with release 6.0. Abbreviated as AP/WMQ and AP-WMQ.

BSV: *see* Business View.

Business View (BSV): A collection of rules that define a desired state of an *e*Business environment. Business Views can be tailored to presents information in the form most suited to a given user, as defined by the user.

Client: Any programming component that uses the AutoPilot M6 infrastructure; for example, the AutoPilot M6 Console.

Common Object Request Broker Architecture (CORBA): A Common Object Request Broker Architecture (CORBA) object can be invoked from a Web browser using CGI scripts or applets.

Console: The console acts as the graphical interface for AutoPilot M6.

Contacts: A subordinate to a given Manager or Expert.

CORBA: *See* Common Object Request Broker Architecture.

Data Source Name: A Data Source Name (DSN) is the logical name that is used by Open Database Connectivity (ODBC) to refer to the drive and other information that is required to access data. The name is use by Internet Information Services (IIS) for a connection to an ODBC data source, (For Example: Microsoft SQL Server database). The ODBC tool in the Control Panel is used to set the DSN. When the ODBC DSN entries are used to store the connection string values externally, you simplify the information that is needed in the connection string. This makes changes to the data source completely transparent to the code itself.

Dependent WebSphere MQ Node: WebSphere MQ nodes that are not directly managed by M6-WMQ. Because dependent nodes do not run an MQ WMQ Agent, they must be managed by proxy.

Deploy: To put to use, to position for use or action.

Domain Server: A specialized managed node that maintains the directory of managed nodes, experts etc. The domain server is also capable of hosting experts, managers etc.

DSN: *See* Data Source Name.

EVT: Event Log file extension (e.g.: *sample.evt*)

Event: An *Event* is something that happens to an object. Events are logged by AutoPilot M6 and are available for use by AutoPilot M6 Policies or the user.

Expert: Services that monitor specific applications such as an applications server, web-server or specific components within the applications (Example: channels in WebSphere MQ.) Experts generate facts.

Fact: Facts are single pieces of data that have a unique name and value. One or more facts are used to determine the health of the object, application or server.

Graphical User Interface (GUI): A type of environment that represents programs, files, and options by means of icons, menus, and dialog boxes on the screen. The user can select and activate these options by pointing and clicking with a mouse or, often, with the keyboard. Because the graphical user interface provides standard software routines to handle these elements and report the user's actions (such as a mouse click on a particular icon or at a particular location in text, or a key press); applications call these routines with specific parameters rather than attempting to reproduce them from scratch.

GUI: *See* Graphical User Interface.

Independent WebSphere MQ Node: A WebSphere MQ node that runs a WMQ Agent and which is managed directly by an MQ Workgroup server. Independent nodes can be used as proxy nodes for managing dependent nodes.

IIS: *See* Internet Information Services.

Internet Information Services: Microsoft's brand of Web server software, utilizing HTTP to deliver World Wide Web documents. It incorporates various functions for security, allows CGI programs, and also provides for Gopher and FTP services.

Java: A platform-independent, object-oriented programming language developed and made available by Sun Microsystems.

Java Developer's Kit (JDK): A set of software tools developed by Sun Microsystems, Inc., for writing Java applets or applications. The kit, which is distributed free, includes a Java compiler, interpreter, debugger, viewer for applets, and documentation.

JDBC: *See* Java Database Connectivity.

Java Database Connectivity (JDBC): The JDBC API provides universal data access from the Java programming language. Using the JDBC 2.0 API, you can access virtually any data source, from relational databases to spreadsheets and flat files. JDBC technology also provides a common base on which tools and alternate interfaces can be built. The JDBC *Test Tool* that was developed by Merant and Sun Microsystems may be used to test drivers, to demonstrate executing queries and getting results, and to teach programmers about the JDBC API.

Java Server Pages (JSP): JSP technology enables rapid development of web-based applications that are platform independent. Java Server Pages technology separates the user interface from content generation enabling designers to change the overall page layout without altering the underlying dynamic content. Java Server Pages technology is an extension of the Java Servlet technology.

Java Virtual Machine (JVM): The "virtual" operating system that JAVA-written programs run. The JVM is a hardware- and operating system-independent abstract computing machine and execution environment. Java programs execute in the JVM where they are protected from malicious programs and have a small compiled footprint.

JDK: *See* Java Developer's Kit.

JRE: JAVA Run-time Environment. The minimum core JAVA required to run JAVA Programs.

JSP: *See* Java Server Pages.

JVM: *See* Java Virtual Machine.

M6 for WMQ: Nastel Technologies' WebSphere MQ management solution. Re-designated as M6 for WMQ with release 6.0, prior releases retain the AP-WMQ or MQControl trademark.

M6 Web: A browser-based interface that provides monitoring and operational control over managed resources and applications.

Management Information Base (MIB): A specification that describes the properties and behavior of a network device. Network managers use MIBs to interact with SNMP-compatible devices. Each MIB is part of a directory structure that specifies where objects are found on the network.

Manager: Managers are the home or container for policies. All business views must reside on managers, and manager must be deployed prior to deploying a business view or policy.

Message Queue Interface: The Message Queue Interface (MQI) is part of IBM's Networking Blueprint. It is a method of program-to-program communication suitable for connecting independent and potentially non-concurrent distributed applications.

MIB: *See* Management Information Base.

MOM: *See* Message-Oriented Middleware.

MQControl: Nastel Technologies' MQSeries management product. Re-designated as AP-WMQ with release 4.0 and M6 for WMQ with release 6.0. Prior releases retain the MQControl trademark.

MQI: *See* Message Queue Interface.

MQSC: *See* WebSphere MQ Commands

MQSeries: IBM's message queuing product. Renamed by IBM as WebSphere MQ.

Naming Service: A common server records "names" of objects and associates them with references, locations and properties.

Managed Node: A container that can host any number of AutoPilot M6 services such as experts, managers, policies, etc. Unlike managed nodes, it is a physical process.

ORB: Object Request Broker.

Orbix: CORBA product distributed by IONA Technologies.

Package Manager: The command line utility that allows users to list, install, uninstall, verify and update AutoPilot M6 installation on any Managed Node.

PCF: *See* Programmable Command Format.

PKGMAN: *See* Package Manager.

Policy/Business Views: Business views are a collection of one or more sensors. Business views are used to visually present the health and status of the different systems as well as automatically issue remedial actions.

Programmable Command Format (PCF): A set of programmable commands that M6-WMQ uses to manage WebSphere MQ. PCF includes data definitions for items such as integers, strings, and lists. The commands can be submitted directly to a queue manager. PCF is comparable to MQSC, except for the fact that MQSC cannot be programmed.

Proxy Management: The indirect management of MQ objects by an intermediate entity. For example, a proxy queue manager might be used to handle another queue manager.

QSG: *See* Queue Sharing Group.

Queue Sharing Group (QSG): In z/OS, a group of queue managers in the same sysplex that can access a single set of object definitions stored in the shared repository, and a single set of shared queues stored in the coupling facility. The shared queue is a type of local queue. The messages on the queue are stored in the coupling facility and can be accessed by one or more queue managers in a queue-sharing group. The definition of the queue is stored in the shared repository.

Sensor: A rule that is used to determine the health of an object or application based on one or more facts. Actions can then be issued, based on health. Sensors are definable in AutoPilot business views by use of the sensor wizard.

Simple Mail Transfer Protocol (SMTP): A TCP/IP protocol for sending messages from one computer to another on a network. This protocol is used on the Internet to route e-mail. *See also* communications protocol, TCP/IP. *Compare* CCITT X series, Post Office Protocol.

Simple Network Management Protocol (SNMP): A de facto standard for managing hardware and software devices on a network. Each device is associated with a Management Information Base (MIB) that describes its properties and behavior.

SMTP: *See* Simple Mail Transfer Protocol.

SNMP: *See* Simple Network Management Protocol.

SNMP Master Agent: An implementation of the SNMP protocol. It includes a definition of the standard MIB. The master agent routes SNMP requests from subagent to subagent.

SNMP Subagent: The implementation of an MIB for a particular device. The MIB describes the device's desired behavior; the SNMP subagent carries it out.

TCP/IP: *See* Transmission Control Protocol/Internet Protocol.

Transmission Control Protocol/Internet Protocol (TCP/IP): A protocol developed by the Department of Defense for communications between computers. It is built into the UNIX system and has become the de facto standard for data transmission over networks, including the Internet.

Virtual Machine: Software that mimics the performance of a hardware device, such as a program that allows applications written for an Intel processor to be run on a Motorola chip. *See* Java Virtual Machine.

WebSphere MQ: IBM's message queuing product. Formally known as MQSeries.

WebSphere MQ Commands: A command-line language used to configure WebSphere MQ.

Websphere_MQ_Manager: A specialized manager capable of hosting one or more MQSeries specific policies, apart from the regular policies.

Workgroup Server: Monitors WebSphere MQ nodes. A workgroup server consists of two agents, M6 managed node and workgroup.

Wireless Application Protocol (WAP): An open global specification that is used by most mobile telephone manufacturers. WAP determines how wireless devices utilize Internet content and other services. WAP enables devices to link diverse systems contents and controls.

WS: *see* Workgroup Server.

z/OS: *see* Z Series Operating System.

Z Series Operating System: IBM architecture for mainframe computers and peripherals. The zSeries family of servers uses the z/Architecture. It is the successor to the S/390 and 9672 family of servers.

