TIBCO Hawk®

Installation, Configuration, and Administration

Software Release 6.2.0
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TIBC○®

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Preface

TIBCO Hawk is a tool for monitoring and managing distributed applications and operating systems. The software is designed specifically for monitoring distributed systems, so there is no centralized console or frequent polling across the network. With this structure, the TIBCO Hawk software can scale to multi-thousand node global networks without the use of hierarchical managers and has the flexibility to add or modify individual managed entities without the need to reconfigure or restart any other part of the system.

This software may be available on multiple operating systems. However, not all operating system platforms for a specific software version are released at the same time. See the Readme file for the availability of this software version on a specific operating system platform.

This manual covers the installation and configuration of the TIBCO Hawk on various platforms. It is intended for systems and network administrators who need to install TIBCO Hawk and use TIBCO Hawk WebConsole.

This manual assumes you are familiar with TIBCO Rendezvous architecture and the concepts of system monitoring.

Topics

Related Documentation

This section lists documentation resources you may find useful.

TIBCO Hawk Documentation

The following documents form the TIBCO Hawk documentation set:

- *TIBCO Hawk Release Notes:* Read the release notes for a list of new and changed features. This document also contains lists of known issues and closed issues for this release.

- *TIBCO Hawk Concepts:* This manual includes basic descriptions of TRA concepts.

- *TIBCO Hawk Installation, Configuration, and Administration:* Read this book first. It contains step-by-step instructions for installing TRA software on various operating system platforms. It also describes how to configure the software for specific applications, once it is installed. An installation FAQ is included.

- *TIBCO Hawk Microagent Reference*: A reference to the microagents and methods used by a TRA Agent for system and application monitoring.

- *TIBCO Hawk WebConsole User's Guide:* This manual includes complete instructions for using TIBCO Hawk WebConsole.

- *TIBCO Hawk Programmer's Guide*: All programmers should read this manual. It contains detailed descriptions of Application Management Interface (AMI), Application Programming Interface (API) concepts, and the TRA security framework and its classes. It also contains detailed descriptions of each class and method for the following APIs:

  — AMI API

    Java, C++ and C API

  — Console API

    Java API

  — Configuration Object API

    Java API

  Programmers should refer to the appropriate language reference sections for the AMI API details. The TRA Application Management Interface (AMI) exposes internal application methods to TRA.

- *TIBCO Hawk Plug-in Reference Guide:* Contains details about the Enterprise Message Service, Messaging and JVM microagents methods that are used to administer and monitor the TIBCO Enterprise Message Service server.

- *TIBCO Hawk Plug-ins for TIBCO Administrator:* Contains detailed descriptions of the TIBCO Hawk plug-ins accessed via TIBCO Administrator.

- *TIBCO Hawk HTTP Adapter User's Guide:* Contains information about performing discovery, monitoring of agent status, monitoring of agent alerts, method invocation, method subscription, and many more activities on TIBCO Hawk and third-party products.

- *TIBCO Hawk Admin Agent Guide:* Contains basic configuration details for TIBCO Hawk Admin Agent and complete instructions for using the web interface of TIBCO Enterprise Administrator for TIBCO Hawk.

- *TIBCO Hawk Security Guide:* Provides guidelines to ensure security within the components of TIBCO Hawk and within the communication channels between the components.

Other TIBCO Product Documentation

You may find it useful to read the documentation for the following TIBCO products:

- TIBCO® Enterprise Administrator

- TIBCO ActiveSpaces®

- TIBCO Rendezvous®

- TIBCO Enterprise Message Service™

Typographical Conventions

The following typographical conventions are used in this manual.

Table 1   General Typographical Conventions

Convention	Use
ENV_HOME *TIBCO_HOME* *HAWK_HOME* *CONFIG_FOLDER*	TIBCO products are installed into an installation environment. A product installed into an installation environment does not access components in other installation environments. Incompatible products and multiple instances of the same product must be installed into different installation environments. An installation environment consists of the following properties: • **Name** Identifies the installation environment. This name is referenced in documentation as *ENV_NAME*. On Microsoft Windows, the name is appended to the name of Windows services created by the installer and is a component of the path to the product shortcut in the Windows Start > All Programs menu. • **Path** The folder into which the product is installed. This folder is referenced in documentation as *TIBCO_HOME*. TIBCO Hawk installs into a directory within a *TIBCO_HOME*. This directory is referenced in documentation as *HAWK_HOME*. The default value of *HAWK_HOME* depends on the operating system. For example on Windows systems, the default value is `C:\tibco\hawk\6.0`. A TIBCO Hawk configuration folder stores configuration data generated by TIBCO Hawk. Configuration data can include sample scripts, session data, configured binaries, logs, and so on. This folder is referenced in documentation as *CONFIG_FOLDER*. For example, on Windows systems, the default value is `C:\ProgramData\tibco\cfgmgmt\hawk`.
`code font`	Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example: Use `MyCommand` to start the foo process.

Table 1   General Typographical Conventions (Cont'd)

Convention	Use
bold code font	Bold code font is used in the following ways: • In procedures, to indicate what a user types. For example: Type **admin**. • In large code samples, to indicate the parts of the sample that are of particular interest. • In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, MyCommand is enabled: MyCommand [**enable** | disable]
italic font	Italic font is used in the following ways: • To indicate a document title. For example: See *TIBCO BusinessWorks Concepts*. • To introduce new terms For example: A portal page may contain several portlets. *Portlets* are mini-applications that run in a portal. • To indicate a variable in a command or code syntax that you must replace. For example: MyCommand *pathname*
Key combinations	Key name separated by a plus sign indicate keys pressed simultaneously. For example: Ctrl+C. Key names separated by a comma and space indicate keys pressed one after the other. For example: Esc, Ctrl+Q.
	The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.
	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.
	The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken.

TIBCO Product Documentation and Support Services

For information about this product, you can read the documentation, contact TIBCO Support, and join TIBCO Community.

How to Access TIBCO Documentation

Documentation for TIBCO products is available on the TIBCO Product Documentation website mainly in the HTML and PDF formats.

The TIBCO Product Documentation website is updated frequently and is more current than any other documentation included with the product. To access the latest documentation, visit https://docs.tibco.com.

Documentation for TIBCO Hawk is available on the TIBCO Hawk Product Documentation page.

How to Contact TIBCO Support

You can contact TIBCO Support in the following ways:

- For an overview of TIBCO Support, visit https://www.tibco.com/services/support.

- For accessing the Support Knowledge Base, viewing the latest product updates that were not available at the time of the release, and getting personalized content about products you are interested in, visit the TIBCO Support portal at https://support.tibco.com.

- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to https://support.tibco.com. If you do not have a user name, you can request one by clicking **Register** on the website.

How to Join TIBCO Community

TIBCO Community is the official channel for TIBCO customers, partners, and employee subject matter experts to share and access their collective experience. TIBCO Community offers access to Q&A forums, product wikis, and best practices. It also offers access to extensions, adapters, solution accelerators, and tools that extend and enable customers to gain full value from TIBCO products. In addition, users can submit and vote on feature requests from within the TIBCO Ideas Portal. For a free registration, go to https://community.tibco.com.

Chapter 1 **TIBCO Hawk Installation**

This chapter provides the details about TIBCO Hawk product installation, along with various requirements, and different installation modes. Also, it provides additional precautions you may have to ensure in order to get seamless functioning of TIBCO Hawk system.

Topics

Installer Overview

If this is the first TIBCO software product you are installing on the system, you can specify the installation directory where all TIBCO products are to be installed. This directory is referred in this documentation as *TIBCO_HOME*. On Microsoft Windows platforms, the default *TIBCO_HOME* is C:\tibco. On UNIX/Linux, the default *TIBCO_HOME* directory is /opt/tibco.

Note that

- `installation-path` — The directory where TIBCO Hawk System components get installed and is referred in this documentation as *HAWK_HOME*. For example, the default *HAWK_HOME* path on Windows is C:\tibco\hawk\<*version*>, where on UNIX/Linux, it is /opt/tibco/hawk/<*version*>.

- `configuration-path` — The directory where TIBCO Hawk components get prepared with appropriate default configuration and kept ready for out-of-the-box execution. This folder is referred in this documentation as *CONFIG_FOLDER*. For example, the default *CONFIG_FOLDER* on Microsoft Windows is C:\ProgramData\hawk\tibco\cfgmgmt\hawk, whereas on UNIX/Linux, it is *TIBCO_HOME*/tibco/cfgmgmt/hawk.

  For Windows 7 and Window 8.x, we recommend you to configure *CONFIG_FOLDER* as some folder other than C:\ProgramData to avoid any access control issues later.

Installing TIBCO Hawk Over Previous Releases

TIBCO Hawk Installation enables TIBCO Hawk to be installed in multiple *TIBCO_HOME*. During installation, you can select the existing *TIBCO_HOME* or create a new *TIBCO_HOME*. If the existing *TIBCO_HOME* is selected, it may have other products installed including TIBCO Hawk. If there is any previous TIBCO Hawk installation in the *TIBCO_HOME*, the existing installation is:

- Replaced, if the same version (major, minor) is installed.

- Upgraded to the latest version, if the patch version is the latest.

- Added, in case of a newer major or minor version.

The Universal Installer is responsible to create and setup directories under *HAWK_HOME*. All the files under *HAWK_HOME* should not be modified by any other component except the installer. An installation properties file that includes settings required for runtime is placed in the installation directory.

During the installation, the Universal Installer creates or updates the properties file hawk_*<version>*_prodInfo.xml in the *TIBCO_HOME_installInfo* directory.

This file contains the settings that are used by TIBCO Hawk runtime modules. You do not need to uninstall previous releases of TIBCO Hawk in order to install the most recent version. TIBCO Universal Installer enables you to install multiple versions of TIBCO Hawk on the same machine.

If you try to install the most recent version of TIBCO Hawk in the same *TIBCO_HOME* that has older versions of TIBCO Hawk, Universal Installer lets you proceed ahead seamlessly.

It is best practice to backup your configuration file before upgrade, as the new installation overwrites the configuration files with default files.

If you choose to install the most recent version of TIBCO Hawk in a new TIBCO_HOME, it helps you to create new TIBCO_HOME. For example, you can have TIBCO Hawk 5.2 and 6.2 co-exist in the same TIBCO_HOME.

If you try to re-install the most recent version of TIBCO Hawk in the same TIBCO_HOME, the installer displays a warning indicating that a previous installation exists.

On Windows, if there are TIBCO Hawk Windows services installed by the previous installation of TIBCO Hawk, they get replaced by new versions of such TIBCO Hawk services, by the Universal Installer without any warning.

Installation Prerequisites

If you plan to install in an existing installation environment, it is recommended to stop all the processes that are using Java from *TIBCO_HOME*.

Before you run TIBCO Universal Installer on your Windows or UNIX system, you must login as a user with appropriate permissions, and your system must meet hardware and software requirements as mentioned in the following sections.

Some software is required, and the rest is optional. Before you run the installer, make sure you are running on a supported platform. See the Readme file available at https://docs.tibco.com for information about the supported operating system platforms, versions, and about required patches.

Microsoft Windows

Only user with Administrator privileges can install TIBCO Hawk components on Windows platform. If you intend to install the product on a network drive, ensure that the account used for installation has Administrator permission to access the network drive.

UNIX or Linux

Any type of user—regular (non-root) user and super-user (root)— can install TIBCO Hawk. It is recommended the same installer account to install all TIBCO products. A graphic environment such as CDE or X Windows is required to run the installer in GUI mode.

Hardware Requirements

TIBCO Hawk installation requires minimum of 512 MB system memory (RAM) and about 500 MB of free disk space. Make sure you have adequate system memory and disk space before proceeding with TIBCO Hawk installation.

The Universal Installer requires disk space in the temporary directory before installation, and additional space in the temporary directory for running the installer. Refer to the following table and ensure you have sufficient disk space available in the directory you want to use as the installation environment (*TIBCO_HOME*) directory.

Directory / Location	Disk Space Requirement
Temporary Directory before installation. For example, `c:\temp` or `/tmp`	Before you start the installation, you need this space to download installable archive file. For example, file with name `TIB_hawk_<version>_win_x86_64.zip` is the installable archive file. This file needs about **290 MB** of disk space.
Temporary Directory during installation. For example, `c:\temp\hawk<version>install` or `/tmp/hawk<version>install`	This is the directory where you extract the installable zip so that you can later execute the Universal Installer. This directory requires about **290 MB** of disk space. On Microsoft Windows, the default temporary directory location is `%SystemDrive%:\Documents and Settings\user_name\Local Settings\Temp`. If your system does not have sufficient free disk space in the default temporary directory, you can use the `is:tempdir` option when starting the installer to run the installer with a different temporary directory. For example: `TIBCOUniversalInstaller -is:tempdir \new_tmp` where `\new_tmp` has sufficient free disk space.
Installation Environment Directories	These directories are *HAWK_HOME* and *CONFIG_FOLDER*. Together they both need at least **480 MB** of disk space.

Software Requirements

Refer to the following table for software requirements for a well-functioning TIBCO Hawk system. TIBCO Hawk installation includes some of the components, although they may be optional. Refer to the Readme file for details about the supported versions of various third-party software components.

Table 2   Software Requirements

Software	Optional?	Bundled with Installer?	Comments
Java Development Kit	No	Yes, it is supplied within Hawk Installation	TIBCO Hawk bundles JDK 11. You can choose to use the JDK version bundled with the Hawk installation. Alternatively, you can use your own version of JDK (new or previously installed on the same machine). In this case, you must edit the required ".tra" and ".cfg" file to reflect the accurate location.
Tomcat Web Server	No	Yes, it is supplied within Hawk Installation	TIBCO Hawk bundles Tomcat. For more information about the Tomcat version, refer to the Readme file. Tomcat is not a pre-requisite. It is installed on your machine during the Hawk installation. The Tomcat web server is necessary to host TIBCO Hawk WebConsole web application.
TIBCO Rendezvous	Yes	No, it is not supplied with TIBCO Hawk installer and needs a separate installation.	The TIBCO Rendezvous is the default transport between the Hawk Micro Agent and Hawk Agent and also between the Hawk Agent and Hawk Console applications. If you have already installed TIBCO Rendezvous software on a network-wide basis and you want to use it as a transport for TIBCO Hawk, you do not need additional TIBCO Rendezvous licenses unless you are running TIBCO Rendezvous Routing Daemon (RVRD) processes on a particular machine. In that case, you need a valid RVRD license in the `tibrv.tkt` file for that machine. TIBCO Rendezvous is used for inter-process communication even if TIBCO Enterprise Message Service (EMS) is chosen as the primary transport. TIBCO Rendezvous is used for communication between Hawk Agent and Hawk Microagent (HMA) even if TCP Transport for TIBCO Hawk is chosen as the primary transport.

Table 2   Software Requirements

Software	Optional?	Bundled with Installer?	Comments
TIBCO Enterprise Message Service	Yes	No, it is not supplied with TIBCO Hawk installer and needs a separate installation.	If you plan to use TIBCO Enterprise Message Service as the primary messaging transport, at least one EMS server must be installed on the network and you must select to install the TIBCO EMS Java client during the TIBCO EMS installation on every machine running TIBCO Hawk Agent and TIBCO Hawk Console applications.
TIBCO Administrator	Yes	No, it is not supplied and needs a separate installation	TIBCO Administrator is a browser-based GUI for monitoring and managing deployed processes in the domain. The domain is a collection of machines and software components used for business process integration. In terms of physical process, every domain has an Administration Server that provides a data store for all the domain resource information as well as project data. The Administration Server consists of a repository server and two servlets running on Tomcat application server. The servlets are built using Hawk Console API to interact with TIBCO Runtime Agents running on every machine in the domain. There are additional Hawk plug-ins for Administrator that you may need to copy from Hawk installation to Administrator installation before you use them from within Administrator UI.
TIBCO Runtime Agent (TRA)	Yes	No, it is not supplied and needs a separate installation	If you plan to use any Hawk plug-ins, TIBCO Administrator and TIBCO Runtime Agent are required. TIBCO Runtime Agent is a Hawk Agent with a special Hawk MicroAgent is added to deploy, monitor, and manage TIBCO components like TIBCO BusinessWorks, TIBCO BusinessEvents, and so on.
TIBCO Enterprise Administrator SDK	Yes	No, it is not supplied and needs a separate installation.	TIBCO Enterprise Administrator Agent for Hawk requires TIBCO Enterprise Administrator Server to be running. You must download and install TIBCO Enterprise Administrator SDK and start the server before running the Admin Agent. Your Web Browser must meet the requirements to run the TIBCO Enterprise Administrator server UI. Refer to the Readme file of TIBCO Enterprise Administrator for details.

Table 2   Software Requirements

Software	Optional?	Bundled with Installer?	Comments
Eclipse LGPL Software Assembly	Required on Linux and Solaris	No	If the Eclipse LGPL software assembly (`product_tibco_eclipse_lgpl`) is not present in the temporary directory where you extracted the product archive file, and the machine on which you plan to run the Hawk installer is not connected to the Internet, download the Eclipse LGPL software assembly for your target platform before you install Hawk.
			Save the downloaded assembly in a temporary directory accessible to the machine on which you plan to run the installer. During installation, provide the location of the temporary directory where the downloaded software assembly is available.
			If the machine is connected to the Internet, you can download the Eclipse LGPL software assembly file for your target platform from the TIBCO Software Product Download Site during installation. The `product_tibco_eclipse_lgpl_<version>_OSpl atform.zip` is downloaded to the location you select.

Table 2   Software Requirements

Software	Optional?	Bundled with Installer?	Comments
Sunec LGPL Software Assembly	Yes		The software requires the Sunec LGPL library (Oracle Elliptic Curve Cryptography (ECC) Library) only if you want to use the ECC ciphers with SSL/TLS configurations. Without the ECC library, the SSL/TLS functionality is still available, but without ECC ciphers.
			If the Sunec LGPL software assembly (`product_tibco_sunec`) is not present in the temporary directory where you extracted the product archive file, and the machine on which you plan to run the installer is not connected to the Internet, download the Sunec LGPL software assembly for your target platform before you install Hawk. Save the downloaded assembly in a temporary directory accessible to the machine on which you plan to run the installer. During installation, provide the location of the temporary directory where the downloaded software assembly is available.
			If the machine is connected to the Internet, you can download the Eclipse LGPL software assembly file for your target platform from the TIBCO Software Product Download Site during installation. The `product_tibco_sunec_<version>_OSplatform.zip` is downloaded to the location you select.

Preparing for Installation

Before you start with installation, make sure your system meets all prerequisites, it is recommended that you decide on the installation environment name and folder, and download and extract the installation package.

- *TIBCO_HOME* is the top-level installation directory for TIBCO products.
- *TIBCO_HOME* is referred to as the installation environment.

Installation environments isolate product installations. A product installed into an installation environment does not automatically access components in other environments.

An installation environment consists of a name and a folder.

- The name identifies the environment, is appended to the name of Windows services created by the installer, and is a component of the path to the product in the Windows **Start** > **All Programs** menu.
- The folder contains the installed software. When you install you can choose a new installation environment or an existing installation environment.

If a previous installation of a TIBCO product did not use the TIBCO Universal Installer, the TIBCO Universal Installer does not detect the folder those older products use as an installation environment folder. If you wish to use the existing location as the installation folder, create a new installation environment and choose the folder where the other products exist.

If any errors appear during installation, consult Appendix B, Troubleshooting and Frequently Asked Questions for possible solutions.

Installation Environment

An installation environment isolates product installations. A product installed into an installation environment does not access components in other installation environments.

An installation environment identifies the top level installation directory in which the product is installed.

Understanding Installation Profiles

Different installation components are associated with different functions. By using the installer, you can select the components during the installation.

During custom installation, you can choose to install the following Hawk components.

Table 3 Installation Components

Component	Description
TIBCO Hawk 6.2 Components	When this profile is selected, all the TIBCO Hawk components are installed. The following components are installed:
	• TIBCO Hawk Agent
	• TIBCO Hawk Console
	• TIBCO Hawk WebConsole (deprecated)
	• TIBCO Hawk Event Service
	• Cluster Manager
	• TIBCO Hawk Display (deprecated)
	• Hawk API Development kit to build Hawk MicroAgent, AMI, or the console application
	• Examples
TIBCO Hawk Admin Agent	When this profile is selected, the TIBCO Hawk Admin Agent is installed. Install the Agent after installing the TIBCO Hawk 6.2 components.
	The Admin Agent is used to monitor and manage Hawk agents using the TIBCO Enterprise Administrator server UI. For configuration details and how to use the Admin Agent to monitor and manage the Hawk agents, refer to *TIBCO Hawk Admin Agent Guide*.
	NOTE:
	• If you are using a version of Hawk earlier than 5.2, upgrade to the latest version.
	• For successful installation, the Admin Agent component should be installed only in the existing TIBCO Hawk installation environment, and not in a new installation environment.
	• The Admin Agent interacts with the TIBCO Enterprise Administrator server that is not shipped with this product. Ensure that you install TIBCO Enterprise Administrator separately.

The installation components are grouped into different installation profiles. One installation profile is associated with one or more installation components. When a profile is selected, the components that default to the selected profile are installed. By default, the **TIBCO Hawk 6.2 Components** installation profile is selected, therefore, all the Hawk components are installed. However, the installer allows you to customize the installation by explicitly selecting the components that you want to install.

Installation Modes

TIBCO Universal Installer provides the following three modes of installation for TIBCO Hawk. When installing TIBCO Hawk you also have the option to install the Admin Agent, which exposes TIBCO Hawk to TIBCO Enterprise Administrator, along with the installation of TIBCO Hawk Components.

GUI Mode

GUI mode performs the installation in an interactive graphical interface. The installer prompts you for values specific to your environment.

Installing the Hawk Components and Hawk Admin Agent

1. Download the package.

2. Extract the contents of the package to a temporary directory.

3. Navigate to the temporary directory.

4. Run TIBCO Universal Installer. You can do so in one of the following ways:

   a. Double-click the TIBCOUniveralsalInstaller icon.

   b. On the command prompt, provide the absolute path of the installer file without specifying any options. The installer defaults to GUI mode.

5. Click the **Next** button on the **Welcome** dialog box.

6. Read through the license text when the **License Agreement** dialog box appears. Select the "**I accept the terms of the license agreement**" radio button and click the **Next** button.

   The **TIBCO Installation Home** dialog box is displayed.

7. In the TIBCO Installation Home dialog box, select one of the following options to specify the installation environment. See Installation Environment for more details.

   — **Create a new TIBCO_HOME** to install the product into a new installation environment, specify the **Directory**. The directory into which the product is installed. Type a path or click **Browse** to specify the path or accept the default location.

   — **Use an existing TIBCO_HOME** to install the product into an existing installation environment, select the environment from the drop-down list. The **Directory** field are populated automatically and cannot be edited.

8. Click the **Next** button. The **Installation Profile Selection** dialog box displays.

9. Select the **TIBCO Hawk 6.2 Components** installation profile to install all the Hawk components. Or select the **Customize Installation** check box to explicitly select the Hawk installation components.

   Optionally, hold your Ctrl key down and click **TIBCO Hawk Admin Agent** to select it too. If you choose not to install the Admin Agent at this time you can always install it at a later time by re-running this installer. Click **Next**. See the Understanding Installation Profiles for more details.

10. Choose a folder to be used as the TIBCO configuration destination for the installation environment. The configuration directory is used to store product configuration information. The folder must not already exist as a configuration destination for another installation environment.

Sub-directories `tibco/cfgmgmt` are appended to the path.

11. Select whether you want to use the JVM bundled with the installer or you want to use a JVM previously installed on your machine. If you opt for the latter, browse to the Java location on your machine using the **Browse** button, then click **Next**.

12. Select the transport to be used with the Hawk Event Service.

    — **TCP (default)**: Connects to a Cluster Manager.

      For details, see TCP Transport for TIBCO Hawk.

    — **RV**: Connects to a TIBCO Rendezvous service.

      For details, see TIBCO Rendezvous Transport.

    — **EMS**: Connects to a TIBCO EMS server.

      For details, see TIBCO Enterprise Message Service (EMS) Transport.

13. If you select **TCP** as the transport:

    a. Configure the TCP transport for Hawk Event Service:

    —   **Hawk Domain:** The default domain of the Hawk Event Service is used.

    —   **Self IP Address:Port**: The IP address of the instance running the Hawk Event Service. The default is `localhost:2582`.

    —   **Cluster Manager IP Address:Port**: The IP address of the instance running Hawk Cluster Manager. The default is `localhost:2561`.

    b. Configure the AMI TCP Session for the Hawk Event Service:

    —   **Self IP Address:Port**: The IP address of the instance running the Hawk Event Service. The default is `localhost:2575`.

    —   **Agent IP Address:Port**: The IP address of the instance running Hawk Agent. The default is `localhost:2571`.

    c. Configure the TCP transport for the Cluster Manager:

    —   **Hawk Domain:** The default domain of the Cluster Manager is used.

    —   **Self IP Address:Port**: The IP address of the instance running the Cluster Manager daemon. The default is `localhost:2561`.

    —   **Cluster Manager IP Address:Port**: The IP address of the instance running Hawk Cluster Manager. The default is `localhost:2561`.

Multiple agents, consoles, or cluster managers running on the same instance must bind separate ports.

    d. Configure the TCP transport for Hawk Agent:

— **Hawk Domain**: The default domain of the Hawk Agent is used.

— **Self IP Address:Port**: The IP address of the instance running the Hawk Agent. The default is `localhost:2551`.

— **Cluster Manager IP Address:Port**: The IP address of the instance running Hawk Cluster Manager. The default is `localhost:2561`.

    e. Configure the AMI TCP Session for the Hawk Agent.

— **AMI TCP Session Self IP Address:Port**: Configures the Hawk agent with a TCP session to be used to communicate with applications implementing the TIBCO Hawk Application Management Interface.

    If this parameter is not specified when using TCP Transport for TIBCO Hawk, the default value of `localhost:2571` is used.

— **Set AMI RVD Session**: Configures the agent with a RVD session to be used to communicate with applications implementing the TIBCO Hawk Application Management Interface.

If you set **Set AMI RVD Session** to `true`, make sure that the respective `.tra` file has the RV_HOME path.

14. If you select **RV** as the transport:

    a. Configure the Rendezvous transport for Hawk Event Service:

    — **Hawk Domain**: The default domain of the Hawk Event Service is used.

    — **Service**: Specify the host and port number of the TIBCO Rendezvous daemon. The default is `7474`.

    — **Network**: The network used for all communications between Hawk and the TIBCO Rendezvous daemon.

    — **Daemon**: The remote host and port used to connect to the TIBCO Rendezvous daemon. The default is `tcp:7474`.

    b. Configure AMI Rendezvous Session for Hawk Event Service:

    — **Service**: Specify the host and port number of the TIBCO Rendezvous daemon. The default is `7474`.

    — **Network**: The network used for all communications between Hawk and the TIBCO Rendezvous daemon.

    — **Daemon**: The remote host and port used to connect to the TIBCO Rendezvous daemon. The default is `tcp:7474`.

    c. Configure the Rendezvous transport for the Hawk agent:

    — **Hawk Domain**: The default domain of the Hawk agent is used.

    — **Service**: Specify the host and port number of the Rendezvous daemon. The default is `7474`.

    — **Network**: The network used for all communications between Hawk and the Rendezvous daemon consisting of network, multicast groups, and send address.

    — **Daemon**: The remote host and port used to connect to the Rendezvous daemon. The default is `tcp:7474`.

    d. Configure AMI RVD Session for Hawk Agent.

    — **Service**: Specify the host and port number of the Rendezvous daemon. The default is `7474`.

    — **Network**: The network used for all communications between Hawk and the Rendezvous daemon consisting of network, multicast groups, and send address.

    — **Daemon**: The remote host and port used to connect to the Rendezvous daemon. The default is `tcp:7474`.

15. If you select **EMS** as the transport:

   a. Configure the EMS transport for Hawk Event Service.

   — **Hawk Domain**: The default domain of the Hawk Event Service is used.

   — **Server URL**: The location of the EMS server. For example: `tcp://server1:7222`.

   — **Username**: The user name of the EMS server. For example: `admin`.

   — **Password**: The password for the EMS server. For example: `#!NhAD1NBC`.

   b. Configure the AMI RVD Session for the Hawk Event Service.

   — **Service**: Specify the host and port number of the Rendezvous daemon. The default is `7474`.

   — **Network**: The network used for all communications between Hawk and the Rendezvous daemon consisting of network, multicast groups, and send address.

   — **Daemon**: The remote host and port used to connect to the Rendezvous daemon. The default is `tcp:7474`.

   c. Configure the EMS transport for the Hawk agent:

   — **Hawk Domain:** The default domain of the Hawk agent is used.

   — **Server URL:** The location of the EMS server. For example: `tcp://server1:7222`.

   — **Username:** The user name of the EMS server. For example: `admin`.

   — **Password:** The password for the EMS server. For example: `#!NhAD1NBC`.

   d. Configure the AMI RVD Session for the Hawk Agent.

   — **Service:** Specify the host and port number of the Rendezvous daemon. The default is `7474`.

   — **Network:** The network used for all communications between Hawk and the Rendezvous daemon consisting of network, multicast groups, and send address.

   — **Daemon:** The remote host and port used to connect to the Rendezvous daemon. The default is `tcp:7474`.

   e. Configure the TCP transport for the Cluster Manager.

   — **Self IP Address:Port**: The IP address of the instance running the Cluster Manager daemon. The default is localhost:2561.

   — **Cluster Manager IP Address:Port**: The IP address of the instance running Hawk Cluster Manager. The default is localhost:2561.

> Multiple agents, consoles, and cluster managers running on the same instance need to bind to separate ports.

16. Download the Oracle Elliptic Curve Cryptography Library LGPL assembly.

    — **Oracle Elliptic Curve Cryptography Library assembly from TIBCO**: Download the assembly from the TIBCO website.

    — **Provide the location for the assembly previously downloaded from TIBCO**: You can manually download the assembly by clicking the `TIB_product_tibco_sunec_11.0.3.012_<OS>.html` file listed with the software on the download site. For example, on Windows, click: `TIB_product_tibco_sunec_11.0.3.012_win_x86_64.html`

    — **Oracle Elliptic Curve Cryptography Library Assembly Path**: Specify the folder where the assembly was downloaded.

17. Verify the list of product features selected for install in the **Pre-Install Summary** dialog box and click **Install**.

18. Review the information listed in the **Post-Install Summary** dialog box and click **Finish**.

Installing the Admin Agent after Installing the TIBCO Hawk Components

1. Navigate to the temporary directory where the installation package was extracted and re-run TIBCOUniversalInstaller. You can do so in one of the following ways:

    a. Double-click the installer icon.

    b. On the command prompt, provide the absolute path of the installer file without specifying any options. The installer defaults to GUI mode.

2. Click the **Next** button on the **Welcome** dialog box.

3. Read through the license text when the **License Agreement** dialog box appears. Select the "**I accept the terms of the license agreement.**" radio button and click the **Next** button.

4. In the TIBCO Installation Home dialog box, click the **Use an existing TIBCO_HOME** option and select the existing installation environment where Hawk is installed and click **Next**.

5. Select the **TIBCO Hawk Admin Agent** installation profile to install the TIBCO Enterprise Administrator Agent Runtime component. Click **Next**. See the Understanding Installation Profiles for more details.

6. Select whether you want to use the JVM bundled with the installer or you want to use a previously installed JVM on your machine. If you opt for the

latter, browse to the Java location on your machine using the **Browse** button, then click **Next**.

7. Verify the list of product features selected for install in the **Pre-Install Summary** dialog box and click the **Install**.

8. Review the information listed in the **Post-Install Summary** dialog box and click **Finish**.

Console Mode

Console mode allows you to install the software from a command window or terminal emulator. The installer prompts you for values.

To install this product in console mode:

1. Download the package.

2. Extract the contents of the package to a temporary directory.

3. Using a console window, navigate to the temporary directory.

4. To install from a Microsoft Windows command window, type:

`TIBCOUniversalInstaller-x86-64.exe –console`

To install from a UNIX terminal window, type:

`TIBCOUniversalInstaller-<platform>.bin -is:javaconsole –console`

5. Complete the installation by responding to the console window prompts

The installation process is the similar to the installation in GUI Mode.

Silent Mode

In silent mode, the Universal Installer does not prompt for any inputs during installation. Instead, the inputs are read from a configuration file that can be provided as a command-line parameter. If no value is specified, the installer uses the default `TIBCOUniversalInstaller_hawk_<version>.silent` file.

The `TIBCOUniversalInstaller_hawk_<version>.silent` file is packaged in the directory that contains the Universal Installer. Edit the file with information for your environment before launching the silent installation. The file includes comments that describe the installation properties you can set.

While you can use the `TIBCOUniversalInstaller_hawk_<version>.silent` file, it is recommended to copy the file to a different name and use that file for the silent install. If errors occur during installation, they are listed in the installation log file located in the `User_Home/.TIBCO` directory.

Installing the Hawk Components and Admin Agent

1. Download the package.

2. Extract the contents of the package to a temporary directory.

3. Using a console window, navigate to the temporary directory.

4. Make a copy of the `TIBCOUniversalInstaller_hawk_<`*version*`>.silent` file and rename the original file.

5. Using a text editor, open the copied file and update the install location, `ENV_NAME`, and features that need to be installed as follows.

   a. Update the install location. Install TIBCO Hawk in the same directory where <Family> is installed. For example, update the directory as follows:

```
<entry key="installationRoot">C:\tibco</entry>
```

   b. Update `ENV_NAME`. TIBCO Hawk must use the same `ENV_NAME` that <Family> uses.

   For example, update `ENV_NAME` as follows:

```
<entry key="createNewEnvironment">false</entry>
<entry key="environmentName">TIBCO_HAWK_HOME</entry>
```

   c. Update features to be installed. Set the Hawk component features that you want to install to `true` and the Admin Agent feature to `false`. See Understanding Installation Profiles for more details.

   The following elements can be set to `true` or `false` in the `.silent` file for installing your choice of components, to simulate the TIBCO Hawk custom installation.

```
<entry key="feature_Agent, SDK, Examples_hawk">true</entry>
<entry key="feature_Event Service_hawk">true</entry>
<entry key="feature_Console_hawk">true</entry>
<entry key="feature_Admin Agent Runtime_hawk">true</entry>
<entry key="feature_Cluster Manager_hawk">true</entry>
```

   d. If you would like to install the TIBCO Hawk Admin Agent at this time, set the following property to true:

```
<entry key="feature_Admin Agent Runtime_hawk">true</entry>
```

   If you choose not to install the Admin Agent at this time, set the above property to `false`. You can always install the Admin Agent at a later time by setting the property to `true` and rerunning the installation.

   e. Configure the Hawk Cluster Manager as follows:

```
<!-- Hawk Cluster Manager Self IP Address -->
<entry key="hawk.self.ip.address">localhost:2561</entry>
<!-- Hawk Cluster Manager Cluster IP Address -->
<entry key="hawk.cluster.ip.address">localhost:2561</entry>
```

```
<!-- Domain -->
<entry key="cluster.hawk.domain">default</entry>
```

    f. Configure the Hawk Agent as follows. Note that you must comment or uncomment properties related to a specific transport. For example, if you choose RV as the transport, uncomment properties related to RV and comment the rest of the properties.

```
<!-- Hawk Agent transport. The choices are: TCP, RV, or EMS -->
<entry key="hawk.agent.transport.name">TCP</entry>

<!-- Configuration for Hawk Agent if TCP selected-->
<!-- Self IP address -->
<entry key="hawk.agent.tcp.self.address">localhost:2551</entry>

<!-- Cluster IP address -->
<entry key="hawk.agent.tcp.cluster.address">localhost:2561</entry>

<!-- Domain -->
<entry key="hawk.agent.tcp.hawk.domain">default</entry>

<!-- AMI settings for TCP -->
<entry key="hawk.agent.ami.tcp.port">localhost:2571</entry>
<entry key="hawk.agent.ami.rvd.session">false</entry>

<!-- Configuration for Hawk Agent if RV is selected -->

<!-- Service name for RV -->
<!-- entry key="hawk.agent.rv.service.name">7474</entry -->

<!-- Network for RV -->
<!-- entry key="hawk.agent.network.name"></entry-->

<!-- Daemon for RV -->
<!-- entry key="hawk.agent.daemon.name">tcp:7474</entry -->

<!-- AMI settings for RV -->
<!-- entry key="hawk.agent.ami.service.name">7474</entry -->
<!-- entry key="hawk.agent.ami.network.name"></entry-->
<!-- entry key="hawk.agent.ami.daemon.name">tcp:7474</entry -->

<!-- Domain -->
<!--entry key="hawk.agent.rv.hawk.domain">default</entry-->

<!--configuration for Hawk Agent if EMS selected-->

<!-- Server URL for EMS -->
<!-- <entry key="hawk.agent.ems.serverurl"></entry-->

<!-- User name for EMS -->
<!-- entry key="hawk.agent.ems.username"></entry-->
<!--entry key="hawk.agent.ems.password"></entry-->

<!-- AMI Settings for EMS -->
<!--
<entry key="hawk.agent.ami.ems.service.name">7474</entry>
```

```
<entry key="hawk.agent.ami.ems.network.name"></entry>
<entry key="hawk.agent.ami.ems.daemon.name">tcp:7474</entry> -->

<!-- Domain -->
<!--entry key="hawk.agent.ems.hawk.domain">default</entry-->
```

    g. Configure the Hawk Event Service as follows. Note that you must comment or uncomment properties related to a specific transport. For example, if you choose RV as the transport, uncomment properties related to RV and comment the rest of the properties.

```
<!-- Hawk Event Service transport. The choices are: TCP, RV, or EMS
-->
<entry key="hawk.event.transport.name">TCP</entry>

<!--Configuration for Hawk Event if TCP selected-->
<!-- Self IP addresss -->
<entry key="hawk.event.tcp.self.address">localhost:2551</entry>

<!-- Cluster IP address -->
<entry key="hawk.event.tcp.cluster.address">localhost:2561</entry>

<!-- AMI settings for TCP -->
<entry key="hawk.event.ami.self.address">localhost:2582</entry>
<entry key="hawk.event.ami.agent.address">localhost:2561</entry>

<!-- Domain -->
<entry key="hawk.event.tcp.hawk.domain">default</entry>

<!--Configuration for Hawk Event if RV selected-->

<!-- Hawk Event service name if RV is selected -->
<!--entry key="hawk.event.rv.service.name">7474</entry-->

<!-- Hawk Event network name if RV is selected -->
<!--entry key="hawk.event.network.name"></entry-->

<!-- Hawk Event daemon name if RV is selected -->
<!--entry key="hawk.event.daemon.name">tcp:7474</entry-->

<!-- Domain -->
<!--entry key="hawk.event.rv.hawk.domain">default</entry> -->

<!-- AMI Settings for Event Service if RV is selected -->
<!--
<entry key="hawk.event.ami.rv.service.name">7474</entry>
<entry key="hawk.event.ami.rv.network.name"></entry>
<entry key="hawk.event.ami.rv.daemon.name">tcp:7474</entry> -->

<!-- Configuration for Hawk Event Service if EMS selected -->
<!-- Server URL for Hawk Event Service -->
<!-- <entry key="hawk.event.ems.serverurl"></entry-->

<!-- User name for Hawk Event Service if EMS is selected -->
<!--entry key="hawk.event.ems.username"></entry-->
```

```
<!-- Password for Hawk Event Service if EMS is selected -->
<!--entry key="hawk.event.ems.password"></entry-->

<!-- Domain -->
<!--entry key="hawk.event.ems.hawk.domain">default</entry> -->

<!-- AMI Settings for Event Service if EMS is selected
<entry key="hawk.event.ami.ems.service.name">7474</entry>
<entry key="hawk.event.ami.ems.network.name"></entry>
<entry key="hawk.event.ami.ems.daemon.name">tcp:7474</entry> -->
```

6. Run the following command to start the installation:

    — On Windows:

```
TIBCOUniversalInstaller.cmd -silent -V
responseFile="TIBCOUniversalInstaller_hawk_<version>.silent"
```

    — On UNIX/Linux:

```
TIBCOUniversalInstaller.bin -silent -V responseFile="
TIBCOUniversalInstaller_hawk_<version>.silent "
```

> Provide a complete (absolute) path of
> `TIBCOUniversalInstaller_hawk_<version>.silent` to execute Universal
> Installer from some other folder.

A line similar to the following is written to the installer log file when installation
completes:

```
... Install, com.tibco.installer.util.TIBCOInstaller, dbg.Debug,
Executing Event:::OnEndInstall
```

Installing Admin Agent After Installing the Hawk Components

1. Edit the same `.silent` file which was used for Hawk components
   installation. See Installing the Hawk Components and Admin Agent.

2. Using a text editor, open the copied file and update the install location,
   ENV_NAME, and features to install as follows:

   a. Update ENV_NAME. Admin Agent must use the same ENV_NAME that TIBCO
      Hawk uses.

      For example, update ENV_NAME as follows:

```
<entry key="createNewEnvironment">false</entry>
<entry key="environmentName">TIBCO-HAWK_HOME</entry>
```

   b. Update features to install. Set the following feature to `true` to install the
      Admin Agent component. See Understanding Installation Profiles for
      more details.

```
<entry key="feature_Admin Agent Runtime_hawk">true</entry>
```

3. Run the following command to start the installation:

— On Windows:

```
TIBCOUniversalInstaller.cmd -silent -V
responseFile="TIBCOUniversalInstaller_hawk_<version>.silent"
```

— On UNIX/Linux:

```
TIBCOUniversalInstaller.bin -silent -V responseFile="
TIBCOUniversalInstaller_hawk_<version>_silent "
```

Provide a complete (absolute) path of
`TIBCOUniversalInstaller_hawk_<version>.silent` to execute Universal
Installer from some other folder.

A line similar to the following is written to the installer log file when installation completes:

```
... Install, com.tibco.installer.util.TIBCOInstaller, dbg.Debug,
Executing Event:::OnEndInstall
```

Post installation Tasks

External JRE

For JVM microagents: If you have specified external JRE when installing TIBCO Hawk, `tools.jar` in the `.hma` file must point to a JDK installation location.

If you plan to use a JRE version other than the one supplied with TIBCO Hawk, make sure that the correct values are set for `JVM_LIB_PATH`, `JVM_LIB_DIR`, `JVM_LIB_SERVER_DIR`, `JAVA_HOME`, `JRE_HOME`, `JRE_ROOT` in the `.cfg` and `.tra` files in *CONFIG_FOLDER*\bin.

Setting Permissions for Executing HMA on UNIX/Linux

TIBCO Hawk MicroAgent (HMA) process must execute under "root" privileges, on UNIX/Linux platforms.

This process internally gathers various system level information through different system artifacts such as, files, folders, scripts and so on. Access failure to such system-guarded items results in incorrect results of some of the microagent methods.

If the installation is done using root user, then the installation process, accordingly creates "`setuid`" permissions with root ownership for the TIBCO HMA executable.

If the installation is done using a non-root user, then after installation is complete, the root user must change the ownership of the following files to root and set the setuid permission as follows:

```
chown root tibhawkhma
chown root starthma
chmod u+s tibhawkhma
chmow u+s starthma
```

Then, a normal user with executable permissions can execute HMA with effective "root" permissions.

Uninstallation Procedure

This section describes how to uninstall this product in the GUI mode and the Console mode.

The uninstaller removes all files that were installed as a part of TIBCO Hawk installation, even if those files were modified by the user or the application. Make sure you have a backup of user-modified files before proceeding with the uninstallation.

Installing any TIBCO Hawk Adapter product creates the *HAWK_HOME*/adapters folder by default. Uninstallation of TIBCO Hawk does not remove the adapter folder. However, if you remove that folder manually, the adapters' uninstaller and the entire installation become non-functional.

GUI Mode

To uninstall this product using Universal Installer GUI screens:

1. Shut down all running TIBCO Hawk applications.

2. Navigate to *TIBCO_HOME*/`tools/universal_installer` and run TIBCOUniversalInstaller.

3. In the TIBCO Installation Manager screen, perform the following steps:

   — Select the **Uninstall Products** from **Selected TIBCO Home Location** radio button.

   — Select the *TIBCO_HOME* location from the **TIBCO Home Location** drop-down list.

   — The **Welcome** dialog box appears. Click the **Next** button.

   — Choose an uninstallation option. The wizard provides two uninstallation options:

     Custom Uninstall - You can select the products to be removed.

     Typical Uninstall - The universal uninstaller removes all the products in this *TIBCO_HOME*.

4. Click the **Next** button. If you selected the **Custom Uninstall** (Select The Products To Be Removed) radio button, select the check boxes for products to uninstall, and then click the **Uninstall** button.

5. Review the **Pre-Uninstall Summary** and click the **Uninstall** button to start the uninstallation process.

6. Review the **Post-Uninstall Summary** and click the **Finish** button to exit the uninstall wizard.

Console Mode

To uninstall this product in Console mode, complete the following steps:

1. Using a command window, navigate to the *TIBCO_HOME*/tools/universal_installer directory.

2. Type the following command at the command prompt:

   TIBCOUniversalInstaller.exe -console

   On HP platform:

   TIBCOUniversalInstaller-hpux-ia64.bin -console

3. Complete the uninstallation by responding to the console window prompts.

Getting Started with TIBCO Hawk (Quick Start)

After successful installation of TIBCO Hawk, follow these steps:

1. Open *TIBCO_HOME* and ensure that the following folders exist under *TIBCO_HOME*:

   — *TIBCO_HOME*/hawk/*<version>*

   — *TIBCO_HOME*/tibcojre64

On Windows: 2. Start the following TIBCO Hawk components:

   a. Start Hawk Cluster Manager by using one of the following methods:

   — Click **Start** > **All Programs** > **TIBCO** > *HAWK_HOME* > **TIBCO Hawk** *<version>* > **Start Hawk TcpDaemon**.

   — Double-click tibhawktcpdaemon from *CONFIG_FOLDER*\bin.

   b. Start Hawk Agent using one of the following methods:

   — Click **Start** > **All Programs** > **TIBCO** > *HAWK_HOME* > **TIBCO Hawk** *<version>* > **Start Hawk Agent**.

   — Double-click tibhawkagent from *CONFIG_FOLDER*\bin.

   c. Start Hawk Microagent using one of the following methods:

   — Click **Start** > **All Programs** > **TIBCO** > *HAWK_HOME* > **TIBCO Hawk** *<version>* > **Start Hawk Microagent**.

   — Double-click tibhawkhma from *CONFIG_FOLDER*\bin.

   On UNIX, execute starthma. The starthma must be run as root and must not use setuid.

   d. Start Hawk Event Service (if needed) using one of the following methods:

   — Click **Start** > **All Programs** > **TIBCO** > *HAWK_HOME* > **TIBCO Hawk** *<version>* > **Start Hawk Event**.

   — Start Hawk Event by double clicking tibhawkevent from *CONFIG_FOLDER*\bin.

3. Start TIBCO Hawk Console by using either of the following methods:

   — Click **Start** > **All Programs** > **TIBCO** > *HAWK_HOME* > **TIBCO Hawk** *<version>* > **Start Hawk Console**.

   — Double-click tibhawkconsole from *CONFIG_FOLDER*\bin.

4. After you start the Hawk Console in your browser's address box, enter a URL of the following format:

   `http://<address>:<port_number>/HawkConsole`

   where the default *<port_number>* is 8083.

   For example, http://localhost:8083/HawkConsole

   In the login window, enter a valid user name and password. The default credentials are:

   - Username: **admin**

   - Password: **admin**

On UNIX/Linux: 1. Start the following TIBCO Hawk components:

   a. Start Hawk Cluster Manager by running `tibhawktcpdaemon` from *CONFIG_FOLDER*`/bin`.

   b. Start Hawk Agent by executing `tibhawkagent` from *CONFIG_FOLDER*`/bin`.

   c. Start Hawk Microagent by executing `starthma`. The `starthma` must be run as root.

   d. Start Hawk Event Service (if needed) by executing `tibhawkevent` from *CONFIG_FOLDER*`/bin`.

   e. Start Hawk Console by executing `tibhawkconsole` from *CONFIG_FOLDER*`/bin`.

2. After you start the Hawk Console, in your browser's address box, enter a URL of the following format:

   `http://<address>:<port_number>/HawkConsole`

   where the default *<port_number>* is 8083.

   For example, http://localhost:8083/HawkConsole

   In the login window, enter a valid user name and password. The default credentials are:

   - Username: **admin**

   - Password: **admin**

Chapter 2 **TIBCO Hawk Component Configurations**

This chapter provides information about various TIBCO Hawk components and how to configure them. The various components within TIBCO Hawk installation are:

- Hawk Agent

- Hawk Cluster Manager

- Hawk Console

- Hawk WebConsole (deprecated in Hawk 6.1)

- HMA (native Hawk Microagent)

- Hawk Display (Deprecated but still supported in Hawk 6.x)

- Hawk Event Service

There are a few configuration items that are common for all TIBCO Hawk components and are explained in the following sections.

Topics

Transport Mode Configuration

Different transport modes are available to be configured as a means of communication between Hawk Agent and HMA, and Hawk Agent and Hawk Console, and they are:

- TIBCO Rendezvous (RV)
- TCP Transport for TIBCO Hawk
- TIBCO Enterprise Message Service (EMS)

At least one transport mode should be configured in the configuration files of Hawk Agent, Hawk Microagent, Hawk Event, and Hawk Console to enable message or event communication among various Hawk components.

TIBCO Hawk installation has TCP Transport for TIBCO Hawk configured as the default mode of message and event transport between Hawk Agent and AMI-based applications, as well as between Hawk Agent and Hawk Console.

If you choose TCP Transport for TIBCO Hawk as the transport between Hawk Agent and Console, you can use the same transport between Hawk Agent and AMI based application except HMA. For HMA, you can use TIBCO Rendezvous as transport and use TCP Transport for TIBCO Hawk and TIBCO Rendezvous Bridge for communicating with Hawk Agent.

If TIBCO Rendezvous is chosen as a transport between the Hawk Agent and the Hawk Console, the same is used a transport between the Hawk Agent and the HMA or other AMI based applications. You cannot configure it to use a different transport.

If you choose to use TIBCO Enterprise Message Service as the transport between the Hawk Agent and the Console, you can only use TIBCO Rendezvous as the transport between the Hawk Agent and the HMA or other AMI based applications.

The above combinations can be configured using various configuration files, as described in next few sections of this chapter.

TIBCO Rendezvous and TIBCO EMS are two independent products that need to be installed separately. Additional configurations need to be performed manually based on whether they are installed before or after installing TIBCO Hawk, and whether any of them share the same *TIBCO_HOME* installation folder.

A Single TIBCO_HOME Location for Various TIBCO Products

If you are using or planning to use a single *TIBCO_HOME* for all TIBCO Rendezvous, TIBCO EMS, and TIBCO Hawk components, read this section. Otherwise, you might skip to the section Different TIBCO_HOME Locations for Various TIBCO Products.

Using pre-installed and pre-configured existing transports

You can use an existing transport (TIBCO Rendezvous or TIBCO EMS) either from a previous installation of TIBCO Hawk or independent installations of these TIBCO products in the same *TIBCO_HOME* where Hawk is installed. Update all the TRA configuration files (for example, `tibhawkagent.tra`), script files (such as, starthawkconsole and starthma), Hawk Console configuration files with the correct locations of *EMS_HOME* and *RV_HOME* and the execution environment.

Setup all the required libraries and their paths during the post-install configuration step of the TIBCO Hawk installation.

Installing TIBCO Rendezvous or TIBCO EMS transports after installing TIBCO Hawk

If you install TIBCO Rendezvous or TIBCO Enterprise Message Service in the same *TIBCO_HOME* after TIBCO Hawk, ensure the following to set the correct runtime environment for the TIBCO Hawk components.

*   Edit and modify TRA configuration files (all the files with the extension ".tra" in *CONFIG_FOLDER*/bin) to set the correct installation location of TIBCO Rendezvous and TIBCO Enterprise Message Service. That is, set the correct values for `tibco.env.EMS_HOME` and `tibco.env.RV_HOME` environment variables in all the TRA configuration files.

    On Unix or Linux, edit and modify the `starthma.sh` file with the correct *RV_HOME* location if TIBCO Rendezvous is installed after TIBCO Hawk.

*   To configure Hawk WebConsole runtime environment, assuming TIBCO Hawk is installed with the default supplied Tomcat web server, copy the Java libraries from respective locations to the *HAWK_HOME*/webconsole/tomcat/lib folder.

    Copy the following Java libraries for TIBCO Rendezvous as transport:

    — *RV_HOME*/lib/tibrvj.jar

Copy the following Java libraries for TIBCO EMS as transport:

— *EMS_HOME*/lib/tibrvjms.jar

— *EMS_HOME*/lib/tibjms.jar

— *EMS_HOME*/lib/tibcrypt.jar

— *EMS_HOME*/lib/jms-2.0.jar (in case of EMS 8.x)

• To configure Hawk WebConsole runtime environment, assuming TIBCO Hawk is installed with default supplied Tomcat web server, edit and modify *HAWK_HOME*/webconsole/startwebconsole.bat and *HAWK_HOME*/webconsole/tomcat/bin/setenv.bat (.bat file on Windows, and .sh on Unix/Linux) to set RV_HOME and EMS_HOME correctly.

> If you are not using EMS as transport, then it is recommended that you remove the *EMS_HOME* entries from startwebconsole.bat and setenv.bat (the .bat file on Windows, and the .sh file on UNIX/Linux) files, to avoid any issues with Hawk WebConsole start.

> If you want to use any web server other than Tomcat, you need to copy some libraries (JAR/WAR) into locations specific to the web server. For details, see Web Server for Hawk WebConsole.

Different TIBCO_HOME Locations for Various TIBCO Products

If you are using or planning on using a different *TIBCO_HOME* for all TIBCO Rendezvous, TIBCO Enterprise Message Service, and TIBCO Hawk components, read this section. Otherwise, skip to the next section.

Since *TIBCO_HOME* for Hawk is different from that of TIBCO Rendezvous and TIBCO Enterprise Message Service, ensure that appropriate installation locations are updated as follows:

• Edit and modify the TRA configuration files (all the files with extension ".tra" in *CONFIG_FOLDER*/bin) to set the correct installation location of TIBCO Rendezvous and TIBCO Enterprise Message Service. That is, set the correct values for tibco.env.EMS_HOME and tibco.env.RV_HOME environment variables in all the TRA configuration files.

On Unix/Linux, if TIBCO Rendezvous is installed at different *TIBCO_HOME*, then edit and modify the starthma.sh file with the correct *RV_HOME* location.

• To configure Hawk WebConsole runtime environment, assuming TIBCO Hawk is installed with default supplied Tomcat web server, copy the Java libraries from respective locations to the *HAWK_HOME*/webconsole/tomcat/lib folder.

Copy the following Java libraries for TIBCO Rendezvous as transport:

— *RV_HOME*/lib/tibrvj.jar

Copy the following Java libraries for TIBCO EMS as transport:

— *EMS_HOME*/lib/tibrvjms.jar

— *EMS_HOME*/lib/tibjms.jar

— *EMS_HOME*/lib/tibcrypt.jar

— *EMS_HOME*/lib/jms-2.0.jar (in case of EMS 8.x)

- To configure Hawk WebConsole runtime environment, assuming TIBCO Hawk is installed with default supplied Tomcat web server, edit and modify *HAWK_HOME*/webconsole/startwebconsole.bat and *HAWK_HOME*/webconsole/tomcat/bin/setenv.bat (the .bat file on Windows, and the .sh file on UNIX/Linux) to set *RV_HOME* and *EMS_HOME* correctly.

If you are not using EMS as transport, then it is recommended that you remove the *EMS_HOME* entries from startwebconsole.bat and setenv.bat (the .bat file on Windows, and the .sh file on UNIX/Linux) files, to avoid any issues with Hawk WebConsole start.

If you want to use any web server other than Tomcat, copy some libraries (JAR/WAR) to locations specific to the web server. For details, see Web Server for Hawk WebConsole.

TIBCO Rendezvous Transport

TIBCO Rendezvous can be used as the transport between the Hawk Microagent and Hawk Agent and also between the Hawk Agent and Hawk Console applications.

Configure the -rvd_session parameter in the configuration files to enable the TIBCO Rendezvous as transport.

Comment this option, or let it be commented in the configuration file, if you are using TIBCO EMS or TCP Transport for TIBCO Hawk as the primary transport.

TIBCO Hawk connects to the TIBCO Rendezvous daemon by creating a session. In the configuration files, ensure that the -tcp_session and -ems_transport parameters are commented out, and then configure the -rvd_session parameter. TIBCO Rendezvous transport creation calls accept three parameters that govern the behavior of the transport: service, network and daemon.

-rvd_session *<service> <network> <daemon>*

where,

- **service** instructs the Rendezvous daemon to use this service whenever it conveys messages on this transport. You can specify the port number as the service to be used, for example, "7474".

- **network** instructs the Rendezvous daemon to use a particular network for all communications involving this transport. The network parameter consists of up to three parts, separated by semicolons: network, multicast groups, and send address.

- **daemon** instructs the transport creation function about how and where to find the Rendezvous daemon and establish communication. For remote daemons, specify two parts (introducing the remote host name as the first part), for example, `tcp:7474`:

  — Remote host name

  — Port number

The default value in the configuration file for the Rendezvous session is

```
-rvd_session 7474 ; tcp:7474
```

For more details on TIBCO Rendezvous, refer to the TIBCO Rendezvous documentation.

TCP Transport for TIBCO Hawk

TCP Transport for TIBCO Hawk is a TCP based transport for Hawk components using the Akka clustering designs.

For more information about architecture of the TCP Transport for TIBCO Hawk, refer to the *TIBCO Hawk Concepts Guide*.

TIBCO Hawk can be deployed on Amazon Web Services (AWS) using TCP Transport for TIBCO Hawk.

To setup the TCP Transport for TIBCO Hawk for Hawk components, you must configure the Hawk components to use the TCP session and join the cluster. The TCP session parameter in the Hawk components requires a unique self socket address and socket address of the Cluster Manager acting as the seed node to join the cluster.

While starting the Hawk components, the Cluster Manager must be started first as the Cluster Manager initiates the cluster for the TCP Transport for TIBCO Hawk.

The following table identifies the files that you must configure to setup the TCP Transport for TIBCO Hawk.

Table 4   TCP Transport for TIBCO Hawk Configuration

Hawk Component	Configuration File	Parameters to Configure
Hawk Cluster Manager	*CONFIG_FOLDER*\bin\hawktcpdaemon.cfg	Perform the following configuration for setting up TCP Transport for TIBCO Hawk for Hawk components: • Specify a valid Hawk domain name. • Configure the -tcp_session parameter with details to join the TCP transport cluster. For more information about configuration parameters for Hawk Cluster Manager, see Hawk Cluster Manager Configurations.
Hawk Agent	*CONFIG_FOLDER*\bin\hawkagent.cfg	Perform the following configuration for setting up TCP Transport for TIBCO Hawk for Hawk Agent: • Specify the Hawk domain name same as specified in the Hawk Cluster Manager. • In case of connection to TIBCO Hawk Microagent (HMA), also uncomment the -ami_rvd_session parameter (in addition to -M AMIService and -ami_tcp_session parameters) for connection using the Hawk TCP-RV Bridge for the TCP Transport for TIBCO Hawk. For TIBCO Hawk Microagent to use the TCP Transport for TIBCO Hawk no configuration is required in hawkhma.cfg. For more information about -tcp_session, -ami_rvd_session, and -ami_tcp_session parameters for Hawk Agent, see Hawk Agent Configurations.

Table 4 TCP Transport for TIBCO Hawk Configuration

Hawk Component	Configuration File	Parameters to Configure
Hawk Console	*CONFIG_FOLDER*\bin\DomainTransportConfig.yml	Specify the domain details and tibtcp as transport. Specify the following parameters for the TCP Transport for TIBCO Hawk: • `- domainName` - Specify the Hawk domain name same as specified in the Hawk Cluster Manager (`hawktcpdaemon.cfg`). • `transport` - Specify the value as `tibtcp` for TCP Transport for TIBCO Hawk. • `tcpSelfUrl` - Specify the socket address of the Hawk Console for joining the cluster. • `tcpDaemonUrl` - Specify the socket address of the Cluster Manager acting as the seed node for the cluster. This socket address is same as *\<cluster_manager_IP>:\<port>* specified for the `-tcp_session` parameter in the Hawk Cluster Manager (`hawktcpdaemon.cfg`). For more details, see Hawk Console Configurations.
Hawk Admin Agent	*CONFIG_FOLDER*\hawkteaagent\config\hawk-domain-transport-cfg.xml	Specify the following parameters for the TCP Transport for TIBCO Hawk: • `<hk:HawkDomainName>` - Specify the Hawk domain name same as specified in the Hawk Cluster Manager (`hawktcpdaemon.cfg`). • `<hk:selfUrl>` - Specify the socket address of the Hawk Admin Agent for joining the cluster. • `<hk:daemonUrl>` - Specify the socket address of the Cluster Manager acting as the seed node for the cluster. This socket address is same as *\<cluster_manager_IP>:\<port>* specified for the `-tcp_session` parameter in the Hawk Cluster Manager (`hawktcpdaemon.cfg`).

Table 4 TCP Transport for TIBCO Hawk Configuration

Hawk Component	Configuration File	Parameters to Configure
Hawk Event Service	*CONFIG_FOLDER*\hawk\tibco\cfgmgmt\hawk\bin\hawkevent.cfg	Perform the following configuration for setting up TCP Transport for TIBCO Hawk for Hawk Event service: • Specify the Hawk domain name same as specified in the Hawk Cluster Manager (`hawktcpdaemon.cfg`). • Uncomment the `-ami_tcp_session` parameter for connecting to the Hawk Agent. For more information about `-tcp_session` and `-ami_tcp_session` parameters for Hawk Event Service, see Hawk Event Service Configurations.
Hawk Display (deprecated)	*CONFIG_FOLDER*\bin\hawkdisplay.cfg	Perform the following configuration for setting up TCP Transport for TIBCO Hawk for Hawk Display: • Specify the Hawk domain name same as specified in the Hawk Cluster Manager. For more information about this parameter for Hawk Display, see Hawk Display Configurations.

Table 4   TCP Transport for TIBCO Hawk Configuration

Hawk Component	Configuration File	Parameters to Configure
Hawk Web Console (deprecated)	*HAWK_HOME*\webconsole\tomcat\webapps\hawkwebconsole\WEB-INF\conf\DomainTransportCfg.xml	Uncomment the `DomainTransport` section with TCP Transport for TIBCO Hawk details and comment the `DomainTransport` sections for other transports. Specify the following parameters for the TCP Transport for TIBCO Hawk: • `<hk:HawkDomainName>` - Specify the Hawk domain name same as specified in the Hawk Cluster Manager (`hawktcpdaemon.cfg`). • `<hk:selfUrl>` - Specify the socket address of the Hawk WebConsole for joining the cluster. • `<hk:daemonUrl>` - Specify the socket address of the Cluster Manager acting as the seed node for the cluster. This socket address is same as *<cluster_manager_IP>:<port>* specified for the `-tcp_session` parameter in the Hawk Cluster Manager (`hawktcpdaemon.cfg`).

SSL Configurations for TCP Transport for TIBCO Hawk

To create a secure communication channel between Hawk components, you can configure TCP transport for TIBCO Hawk to use two-way SSL authentication.

You must configure the following SSL parameters for TCP Transport for TIBCO Hawk in each component of TCP Transport Cluster for the secure communication:

- -tcp_key_store
- -tcp_trust_store
- -tcp_key_store_password
- -tcp_key_password
- -tcp_trust_store_password
- -tcp_ssl_protocol
- -tcp_enabled_algorithms

For details on these parameters for each component, see the configuration section for each component:

- Hawk Agent Configurations
- Hawk Cluster Manager Configurations
- Hawk Console Configurations

TIBCO Enterprise Message Service (EMS) Transport

This section describes configuration options for connecting to TIBCO EMS server as transport for TIBCO Hawk components.

Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO Rendezvous as the primary transport.

The two ways to specify the TIBCO EMS transport parameters are:

1. Specify only the location of the EMS server.

   For example,

   ```
   -ems_transport tcp://server1:7222
   ```

   If communicating with the EMS server using SSL, specify the location of the EMS server as follows for the above example

   ```
   -ems_transport ssl://server1:7222
   ```

   also specify the additional options as outlined below.

2. Specify the location of the EMS server and a valid user name and password for the EMS server.

   These parameters are separated by a space and can be an empty string to indicate a null value.

   For example,

   ```
   -ems_transport tcp://server1:7222 admin "#!NhAD1NBC"
   ```

   For instructions to modify the password which was specified during installation, see Handling Passwords for TIBCO EMS Transport.

   If communicating with the EMS server using SSL, specify the location of the EMS server as follows for the above example

   ```
    -ems_transport ssl://server1:7222 admin "#!NhAD1NBC"
   ```

   and also specify the additional options as outlined in TIBCO Enterprise Message Service (EMS) Transport Using SSL.

Re-Connection Setup

To ensure the TIBCO EMS client attempts re-connection after losing connection to the EMS server, repeat the server URL in the URL list. For example,

```
-ems_transport tcp://H1:7222,tcp://H1:7222
```

Fault Tolerance Setup

You can specify backup servers to connect to in the event of the failure of the primary server. The serverURLs for the primary and backup server are specified as a comma-separated list of URLs.

For example,

```
-ems_transport tcp://server1:7222,tcp://server2:7344
```

If a connection to the first URL fails, the next URL in the list is used to attempt a reconnection. The connections in the list are attempted in sequence (wrapping to the start of the list, if the first connection was not the failed connection) until all URLs have been tried. If no connection is established after all URLs have been tried, the connection fails.

In addition to specifying the -ems_transport options, the following parameters in the EMS server configuration file, `tibemsd.conf`, should be considered:

- `ft_active`—the name of the active server.
- `ft_reconnect_timeout`—the amount of time a backup server waits for clients to reconnect.
- `store`—the directory to store TIBCO EMS data.

For more information, see TIBCO Enterprise Message Service documentation.

TIBCO Enterprise Message Service (EMS) Transport Using SSL

Specifies the SSL parameters used by TIBCO Hawk Display when connecting to the EMS server.

If the -ems_transport parameter is not used, the following options are ignored.

```
-ssl_vendor <name of the vendor>
```

The name of the vendor of the SSL implementation. The valid choices are

- `j2se`—Use this option when you want to use the default Java Cryptography Extension (JCE) bundled with the Java JRE.

    On IBM platforms (such as AIX), this option defaults to `ibm`.

- `entrust61`—Use this option when you want to use the Entrust libraries.

- `ibm`—On non-IBM platforms, this option can be used only if the IBM version of JCE is installed.

- `-ssl_ciphers` *<suite-name>*—When specifying this option to specify the cipher suites that can be used, use the ^ qualifier instead of a - qualifier. For more information about specifying cipher suites, refer to the TIBCO Enterprise Message Service documentation.

In addition, the following sets of options are used:

For TIBCO Hawk components to verify the EMS server

- `-ssl_no_verify_host`—If this option is present, it this indicates that the TIBCO Hawk component should not verify the server. Conversely, if this option is not included in the configuration file, it indicates that TIBCO Hawk component should verify the server.

- `-ssl_trusted`—The option specifies the file name of the server certificates. This option can be repeated if more than one certificate file is used.

- `-ssl_no_verify_hostname`—This option specifies that the client should not verify the name in the CN field of the server certificate. Conversely, if this option is not included in the configuration file, it indicates that TIBCO Hawk component should verify the name in the CN field of the server certificate.

- `-ssl_expected_hostname`—The name that is expected in the name of the CN field of the server certificates is specified by this option. The value of this option is used when the -ssl_no_verify_hostname option absent from the configuration file.

> If the `-ssl_no_verify_host` is not specified, the option `-ssl_trusted` has to be used. Along with the option `-ssl_trusted`, specify either `-ssl_no_verify_hostname` or `-ssl_expected_hostname`.

For the EMS server to verify TIBCO Hawk components

- `-ssl_identity`—This option specifies the digital certificate of the TIBCO Hawk components.

- `-ssl_private_key`—This option indicates the private key of the TIBCO Hawk component. If the key is included in the digital certificate in -ssl_identity, then you may comment this parameter.

- `-ssl_password`—The password to decrypt the identity file of the Hawk component.

Handling Passwords for TIBCO EMS Transport

On Microsoft Windows, the password is obfuscated before it is stored in the Microsoft Windows registry. In order to use the EMS password encrypt/decrypt functionality, all TIBCO Hawk components (including the tibhawkpassword wrapper) have to use JRE 1.8 or above.

If you need to change the user name and password information for the EMS server after installation, a utility is provided to encrypt your password. The following steps detail the use of this utility:

1. Invoke the command line using the syntax

```
tibhawkpassword -encrypt
```

2. Enter the password you want to encrypt when prompted.

3. Copy and paste the output of the utility within quotes ("") into the configuration file.

    For example,

```
 -ems_transport tcp://emsServer:7222 username
"#!FrHOG/QbvQMdVk4/wMv/1DA0"
```

4. Re-start the TIBCO Hawk component whose configuration file you updated in step above.

Starting TIBCO Hawk Components

A standalone TIBCO Hawk installation does not need any changes in any of the configuration files for you to execute TIBCO Hawk and its components using TCP Transport for TIBCO Hawk as the default transport. However, if you want to use different or existing transport (TIBCO Rendezvous or TIBCO EMS) or use different port or security, refer to the following table.

These executable or scripts are located in *CONFIG_FOLDER*/bin and *HAWK_HOME*/webconsole.

Table 5   TIBCO Hawk Components, Startup Scripts/Wrappers, and Configuration Files

Component	Executable / Script	Configuration File	See
TIBCO Hawk Agent	tibhawkagent TIBCO Hawk Agent (Windows Service)	`hawkagent.cfg`	Hawk Agent Configurations
TIBCO Hawk Console	tibhawkconsole	`DomainTransportConfig.yml`	Hawk Console Configurations
TIBCO Hawk WebConsole	tibhawkh2db.exe (Windows) startwebconsole.bat (Windows) tibhawkh2db (UNIX) startwebconsole.sh (UNIX)	`DomainTransportCfg.xml`	Hawk WebConsole Configurations
TIBCO HMA	tibhawkhma (Windows) TIBCO Hawk HMA (Windows Service) starthma (UNIX/Linux)	`hawkhma.cfg`	HMA Configurations
TIBCO Hawk Event Service	tibhawkevent TIBCO Hawk Event (Windows Service)	`hawkevent.cfg`	Hawk Event Service Configurations
TIBCO Hawk Display	tibhawkdisplay	`hawkdisplay.cfg`	Hawk Display Configurations

In any of the above configuration files, if any folder or file has to be configured with a space in it, then the full path has to be provided within double quotes.

On AIX platform, TIBCO HMA process must be started as **root** user and should not rely on the **setuid** feature. On other non-Windows platforms, pseudo access may be sufficient, but root privileges are recommended to start TIBCO HMA process.

Hawk Domain

A Hawk domain is a logical grouping of Hawk Components. The Hawk Agent, the Console API and the AMI instrumented applications can all communicate with each other only if they all belong to the same hawk domain. A hawk domain constitutes of a transport and a domain name.

Some components may have additional requirements in order to communicate with the Hawk Agent such as to specify the Hawk Agent name to connect to.

However, the Hawk Console can be configured to manage multiple domains.

If you are using TCP Transport for TIBCO Hawk the Hawk domain must be same for all Hawk components to be part of the cluster.

Hawk Agent Configurations

All the required configuration parameters are stored in *HAWK_HOME*/bin/hawkagent.cfg. Each section in this configuration file begins with "-M" followed by the module name, such as –M Self. Within each modular section, all the command-line options that can be configured are listed. These options are as follows:

Table 6   Hawk Agent Modules and Options

Module	Parameters
-M Self	-cluster *<cluster name>*
	-agent_name *<agent name>*
	-agent_domain *<agent domain name>*
	-hawk_domain *<TIBCO Hawk Domain Name>*
	-rvd_session *<service>* *< network>* *<daemon>*
	-tcp_session *<self_IP>:<port>* *<cluster_manager_IP>:<port>*
	-tcp_key_store *<key store file path>*
	-tcp_trust_store *<trust store file path>*
	-tcp_key_store_password *<key store password>*
	-tcp_key_password *<key password>*
	-tcp_trust_store_password *<trust store password>*
	-tcp_ssl_protocol *<security protocol>*
	-tcp_enabled_algorithms *<security algorithms>*
	-ems_transport *<ems transport parameters>*
	-ssl_ciphers *<suite-name>*
	-ssl_no_verify_host
	-ssl_trusted *<file name>*
	-ssl_expected_hostname *<host name>*

Table 6   Hawk Agent Modules and Options

Module	Parameters
	-ssl_identity *<file name>*
	-ssl_private_key *<file name>*
	-ssl_password *<string>*
	-use_thread_pool *<thread pool>*
	-character_encoding *<character encoding>*
	-hma_plugin_dir *<directory>*
-M RuleBaseEngine	-rulebases *<rulebase> <rulebase>* …
	-config_path *<list of directories to use as configuration sources>*
	-auto_config_dir *<directory to autoload rulebases at startup>*
	-repository_path *<list of repositories to use as configuration sources>*
	-repository_cache_dir *<repository cache dir>*
	-variables *<property file>*
	-email_smtp_server *<SMTP hostname>*
	-email_smtp_port *<server port number>*
	-email_smtp_auth_required *<true or false>*
	-email_smtp_tls_required *<true or false>*
	-email_smtp_socket_factory_port *<port>*
	-email_smtp_user *<user name>*
	-email_smtp_password *<password>*
	-email_from *<sender email address>*
	-email_content_type *<content type>*
-M AMIService	-ami_rvd_session *<service> <network> <domain>*
	-ami_tcp_session *<self_IP>:<port>*

Table 6   Hawk Agent Modules and Options

Module	Parameters
-M LogService	-log_dir *<directory to store TIBCO Hawk logs>*
	-log_max_size *<maximum size of log file>*
	-log_max_num *<maximum number of log files>*
	-log_level *<desired trace level for logs>*
	-log_format *<log format>*
-M TIBProtocolAdapter	-interval *<heartbeat interval in seconds>*
	-security_policy *<class that implements security>*
-M Repository	-repository_name *<repository name>*
	-repository_dir *<repository directory>*
-M LogFileMicroAgent	-scan_rate *<scan interval in seconds>*
	-block_size *<size in kilobytes>*
	-eval_rate *<rate in seconds>*
-M CustomMicroAgent	None

Each of the parameters listed above are explained in more detail, in the following table.

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-cluster	No	IP subnet address	The name of the container in which the agent appears in the display by default. The display creates the container if it does not already exist. Allows for grouping of multiple agents. The cluster name must be enclosed within quotes, if the name contains spaces.

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-agent_name	No	Host Name of the computer	Each agent being managed must have a unique combination of agent_name, agent_domain, and hawk_domain values. To use the host name as the agent name, comment this option. Note: Agent names with multiple words separated by dots are not supported.
-agent_domain	No	"none"	An agent domain must be specified when two computers within the same TIBCO Hawk domain have the same name but reside in different network domains. For example, you might specify this option as: -agent_domain pa.tibco.com.
-hawk_domain	No	"default"	As explained in Hawk Domain.
TCP Transport for TIBCO Hawk (Default)			

Table 7 Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-tcp_session	Yes	localhost:2551 localhost:2561	Specifies that the TIBCO Hawk Agent should use TCP Transport for TIBCO Hawk. The syntax of the property is: `-tcp_session` *\<self_IP\>:\<port\>* *\<cluster_manager_IP\>:\<port\>* where, • *\<self_IP\>:\<port\>* - Unique socket address of the Hawk agent for connecting to the cluster. • *\<cluster_manager_IP\>:\<port\>* - The socket address of the Cluster Manager acting as the seed node for the cluster. This socket address is same as *\<cluster_manager_IP\>:\<port\>* specified for the `-tcp_session` parameter in the Hawk Cluster Manager (`hawktcpdaemon.cfg`). In case of multiple daemons, agents, or consoles running on the same instance, use different ports for creating unique socket address. For fault tolerance, you can specify multiple seed daemon's socket addresses in a comma-separated list. `-tcp_session` *\<self_IP\>:\<port\>* *\<daemon1_IP\>:\<port\>*, *\<daemon2_IP\>:\<port\>* For more information of the Hawk Cluster Manager, see Hawk Cluster Manager Configurations.
TCP Transport for TIBCO Hawk SSL Parameters The following TLS/SSL parameters are applicable to `-tcp_session` and `-ami_tcp_session`.			
-tcp_key_store	No	-	Path of the key store file
-tcp_trust_store	No	-	Path of the trust store file
-tcp_key_store_password	No	-	Password for the key store file
-tcp_key_password	No	-	Encrypted key password

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-tcp_trust_store_password	No	-	Password for the trust store file
-tcp_ssl_protocol	No	TLSv1.2	Protocol for a secure connection
-tcp_enabled_algorithms	No	TLS_RSA_WITH_AES_128_CBC_SHA	Algorithm to be used for the security protocol. You can specify multiple algorithms as comma-separated list without space.
TIBCO Rendezvous Transport			
-rvd_session	No	7474; tcp:7474	Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO EMS as the primary transport. The format is -rvd_session <service> <network> <daemon>. If you use this option, all three parameters must be present and separated by white space. Use a semicolon (;) to indicate a null value, or use an empty string, for example: -rvd_session 7474; tcp:7474
TIBCO EMS Transport			
-ems_transport	No		Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO Rendezvous as the primary transport. Specifies location of the EMS server. For example: `-ems_transport tcp://server1:7222 admin ""` NOTE: If EMS is configured as Transport, ami_rvd_session parameter should be configured.
TIBCO EMS SSL Parameters (In case EMS Server is configured for SSL communication).			

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-ssl_vendor	No	j2se	The name of the vendor of the SSL implementation. The valid choices are • j2se-default—Use this option when you want to use the default JCE bundled with the Java JRE. On IBM platforms (such as AIX), this option defaults to ibm. • j2se • entrust61—Use this option when you want to use the Entrust libraries. • ibm—On non-IBM platforms, this option can be used only if the IBM version of JCE is installed.
-ssl_ciphers	No	-	Cipher suite name
-ssl_no_verify_host	No	-	Indicate not to verify the EMS server
-ssl_trusted	No	-	File name of the server certificates. The file should be accessible locally/ shared drive
-ssl_no_verify_hostname	No	-	Indicates not to verify the name in CN field of the server certificate
-ssl_expected_hostname	No	-	If the -ssl_no_verify_host is not specified, the option -ssl_trusted has to be used. Along with the option-ssl_trusted specify either -ssl_no_verify_hostname or -ssl_expected_hostname.
-ssl_identity	No	-	Digital certificate
-ssl_private_key	No	-	Private key
-use_thread_pool	No	256	Optimizes the number of threads the agent creates for every microagent it discovers. It is advisable to turn this option On if the agent is going to discover over 100 microagents. This value is OS dependent and should be set to the maximum number of threads allowable per process.

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-character_encoding	No	UTF-8	Character encoding to be used across the configured transport
-hma_plugin_dir	No	*CONFIG_FOLDER*/plugin	Specify the plug-in directory path.
-rulebases	No	-	List of .hrb files to be loaded at the startup
-config_path	No	*CONFIG_FOLDER*/config	The list of directories to use as configuration sources. Used in the case of manual configuration. The delimiter for path entries is a colon (:). If -config_path is used, comment the -auto_config_dir, -repository_path, and -repository_cache_dir options.
-auto_config_dir	No	*CONFIG_FOLDER*/autoconfig	The directory to auto-load Rulebases at the startup. If this option is present, the agent runs in an automatic configuration mode. Specify the directory from which the Rulebase and schedule configuration objects are loaded at the startup. The default directory, *HAWK_HOME*/autoconfig, is used if a value is commented. If you use automatic configuration, comment the following options: -config_path, -repository_path, -repository_cache_dir, -rulebases

Table 7 Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-repository_path	No	-	List of repositories to use as configuration sources. If repository configuration mode is used, specify the path to be searched for repositories. The delimiter for path entries is a colon (:). The default used if this option is commented is the current working directory. If -repository_path is used, comment the -auto_config_dir and -config_path options.
-repository_cache_dir	No	*CONFIG_FOLDER*/cache	If repository configuration mode is used, all configuration objects loaded from the repository may be cached in a local directory, specified in this option. This cache is used if a repository fails, and also to minimize network traffic. If -repository_cache_dir is used, comment the -auto_config_dir and -config_path options.
-variables	No	-	Properties file to specify variables file. The variables file can pass data to define external variables to be passed to rules for use in Rulebase configurations.
Email Configurations Email configuration options are used to send the notification email.			
-email_smtp_server	No	-	Specifies the hostname of the SMTP server.
-email_smtp_port	No	25	Specifies the port at which the SMTP server is listening.
-email_smtp_auth_required	No	false	Specifies whether authentication is required for the SMTP server. The default value is `false`. If the value is `true`, you need to provide the user name (`-email_smtp_user`) and password (`-email_smtp_password`) for authentication.

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-email_smtp_tls_required	No	false	Specifies whether TLS encryption is required for the SMTP server. If set to `true`, use of the STARTTLS command is required (if supported by the server) to switch the connection to a TLS-protected connection before issuing any login commands.
-email_smtp_socket_factory_port	No	25	Specifies the port to connect to when using the specified socket factory. If not set, the default port is used.
-email_smtp_user	No	-	Specifies the sender's user name for the SMTP server authentication. The field is mandatory if the authentication option (`-email_smtp_auth_required`) is set to `true`.
-email_smtp_password	No	-	Specifies the sender's password for the SMTP server authentication. The field is mandatory if the authentication option (`-email_smtp_auth_required`) is set to `true`.
-email_from	No	-	Specifies the sender's email address for sending the email. The default is the current system user, for example, `"HawkAdministrator"<admin@abc.com>`
-email_content_type	No	text/html	Specifies the content type of email. The email application interprets the text characters in the body of the email based on this property.
Configuration for AMI communication			

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-ami_rvd_session	No		Configures the agent with a RVD session to be used to communicate with applications implementing the TIBCO Hawk Application Management Interface. Multiple -ami_rvd_session parameters may be specified. If none are specified, the RV session used for AMI is the primary session of the Self Module.
			# Note: When using TIBCO EMS transport for communication, 127.0.0.1 should be used as the network parameter. For example: -ami_rvd_session 7474 127.0.0.1 tcp:7474
			If you are using TCP Transport for TIBCO Hawk then uncomment this option, so that Hawk Agent can communicate with Hawk Microagent using the TCP-RV bridge. Same value must be used in the Hawk Microagent configuration (`hawkhma.cfg`) for the `-rvd_session` parameter.
-ami_tcp_session	No	localhost:2571	Configures the Hawk agent with a TCP session to be used to communicate with applications implementing the TIBCO Hawk Application Management Interface.
			If this parameter is not specified while using TCP Transport for TIBCO Hawk, the default value (`localhost:2571`) is used.
			The syntax of the property is:
			`-ami_tcp_session` *<self_IP>:<port>*
			where, *<self_IP>:<port>* is the unique socket address for communication with TIBCO Hawk Application Management Interface.
Logging			
-log_dir	No	*CONFIG_FOLDER*/log	The directory in which to store log files generated by the TIBCO Hawk Agent.
-log_max_size	No	10240	The maximum size of a rotating log files in Kbytes.
-log_max_num	No	10	The maximum number of rotating log files

Table 7   Hawk Agent Configuration Options

Property	Mandatory	Default Value	Description
-log_level	No	7	Specifies the level of diagnostic information stored in the logs. The following are the logging levels: 4 - Indicates error level trace messages should be enabled. 6- Indicates warning level trace messages should be enabled. 7 - Indicates information level trace messages should be enabled. 8 - Indicates debug level trace messages should be enabled. 16 - Indicates AMI level trace messages should be enabled. A value of zero turns all tracing off. A value of -1 turns all tracing on.
-log_format	No	"default"	The format for trace log messages
TIBCO Protocol Adapter			
-interval	No	30 seconds	The heartbeat interval in seconds.
-security_policy	No	-	The fully qualified name of the Java class which implements the security policy. For more information refer to Chapter 4, TIBCO Hawk Security Model.
Rulebase Repository			
-repository_name	No	-	The name of the Rulebase Repository
-repository_dir	No	-	The location of the Repository
Logfile MicroAgent			
-scan_rate	No	10 seconds	The rate at which log files are scanned.
-block_size	No	16 KB	The maximum number of kilobytes to read on each scan.
-eval_rate	No	300 seconds	The rate at which all the log files being monitored are re-evaluated.

Logging for TIBCO Hawk Agent

TIBCO Hawk provides two different modes of logging: trace mode and log4j mode.

Trace Logging Mode

By default, Hawk Agent uses the trace mode for logging requirements. TIBCO Hawk, uses the trace mode logging mechanism to match parity with different versions of Hawk, bundled in different TIBCO products.

The logging parameters for Hawk Agent, Hawk MicroAgent, and Hawk Event are configured using the logging parameters defined their respective configuration files. For more details on these logging parameters, refer the following sections:

- Table 7, Hawk Agent Configuration Options
- Table 14, HMA Configuration Properties
- Table 16, Hawk Event Service Configuration Properties

Log4j Logging Mode

In TIBCO Hawk, you can enable the log4j mode for Hawk Agent logging requirements. By default, the log4j mode is disabled for Hawk Agent. Modify the log4j configuration in the respective .tra files to enable the log4j for logging.

The configuration for Hawk Agent is included in `tibhawkagent.tra` at:

```
java.extended.properties=-Duse_log4j=false
-Dlog4j.configuration=%HAWK_CONFIG_HOME%/bin/log4j_agent.propertie
s
```

To enable the log4j for logging, update the value of the `-Duse_log4j` parameter to `true` in the configuration mentioned above.

Specify "`-Dlog4j.configuration`" as command-line parameter to override the log file configuration.

A default log4j properties file exists at *CONFIG_FOLDER*/bin/log4j_agent.properties. You can modify this configuration file or use your own properties file.

The logging properties specified in `hawkagent.cfg` for –M LogService viz. log_dir, log_max_size, log_max_num and `log_level` override those in log4j RootLogger's RollingFileAppender.

Use of -log_level Parameter in Agent Configuration

If –log_level <*int_value*> is specified in –M `LogService` section of agent configuration and the value of `log_level` is greater than seven, the log4j root logger level is set to `DEBUG`.

Note:

- Ensure that the log4j configuration file specified above must have at least one RollingFileAppender applied to the Root logger.
- Agent logging configuration properties given in hawkagent.cfg only apply to RollingFileAppender for the Root category (Logger). If there are sub-categories with different file appenders, the agent properties do not override them.
- Log4j.xml configuration file is not supported.

Mapping of TIBCO Hawk default Util Logging Levels with Log4j:

Util Logging (in Hawk Agent)

Util Logging Level	Log4j Logging Level
Log.INFO (value 0)	INFO
Log.WARNING (value 1)	WARN
Log.DEBUG (value 2)	DEBUG
Log.ERROR (value 3)	ERROR
Log.EVENT (value 4)	INFO
Log.EXCEPTION	EXCEPTION

Trace Logging (in AMI)

Util Logging Level	Log4j Logging Level
Log.ALWAYS (value 0)	DEBUG
Log.INFO (value 1)	INFO
Log.WARNING (value 2)	WARN
Log.ERROR (value 4)	ERROR
Log.DEBUG (value 8)	DEBUG

Trace Logging (in AMI)

Log.AMI (value 16)	INFO

Hawk Cluster Manager Configurations

All the required configuration parameters are stored in *CONFIG_FOLDER*/hawk/bin/hawktcpdaemon.cfg. Each section in this configuration file begins with "-M" followed by the module name, such as –M Self. Within each modular section, all the command-line options that can be configured are listed. These options are as follows:

Table 8   Hawk Cluster Manager Modules and Options

Module	Parameters
-M Self	-tcp_session *<self_IP>:<port> <cluster_manager_IP>:<port>*
	-tcp_key_store *<key store file path>*
	-tcp_trust_store *<trust store file path>*
	-tcp_key_store_password *<key store password>*
	-tcp_key_password *<key password>*
	-tcp_trust_store_password *<trust store password>*
	-tcp_ssl_protocol *<security protocol>*
	-tcp_enabled_algorithms *<security algorithms>*
	-strategy *<Majority or Quorum>*
	-hawk_domain *<domain_name>*
-M LogService	-log_dir *<directory to store TIBCO Hawk logs>*
	-log_max_size *<maximum size of log file>*
	-log_max_num *<maximum number of log files>*
	-log_level *<desired trace level for logs>*
	-log_format *<log format>*

The following table provides more detailed information about each of the configuration parameters for the Cluster Manager.

Table 9   Hawk Cluster Manager Configuration Options

Property	Mandatory	Default Value	Description
TCP Transport for TIBCO Hawk			
-tcp_session	Yes	localhost:2561 localhost:2561	Setups the TCP session for the Hawk components. Hawk Cluster Manager joins the TCP Transport for TIBCO Hawk cluster as seed node using this property. The syntax of the property is: `-tcp_session` *<self_IP>:<port>* *<cluster_manager_IP>:<port>* where, • *<self_IP>:<port>* - Unique socket address of the Hawk agent for connecting to the cluster. • *<cluster_manager_IP>:<port>* - The socket address of the Cluster Manager acting as the seed node for the cluster. In case there is only one daemon in the cluster then both the socket addresses (self and daemon) are same. For fault tolerance, you can specify multiple seed daemon's socket addresses in a comma-separated list. `-tcp_session` *<self_IP>:<port> <daemon1_IP>:<port>*, *<daemon2_IP>:<port>*
TCP Transport for TIBCO Hawk SSL Parameters			
-tcp_key_store	No	-	Path of the key store file
-tcp_trust_store	No	-	Path of the trust store file
-tcp_key_store_password	No	-	Password for the key store file
-tcp_key_password	No	-	Encrypted key password
-tcp_trust_store_password	No	-	Password for the trust store file
-tcp_ssl_protocol	No	TLSv1.2	Protocol for a secure connection

Table 9   Hawk Cluster Manager Configuration Options

Property	Mand atory	Default Value	Description
-tcp_enabled_algori thms	No	TLS_RSA_ WITH_AES _128_CBC _SHA	Algorithm to be used for the security protocol. You can specify multiple algorithms as comma-separated list without space.
-strategy	No	Quorum	Specifies the strategy for resolving network partitions of the cluster members from the TCP Transport for TIBCO Hawk cluster. The two strategies that you can choose are: • **Quorum** - This strategy defines the minimum number of daemons required for cluster to be operational (*quorum size*). In case of network partition, the partition with the required quorum size remains operational while the other partition is shut down. • **Majority** - If the network partition occurs then the partition that has majority of nodes remains operational while the other partition is shut down. For more information about the downing strategy of the TCP Transport for TIBCO Hawk, refer to the *TIBCO Hawk Concepts guide*.
-hawk_domain	No	default	Specifies the Hawk domain name. The Hawk agents, Hawk Cluster Managers, and the console applications must have the same hawk domain value in order to communicate.
Logging			
-log_dir	No	*CONFIG_F OLDER*/lo gs	The directory to store log files generated by the TIBCO Hawk Cluster Manager.
-log_max_size	No	10M	The maximum size of a rotating log files in Kbytes. You can apply the suffix 'm' or 'M' for indicating MB values.
-log_max_num	No	10	The maximum number of rotating log files.

Table 9   Hawk Cluster Manager Configuration Options

Property	Mandatory	Default Value	Description
-log_level	No	7	Specifies the level of diagnostic information stored in the logs. The following are the logging levels: • **4** - Indicates error level trace messages should be enabled. • **6** - Indicates warning level trace messages should be enabled. • **7** - Indicates information level trace messages should be enabled. • **8** - Indicates debug level trace messages should be enabled. • **16** - Indicates AMI level trace messages should be enabled. • **0** - A value of zero turns OFF all tracing. • **–1** - A value of -1 turns ON all tracing.
-log_format	No	"default"	The format for trace log messages.

Hawk Console Configurations

All the required configuration parameters for Hawk Console are stored in the `hawkconsole.cfg` configuration file located at *HAWK_HOME*`/bin`.

For more information about the configurations that you can perform in Hawk Console, see the following topics:

- Domain and Transport Configuration for Hawk Console
- User Authentication in Hawk Console
- Secure Communication over Hawk Console
- Configuring an External Database
- Hawk Console Modules and Configuration Options

Domain and Transport Configuration for Hawk Console

You can register a Hawk domain to the Hawk Console and specify the transport type for the communication. You can either use web interface of Hawk Console or configure the domain and transport configuration file (`DomainTransportConfig.yml`).

For information about how to register a domain to Hawk Console using the web interface, see *TIBCO Hawk Console User's Guide*.

Domain Registration by Using Configuration File

The domain and transport configuration file (`DomainTransportConfig.yml`) for Hawk Console contains the parameters to connect to regular and proxy domains.

For more information about proxy domains, see *TIBCO Hawk Concepts Guide*.

You can specify the location of the `DomainTransportConfig.yml` file by using the `-domain_config_file` option in the Hawk Console configuration file (`hawkconsole.cfg`). For details on options present in the `hawkconsole.cfg` file, see Table 13, Hawk Console Configuration Options.

In the `DomainTransportConfig.yml` file you can specify the following elements for the connection:

- `domainConfiguration` - The parent tag for the domain and transport configurations for Hawk Console.

- Domain type - Specify whether the Hawk domain to be registered is a regular domain or a proxy domain. Based on the domain type, specify additional configuration parameters. The tags used for the domain type are:

    — `regular` - For details about fields for the proxy domain type, see Table 10, Configuration Fields in DomainTransportConfig.yml for the Regular Domain Type

    — `proxy` - For details about fields for the proxy domain type, see Table 11, Configuration Fields in DomainTransportConfig.yml for Proxy Domain Type

- `domainName` - Name of the domain that is to be registered.

The following figure shows the hierarchy of the tags that can be defined in the `DomainTransportConfig.yml` file.

Figure 1   Hawk Console Domain and Transport Configuration Hierarchy
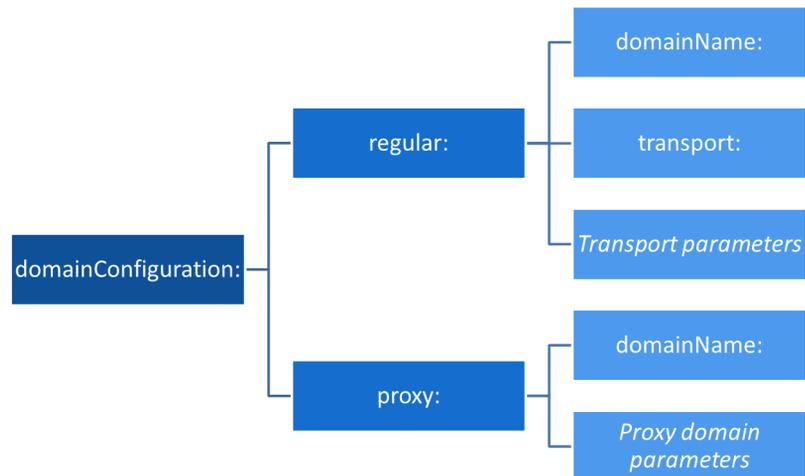
Domain and Transport Configuration Parameters

Table 10   Configuration Fields in DomainTransportConfig.yml for the Regular Domain Type

Field	Description
transport	Type of transport that the Hawk domain is using. The following transport types are available: • `tibtcp` - TCP Transport for TIBCO Hawk • `tibrv` - TIBCO Rendezvous Transport • `tibems` - TIBCO Enterprise Message Service (EMS) Transport Based on the transport type selected, specify transport configuration fields.

securityPolicy	Specify security policy to be applied to a domain:
	`COM.TIBCO.hawk.security.trusted.Trusted`
	or
	`COM.TIBCO.hawk.security.trusted.TrustedWithDomain`

TCP Transport for TIBCO Hawk (`tibtcp`)	
tcpSelfUrl	Unique socket address of the Hawk Console for connecting to the TCP Transport for TIBCO Hawk cluster. The syntax is: *<self IP>:<self port>*
tcpDaemonUrl	The socket address of the Cluster Manager acting as the seed node for the TCP Transport for TIBCO Hawk cluster. The syntax is: *<cluster manager IP>:<cluster manager port>*
Secure Connection Fields for TCP Transport for TIBCO Hawk	
tcpSslKeyStore	Path of the key store file.
tcpSslTrustStore	Path of the trust store file.
tcpSslKeyStorePassword	Password for the key store file.

Table 10   Configuration Fields in DomainTransportConfig.yml for the Regular Domain Type

Field	Description
`tcpSslKeyPasswor d`	Encrypted key password.
`tcpSslTrustStore Password`	Password for the trust store file.
`tcpSslProtocol`	Protocol for a secure connection. The default value is `TLSv1.2`.
`tcpSslEnabledAlg orithms`	Algorithm to be used for the security protocol. You can specify multiple algorithms as comma-separated list without space. The default value is `TLS_RSA_WITH_AES_128_CBC_SHA`.
TIBCO Rendezvous Transport (`tibrv`)	
`rvService`	Specify the service that the Rendezvous daemon uses to convey messages on this transport. You can specify the port number as the service to be used, for example, "7474".
`rvNetwork`	Specify the network that the Rendezvous daemon uses for all communications involving this transport. The network parameter consists of up to three parts, separated by semicolons: network, multicast groups, and send address.
`rvDaemon`	Specify the socket address of the Rendezvous daemon.
TIBCO Enterprise Message Service Transport (`tibems`)	
`emsServerUrl`	Specify the location of the EMS server.
`emsUserName`	Specify the user name to login to the EMS server.
`emsPassword`	Specify the password for the `emsUserName`.
Secure Connection Fields for TIBCO Enterprise Message Service Transport	

Table 10   Configuration Fields in DomainTransportConfig.yml for the Regular Domain Type

Field	Description
emsSslVendor	The name of the vendor of the SSL implementation. The valid choices are • j2se (default) - Use this option when you want to use the default Java Cryptography Extension (JCE) bundled with the Java JRE. On IBM platforms (such as AIX), this option defaults to ibm. • entrust61 - Use this option when you want to use the Entrust libraries. • ibm - On non-IBM platforms, this option can be used only if the IBM version of JCE is installed.
emsSslTrace	The option enables the SSL tracing.
emsSslTrusted	The option specifies the file name of the server certificates. This option can be repeated if more than one certificate file is used.
emsSslPrivateKey	This option indicates the private key of the TIBCO Hawk component.
emsSslExpectedHo stname	The name that is expected in the name of the CN field of the server certificates is specified by this option.
emsSslPassword	The password to decrypt the identity file of the Hawk component.

Table 11   Configuration Fields in DomainTransportConfig.yml for Proxy Domain Type

Field	Description
host	URL of the domain that needs to be registered. The syntax is: *<domain IP>*:*<domain port>*
credentials	User name and password required to log in to the domain. The syntax is *<user name>*:*<encrypted password>*

Table 11   Configuration Fields in DomainTransportConfig.yml for Proxy Domain Type

Field	Description
securedChann el	Specify the value as `true` for connecting to the domain using a secure channel. The default value is `true`.

Example

For example, the following is a sample code of the `DomainTransportConfig.yml` file for a non-secure connection to the `default` domain using TCP Transport for TIBCO Hawk.

```
domainConfiguration:
  regular:
    - domainName: default
      transport: tibtcp
      tcpSelfUrl: localhost:2581
      tcpDaemonUrl: localhost:2561
      tcpsecurityPolicy: ' '
```

User Authentication in Hawk Console

Hawk Console supports user authentication based on a file, a database, and LDAP-based authentications. You can set the authentication mode by using the Hawk Console configuration file (`hawkconsole.cfg`).

File-Based Authentication

For the file-based authentication, the user details are stored in the `hawkconsole-user.cfg` file. By default, the configuration file is located at *<CONFIG_HOME>*/bin. If required, you can configure its location by using the `-user_file_store` option in the `hawkconsole.cfg` file.

The syntax for a user entry in the `hawkconsole-user.cfg` file is:

<user_name>:*<encrypted_password>*

For example,

`admin:#####*****###`

You can use the `tibhawkpassword` utility at *<HAWK_HOME>*/bin to encrypt the password.

For more details on user authentication properties, see Table 13, Hawk Console Configuration Options.

Database-Based Authentication

In the database based authentication, the user names and passwords are stored in the database. Hawk Console supports both in memory database and external database to store authentication details. For more information about configuring an external database in Hawk Console, see Configuring an External Database

Adding a new user in the external database

You can add a new user in the external database using the following steps:

1. Add the new user in the `users` table.

For example:

```
insert into users (name, password, email, role_id)
values('new_user',
'#!SXcfN3U19IiH/Eai55LWvV4XNKV/eQIDfri6+J+rho4=',
'newUser@xyz.com',1);
```

2. Create a mapping in the table `user_privilege_mapping`.

For example:

```
insert into user_privilege_mapping (user_id, privilege_id)
values((select id from users where name = 'new_user'), 1);
```

LDAP-Based Authentication

For the LDAP-based authentication, the user details are stored in the `hawkconsole.cfg` file. By default, the configuration file is located at `<CONFIG_HOME>/bin`.

For selecting LDAP as the user store, modify the `hawkconsole.cfg` file as follows:

1. Under `-M UserAuth`, specify LDAP as the user store type:

   `-user_store_type ldap`

2. Under `-user_store_type ldap`, specify the LDAP-based user authentication properties.

   For more details about user authentication properties that can be specified, see Table 13, Hawk Console Configuration Options.

Secure Communication over Hawk Console

You can access Hawk Console over a secure channel by using SSL or TLS security protocols.

To enable the secure communication, uncomment and configure the following fields in the Hawk Console configuration file (`hawkconsole.cfg`):

- `-key_alias`
- `-key_password`
- `-key_store`
- `-key_store_password`
- `-protocol`
- `-ciphers`

For more details on these properties, see Table 13, Hawk Console Configuration Options.

Configuring an External Database

Hawk alerts can be persisted by configuring an external database to store the alerts. If Hawk Console is restarted then also you can view the previous alerts since when the Hawk Agent is active. Following databases are supported in this release:

- MySQL

- Apache Ignite

- H2 database in server and disc mode

Prerequisites:

- You must set up the database and perform database-specific configuration depending on the database vendor.

- Add the appropriate `.jar` file of the JDBC Driver classes, from the database vendor, to the folder *HAWK_HOME/<version>*`/lib/ext/console-ext`.

Procedure:

To configure the external database, uncomment and configure the following fields in the Hawk Console configuration file (hawkconsole.cfg). By default the configuration file is located at *<CONFIG_HOME>*`/bin`.

- `-datasource_url`
- `-datasource_drivername`
- `-datasource_username`
- `-datasource_password`
- `-datasource_connection_pool_initial_size`
- `-datasource_connection_pool_max_idle`
- `-datasource_connection_pool_max_active`

For more details on these properties, see Table 13, Hawk Console Configuration Options.

Hawk Console Modules and Configuration Options

Each section in this configuration file (*HAWK_HOME*/bin/hawkconsole.cfg) begins with "-M" followed by the module name, such as –M Self. Within each modular section, all the command-line options that can be configured are listed. These options are as follows:

Table 12   Hawk Console Modules and Options

Module	Parameters
-M Self	-domain_config_file *<domain config file path>*
	-server_port *<port number>*
	-key_alias *<key alias>*
	-key_password *<encrypted key password>*
	-key_store *<key store file path>*
	-key_store_password *<key store password>*
	-protocol *<security protocol>*
	-ciphers *<cipher name>*
	-subscription_queue_size <queue size>
	-subscription_expiry_time *<expiry time>*
	-proxy_alert_count_pull_interval *<time interval>*
	-proxy_domain_reachability_check_interval *<time interval>*
	-datasource_url *<Datasource URL>*
	-datasource_drivername *<JDBC driver name>*
	-datasource_username *<Database user name>*
	-datasource_password *<Database password>*
	-datasource_connection_pool_initial_size *<Initial number of database connections to be allocated>*
	-datasource_connection_pool_max_idle *<Maximum number of idle database connections allowed>*

Table 12   Hawk Console Modules and Options

Module	Parameters
	-datasource_connection_pool_max_active *<Maximum number of active database connections allowed>*
	-retention_count_for_notification *<Alert limit for Notification. Default is 100000.>*
	-retention_count_for_high_alerts *<Alert limit for High Alerts. Default is 100000.>*
	-retention_count_for_medium_alerts *<Alert limit for Medium Alerts. Default is 100000.>*
	-retention_count_for_low_alerts *<Alert limit for Low Alerts. Default is 100000.>*
	-repository_path "`CONFIG_HOME/hawk/repository`"
	-alert_manager_activity_interval *<time interval in milliseconds>*
-M LogService	-log_dir *<directory to store TIBCO Hawk logs>*
	-log_max_size *<maximum size of log file>*
	-log_max_num *<maximum number of log files>*
	-log_level *<required trace level for logs>*
	-log_format *<log format>*
-M UserAuth	-user_store_type *<store type>*
	-user_file_store *<path of file store>*

Each of the parameters listed above are explained in more detail, in the following table.

Table 13   Hawk Console Configuration Options

Property	Mandatory	Default Value	Description
-domain_config_file	No	*CONFIG_FOLDER*/bin/DomainTransportConfig.yml	Path of file that contains the domain and transport configurations for Hawk Console. For details on the domain and transport configuration file, see Domain and Transport Configuration for Hawk Console.
-server_port	No	8083	The server port to access Hawk Console.
Secure Communication (SSL Authentication) Options			
-key_alias	No	-	Key alias
-key_password	No	-	Encrypted key password
-key_store	No	-	The path of the key store file.
-key_store_password	No	-	The password for the key store file.
-protocol	No	TLSv1.2	The security protocol for a secure communication.
-ciphers	No	TLS_RSA_WITH_AES_128_CBC_SHA	The ciphers to be used for the specified security protocol. You can specify multiple ciphers as comma-separated list. The following ciphers are supported: TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256 TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384 TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384 TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256 TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
-subscription_queue_size	No	128	A bounded circular queue is maintained for each subscription for storing its results. This parameter defines the maximum size of the queue. If the maximum size of queue is reached then old results are overridden by the new ones.

Table 13   Hawk Console Configuration Options

Property	Mandatory	Default Value	Description
-subscription_expiry_time	No	90000	Time in milliseconds after which a subscription expires if the results of subscription are accessed.
Proxy Domain Options			
-proxy_alert_count_pull_interval	No	15000	Time interval (in milliseconds) in which the alert count is fetched from proxy domains.
-proxy_domain_reachability_check_interval	No	15000	Time interval (in milliseconds) in which proxy domains are checked for reachability.
External Database Configuration			
-datasource_url	No	jdbc:h2:mem:test;DB_CLOSE_DELAY=-1	URL which identifies the database connection
-datasource_drivername	No	org.h2.Driver	Name of the JDBC driver
-datasource_username	No	-	User name to connect to the database
-datasource_password	No	-	User's password to connect to the database
-datasource_connection_pool_initial_size	No	10	Initial number of database connections to be allocated
-datasource_connection_pool_max_idle	No	20	Maximum number of idle connections allowed in the database connection pool
-datasource_connection_pool_max_active	No	100	Maximum number of active connections allowed in the database connection pool
-retention_count_for_notification	No	100000	Alert limit for Notification
-retention_count_for_high_alerts	No	100000	Alert limit for High Alerts
-retention_count_for_medium_alerts	No	100000	Alert limit for Medium Alerts
-retention_count_for_low_alerts	No	100000	Alert limit for Low Alerts

Table 13   Hawk Console Configuration Options

Property	Mandatory	Default Value	Description
-alert_manager_activity_interval	No	20000	The period, in milliseconds, after which the alert manager executes to store alerts in the database and purge extra alerts in the database.
-repository_path	No	`CONFIG_HOME/hawk /repository`	Path to the repository
Logging			
-log_dir	No	*CONFIG_FOLDER*/logs	The directory in which to store log files generated by the TIBCO Hawk Agent.
-log_max_size	No	10M	The maximum size of a rotating log files in KB. You can apply a suffix 'm' or 'M' for indicating MB values.
-log_max_num	No	10	The maximum number of rotating log files
-log_level	No	7	Specifies the level of diagnostic information stored in the logs. The following are the logging levels: • `4` - Indicates error level trace messages should be enabled. • `6`- Indicates warning level trace messages should be enabled. • `7` - Indicates information level trace messages should be enabled. • `8` - Indicates debug level trace messages should be enabled. • `16` - Indicates AMI level trace messages should be enabled. • A value of zero turns all tracing off. • A value of `-1` turns all tracing on.
-log_format	No	ae4	The format for trace log messages
User Authentication			

Table 13   Hawk Console Configuration Options

Property	Mand atory	Default Value	Description
-user_store_type	No	database	Specify whether Hawk Console uses an inbuilt database or a file for user authentication. The values are: • `database` - In the `database` based configuration, the user names and passwords are stored in the database. • `file` - In the `file` based configuration, the user names and passwords are stored in a file in the disk. Specify the location of the user authentication file in the `-user_file_store` property. • `ldap` - In the `ldap` based configuration, the user names and passwords are validated with a LDAP directory server.
-user_file_store	No	*CONFIG_FOLDER*/bin/hawkconsole-users.cfg	If `-user_store_type` is `file`, specify the path of the file which stores user details for authentication.
User Authentication: LDAP-Based			
ldap_host	Yes	Not applicable	Host name for the LDAP server.
ldap_port	No	389	Port of the LDAP server.
ldap_adminDN	Yes	Not applicable	LDAP manager user DN for accessing the server, to avoid anonymous access to the server.
ldap_admin_password	Yes	Not applicable	LDAP admin password for accessing the server. The password is obfuscated.
ldap_baseDN	Yes	Not applicable	Base DN for the users to search.
ldap_uid_attr	No	UID	UID attribute to perform the user search.
ldap_ssl_enabled	No	false	Specifies whether to connect to LDAP over SSL or not.

Hawk WebConsole Configurations

The following sections explain various configurations for TIBCO Hawk WebConsole.

Web Server for Hawk WebConsole

By default, TIBCO Hawk installer bundles Apache Tomcat 7.0 web server and deploys TIBCO Hawk WebConsole web-application in it.

If you want to use a different standalone Tomcat server to deploy TIBCO Hawk WebConsole, you need to follow these manual steps:

1. Copy *HAWK_HOME*/webconsole/hawkwebconsole.war to *<CATALINA_HOME>*/webapps/.

2. If H2 database is used, copy H2 driver jar (h2*.jar) to the lib folder of Tomcat (*<CATALINA_HOME>*/lib).

3. If TIBCO Rendezvous is used as the transport, copy the following JAR to the lib folder of Tomcat (*<CATALINA_HOME>*/lib):

   — *RV_HOME*/lib/tibrvj.jar

4. If TIBCO Enterprise Message Service is used as the transport, copy the following JARs to lib folder of Tomcat (*<CATALINA_HOME>*/lib):

   — *EMS_HOME*/lib/tibrvjms.jar

   — *EMS_HOME*/lib/tibjms.jar

   — *EMS_HOME*/lib/tibcrypt.jar

   — *EMS_HOME*/lib/jms.jar (in case of EMS 6.3) or *EMS_HOME*/lib/jms-2.0.jar (in case of EMS 8.0)

5. Make sure that TIBCO EMS (when required) and TIBCO Rendezvous shared libraries are in

— `PATH` (Windows)

— `LD_LIBRARY_PATH` (Linux, Solaris)

— `SHLIB_PATH` (HP-UX)

— `LIBPATH` (AIX)

— `DYLD_LIBRARY_PATH` (MacOS)

> If you want to use any web server other than Tomcat, then you need to copy the above mentioned libraries (JAR/WAR) into appropriate locations specific to the web server.

Basic Configurations

Hawk Domain and Transport

TIBCO Hawk WebConsole can monitor multiple domains configured for different or same transports.

> The monitored domain names must be unique within and across different transport types.

TIBCO Hawk WebConsole can monitor multiple transports at the same time. Each of those transports supports multiple domain configurations.

Domain Transport Configuration File (DomainTransportCfg.xml)

The configuration file used to configure the domains is specified in `web.xml` under the `'main_servlet'` definition.

```
<init-param>
    <param-name>domain_config_file</param-name>
    <param-value>/DomainTransportCfg.xml</param-value>
</init-param>
```

This file `DomainTransportCfg.xml` is available in the *HAWK_HOME*/webconsole/tomcat/webapps/hawkwebconsole/WEB-INF/conf folder.

It follows the XML schema defined as per `DomainTransportCfg.xsd`. See the examples in the `DomainTransportCfg.xml` file for information on how to configure Hawk Domains and their respective transports. You can configure the Hawk domain and their respective transport for the Hawk Web Console. One or

more Hawk domains can be managed. You require one `DomainTransport` section per managed domain. You must uncomment and configure the code for the `DomainTransport` section for the transport that you want to use and comment all other `DomainTransport` sections.

For example, the configuration for RV transport domain is as follows:

```
<!--  RV transport domain-->
<hk:DomainTransport>
    <hk:HawkDomainName>default</hk:HawkDomainName>
    <hk:Transport>
        <hk:RVTransportCfg>
            <hk:service>7474</hk:service>
            <hk:network></hk:network>
            <hk:daemon>tcp:7474</hk:daemon>
        </hk:RVTransportCfg>
    </hk:Transport>
    <hk:SecurityPolicy></hk:SecurityPolicy>
</hk:DomainTransport>
```

Configuring Security for Any Domain

Configure a security policy for each domain independently using the `<hk:SecurityPolicy>` as shown in the preceding section. For more Information on Security Configuration, refer to Chapter 4, TIBCO Hawk Security Model.

The security policy of a domain is an optional tag. If the `<hk:SecurityPolicy>` tag is not present in the Domain configuration or is empty, the domain is initialized with no security policy.

Persistence Mode

The WebConsole Server may or may not be configured to use a database. Persistence mode enabled refers to when a database is used for configuration and storage. The WebConsole Server uses the persistence mode by default. You can disable the persistence mode in `web.xml`. Depending on the selected mode, different aspects of the web applications are configured differently. The following sections cover these configuration options.

The persistence mode can be enabled or disabled in `web.xml` as shown:

```
<!-- Hawk webconsole persistence mode -->
<!-- Accepted values are either true or false, default value is true-->
 <context-param>
   <param-name>persistence_mode</param-name>
   <param-value>false</param-value>
 </context-param>
```

Persistence Mode Enabled Settings

With persistence mode enabled, you can save/restore configuration objects and user created dashboards across multiple sessions.

The above functionality is not available when the persistence mode is disabled.

TIBCO Hawk bundles a H2 database (`http://www.h2database.com`) for data persistence. You may choose to connect to an external database that is JDBC compliant

Configuring an External Database

1. Define database resource in the hawkwebconsole web application's `META-INF/context.xml` as follows:

```
<Context>
<!-- Configure Hawk Database resource for Persistence mode-->
  <Resource name="jdbc/hawkdb"
      factory="org.apache.tomcat.jdbc.pool.DataSourceFactory"
      type="javax.sql.DataSource"
      url="jdbc:h2:tcp://localhost/~/hawk"
      driverClassName="org.h2.Driver"
      username="sa"
      password=""
      maxActive="100"
      maxIdle="20"
      initialSize ="10"
      defaultAutoCommit ="false"
      removeAbandoned="true"
      removeAbandonedTimeout="60"
    logAbandoned="true"/>
</Context>
```

2. Define the resource reference in its `web.xml` as follows:

```
<resource-ref>
 <description>Hawk Database Connection</description>
   <res-ref-name>jdbc/hawkdb</res-ref-name>
   <res-type>javax.sql.DataSource</res-type>
   <res-auth>Container</res-auth>
</resource-ref>
```

Hawk WebConsole Users

Hawk WebConsole can be configured to authenticate Hawk users against the following types of user repositories and these authentication types need to be set in the following section of `web.xml`.

```
<!-- Hawk Users Authentication provider type, supported types are
FILE or LDAP or DATABASE -->
```

```
<context-param>
    <param-name>auth_type</param-name>
    <param-value>FILE</param-value>
  </context-param>
```

Default `auth_type` is FILE that is, File based user repository is used.

Database (RDBMS) based User Repository

In the DATABASE based configuration, the users and passwords are stored in the database.

To use this configuration, change auth_mode to DATABASE in web.xml:

```
<context-param>
  <param-name>auth_type</param-name>
  <param-value>DATABASE</param-value>
</context-param>
```

To use `auth_type` as DATABASE, make sure persistence mode is enabled and Database configuration is done appropriately.

The user authentication information is stored in a table called `hawk_users`.

For example, to add a new user (admin/admin), Administrator needs to run the following SQL script:

```
INSERT INTO hawk_users (user_name, password) VALUES ('admin',
'admin');
```

OR

```
INSERT INTO hawk_users (user_name, password) VALUES ('admin',
'232f297a57a5a743894a0e4a801fc3');
```

The password can be in plain text or MD5 hashed.

LDAP Based User Repository

In the LDAP based configuration, the users and passwords are stored in LDAP/AD.

To use this configuration, change auth_mode to LDAP in `web.xml`:

```
<context-param>
    <param-name>auth_type</param-name>
    <param-value>LDAP</param-value>
</context-param>

Configure LDAP properties in web.xml:
<!-- If authentication type is LDAP, configure LDAP properties -->
```

```
<context-param>
     <param-name>ldap_host</param-name>
     <param-value>10.97.107.21</param-value>
</context-param>
<context-param>
<!--If not configured, default port 389-->
     <param-name>ldap_port</param-name>
     <param-value>389</param-value>
</context-param>
<context-param>
     <param-name>ldap_adminDN</param-name>
     <param-value>CN=eric,CN=Users,DC=pmqa,DC=com</param-value>
</context-param>
<context-param>
     <param-name>ldap_admin_password</param-name>
     <param-value>Search123</param-value>
</context-param>
<context-param>
     <param-name>ldap_baseDN</param-name>
     <param-value>DC=pmqa,DC=com</param-value>
</context-param>
<context-param>
<!--If not configured, default value is 'uid'-->
     <param-name>ldap_uid_attr</param-name>
     <param-value>cn</param-value>
</context-param>
<context-param>
<!--If not configured, default value is '*' -->
     <param-name>ldap_object_class</param-name>
     <param-value>*</param-value>
</context-param>
```

File Based User Repository

In the File based configuration, the users and passwords are stored in the `hawkusers.xml` file. To configure file based authentication:

1. Change the `auth_mode` to `FILE` in `web.xml` as follows:

```
<context-param>
     <param-name>auth_type</param-name>
     <param-value>FILE</param-value>
</context-param>
```

2. Configure the `hawkusers.xml` file as follows:

```
<!-- Hawk Users file for FILE based authentication -->
<context-param>
     <param-name>hawk_users_file</param-name>
     <param-value>/hawk_users.xml</param-value>
</context-param>
```

Store the Hawk users file in the location
HAWK_HOME\webconsole\tomcat\webapps\WEB-INF\conf. It has the
following format:

```
<user username="<username>" password="<MD5 hashed password or Plain text
password>" roles="<user role>"/>
```

Logging

WebConsole uses log4j for application logging. By default, the WebConsole logs are generated under *CONFIG_FOLDER*/logs/hawkwebconsole.log.

You can modify the default log4j config file *WEB-INF*/conf/log4j_webconsole.properties or use your own properties file.

You can configure the location of logs using the log4j.appender.RFileApp.File property in the log4j config file (*WEB-INF*/conf/log4j_webconsole.properties).

For example, the default location of logs is as follows:

```
log4j.appender.RFileApp.File=C:/ProgramData/HK510v11/tibco/cfgmgmt
/hawk/logs/hawkwebconsole.log
```

You can specify your properties file location in the *WEB-INF*/web.xml file as follows:

```
<context-param>
     <param-name>log4j_config_file</param-name>
     <param-value>/log4j_webconsole.properties</param-value>
</context-param>
```

By default, Tomcat server logs are generated at *HAWK_HOME*/webconsole/logs.

Authorization

Perform the filtering of agents in the Web Server layer. When enabled, authenticated users can be authorized to access specific domains or agents.

By default, users have access to all configured domains and agents.

To configure the filtering of domains and agents in the User Agent Config file, use one of the following ways:

- Use a File Path: add the following entry in web.xml under the 'main_servlet' definition.

```
<init-param>
     <param-name>user_agent_config_file</param-name>
     <param-value>/hawk_user_agent_cfg.txt</param-value>
</init-param>
```

- Use a URL: an example of configuring domain filtering with a URL is as follows:

```
<init-param>
 <param-name>user_agent_config_file</param-name>
 <param-value>http://<hostname:port>/hawkusers/hawk_user_agent_cfg.
```

txt</param-value>
                         </init-param>

Example of `hawk_user_agent_cfg.txt` is as follows:

```
# This file is used by agent running with "COM.TIBCO.hawk.security.trusted.Trusted"
security model.
#
#
# Explanation of Settings:
#
# This file provides authorization or filter level for node/agent for WebConsole
application.
# This doesn't include microagent and methods level authorization, even if the
microagent and methods are defined, then those are ignored.
# The node column can have a node/agent name or "agent dns domain" or
"agent:dns:domain" format.
# Wild card * is supported in both user and node column.
# Access restrictions can be defined for an user by starting record with !
# In case of any conflict in grant and restriction, the restriction has the
precedence.
#Examples
#1. admin has access to all agents/nodes and domains
#2. user1 has access to agent1 under domain1 with dns dns1.
#3. user2 has access to all agents/nodes under domain domain2 and any dns.
#4. user3 has access to agent3 if agent3 doesn't belong to domain3
#
# File format:
#
# user       node
#            access
#              &
#          restrictions
#
admin *
user1 "agent1 dns1 domain1"
user2 "* * domain2"
user3      agent3
!user3"* * domain3"
```

Enabling SSL Authentication for Hawk WebConsole

The WebConsole is hosted inside the Tomcat web container, thus, enable the SSL for the Tomcat Web container to enable the SSL for WebConsole. Follow the steps mentioned in the Tomcat documentation at the following URL to configure SSL in the Tomcat Web container:

https://tomcat.apache.org/tomcat-7.0-doc/ssl-howto.html

Alternatively, you can also follow these steps to quickly enable SSL over HTTP for the Tomcat Web container:

1. Open the command prompt and navigate to the JDK Installation folder.

2. Run the following command to create a keystore file to store the server's private key and self-signed certificate:

JAVA_HOME\bin\keytool -genkey -alias tomcat -keyalg RSA

3. When prompted, specify the password string, for example, "hawkwebconsole". The password could be any string, the same password needs to be specified in the `server.xml` configuration file (see step 6).

4. When prompted, specify general information about the certificate, such as company, contact name, and so on. This information helps users to validate the authenticity of the certificate, as this information is displayed to users who attempt to access a secure page in your application.

   The `.keystore` file with the Certificate is created in the same JDK installation folder.

5. Now, browse to the configuration folder of Hawk WebConsole and open `server.xml` for editing.

HAWK_HOME/webconsole/tomcat/conf/server.xml

6. Enter the following information under the Catalina service tag `<Service name="Catalina">`:

```
<Connector protocol="org.apache.coyote.http11.Http11Protocol"
port="8443" maxThreads="200"
scheme="https" secure="true" SSLEnabled="true"
keystoreFile="<path of .keystore file>"
keystorePass="hawkwebconsole"
clientAuth="false" sslProtocol="TLS"/>
```

7. Save the file and restart Hawk WebConsole.

   To verify, type the URL "https://localhost:8443/hawkwebconsole/" in a web browser and press **Enter**. Web browser should display Hawk WebConsole.

Agent Inventory

The WebConsole Server maintains a record of all newly discovered agents.

- Upon restart of the WebConsole Server, these agents status initially appears as "Offline"

- During the discovery process, if an agent is discovered, the status changes to "Alive".

If persistence mode is enabled, the agent information is saved in the configured database.

If persistence mode is disabled, the agent information is saved in an xml file, which does not require any configuration. By default, the application stores the agent information under *<CATALINA_HOME>*/AppData/hawk_agents.xml.

It is possible to bootstrap the application with a predefined set of Hawk Agents by directly adding entries to this file or to the corresponding table in the database.

Global User Preferences

The user preferences at global level can be configured in the WebConsole Server. These preferences are applicable across all users.

The following example shows how the depth of alert/subscription caches in the browser (default=1000) can be set in web.xml:

```
<!-- Configure the Max limit of the items (Alerts/subscription)to
be cached on browser -->
<!-- If not configured, the default limit is 1000 -->
<context-param>
    <param-name>browser_item_cache_max</param-name>
    <param-value>1000</param-value>
</context-param>
```

Heat Map Update Frequency

The rendering frequency of heat maps in Hawk WebConsole can be controlled using the following parameters in web.xml:

heatmap_update_type — Specifies if the heatmap can be updated automatically or at the specified time interval. Set the value to one of the following:

— **auto** —Updates heatmap automatically for optimal performance

— **timer**— Gives control to specify the rendering rate using the parameter "heatmap_render_rate"

— **heatmap_render_rate**— Specifies how often the heatmap is updated. Default value 10 seconds. The minimum value is 5 seconds.

Change Notifications

All configuration object changes made via the WebConsole UI are propagated to all connected user sessions. However, the changes made through Hawk Display or any other mechanism is not notified.

Versioning

When the persistence mode is enabled, the objects that are local to a user (that is, the objects that are not yet deployed to an agent) are versioned.

A version check is performed when you try to save a local object. The save operation succeeds only if the version is the latest. Otherwise, you get an exception that asks you to refresh your copy. It can happen only if the same user logs in from two sessions.

For agent deployed objects or common objects, versioning is not maintained. This is because Agents do not support versioning and version based deployment of configuration objects.

WebConsole User Session Persistence

By default, the session persistence is disabled for WebConsole application with Tomcat restart. You can enable or disable the session persistence with Tomcat restart for Hawk WebConsole application. It is configurable in `tomcat/webapps/hawkwebconsole/META-INF/context.xml`.

To enable session persistent, comment out the below entry in `context.xml`:

```
<Manager pathname="" />
```

The above configuration for user session persistence is specific to Tomcat. If you are deploying Hawk WebConsole on any other web server, follow equivalent steps for that web server.

HMA Configurations

All the required configuration parameters are stored in *CONFIG_FOLDER*/bin/hawkhma.cfg. The following table describes various HMA configuration properties in easy-to-understand logical groups. The various groups are as follows:

Table 14   HMA Configuration Properties

Logical Group	Parameters
TIBCO HMA Common	-hawk_domain <TIBCO Hawk domain name>
	-agent_name <agent name>
	-agent_domain <agent domain name>
TIBCO Rendezvous (RVD) Session	-rvd_session <service> <network> <daemon>
Logging Information	-logdir <directory to store HMA logs>
	-logmaxsize <maximum size of one HMA log>
	-logmaxnum <maximum number of HMA logs>
	-log_format <Hawk or ActiveEnterprise format>
Timeout	-timeout <milliseconds>
Trace Level	-tracelevel <desired trace level>
UNIX Signal Handling	-ignore_sigint
	-ignore_sigterm
	-ignore_sigabrt
Encoding	-codepage

Each of the parameters listed above are explained in more detail, in the following table.

Table 15   HMA Configuration Parameter Details

Property	Mand atory	Default Value	Description
TIBCO HMA Common			

Table 15   HMA Configuration Parameter Details

Property	Mandatory	Default Value	Description
-hawk_domain	Yes	"default"	See Hawk Domain for details.
-agent_name	Yes	Host Name of the computer	Name of the agent. Ensure that the output of the '/usr/bin/hostname' UNIX command matches with the 'hostname' specified in the /etc/hosts file. For example, if the value of hostname is linux64 then the /etc/hosts file should have the entry, such as, 192.168.1.100 linux64.
-agent_domain	Yes	"none"	An agent domain must be specified when two computers within the same TIBCO Hawk domain have the same name but reside in different network domains. For example, you might specify this option as: –agent_domain pa.tibco.com.
TIBCO Rendezvous Transport			
-rvd_session	No	7474 "" tcp:7474	Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO EMS as the primary transport. However, if you are using TCP Transport for TIBCO Hawk then uncomment this option, so that Hawk Agent can communicate with Hawk Microagent using the TCP-RV bridge. The value of this parameter must be same as the value of the –ami_rvd_session parameter in the Hawk Agent configuration file (hawkagent.cfg). The format is -rvd_session <service> <network> <daemon>. If you use this option, all three parameters must be present and separated by white space. Use a semicolon (;) to indicate a null value, or use an empty string, for example: -rvd_session 7474 "" tcp:7474
Logging			
-logdir	No	*CONFIG_FOLDER*/logs	The directory in which to store log files generated by the TIBCO Hawk HMA.
-logmaxsize	No	1024	The maximum size of a rotating log files in Kbytes.
-logmaxnum	No	5	The maximum number of rotating log files
-log_format	No	"default"	The format for trace log messages
Timeout			

Table 15   HMA Configuration Parameter Details

Property	Mandatory	Default Value	Description
-timeout	No	10000	The method invocation timeout period to be used by all AMI methods. Timeout value is in milliseconds.
Trace Level			
-tracelevel	No	7	Specifies the level of diagnostic trace output. The desired trace level is specified by adding the following values together: 1 - Indicates information level trace messages should be enabled. 2 - Indicates warning level trace messages should be enabled. 4 - Indicates error level trace messages should be enabled. 8 - Indicates debug level trace messages should be enabled. 16 - Indicates AMI level trace messages should be enabled. 32 - Adds source file name and line number to all messages. A value of zero turns all tracing off A value of -1 turns all tracing on.
Unix Signal Handling			
-ignore_sigint	No	-	Ignore SIGINT signal
-ignore_sigterm	No	-	Ignore SIGTERM signal
-ignore_sigabrt	No	-	Ignore SIGABRT signal
Encoding			
-codepage	No	65001 (UTF-8)	The desired code-page for multi-byte/Unicode character sets

Logging for HMA

The TIBCO Hawk HMA process creates log files for each MicroAgent, such as `Hawk_Process.log`. The HMA process also creates a `Hawk_HMA.log` file for MicroAgent-generic errors.

To see console logs on command console, add "`-console`" argument as one of the application arguments in the file `tibhawkhma.tra`. Otherwise, the logs get logged as Windows Events. If the logging is enabled, the logs appear in the related files.

You control the size and level of detail in HMA log files at the start using the `hawkhma.cfg` file or during runtime using the `setTraceLevel()` and `setTraceParameters()` methods. These standard methods are included for default platform-specific MicroAgents, and can be added when instrumenting an application using the AMI protocol.

Following are some representative lines in an HMA log file for the Services MicroAgent:

```
INFO 01/15/2013 11:14:39
OPTIONS: Transport: RV
RV Session : Service : 7474 -- Network : ; -- Daemon : tcp:7474
Timeout : 10000
CodePage : 65001
TraceLevel : -1
Logdir : C:/ProgramData/hawkv16/tibco/cfgmgmt/hawk/log --
LogMaxSize : 1024 -- Max Log Files : 5 -- Log Format : default
INFO 01/15/2013 11:14:53 TIBCO Hawk HMA initialization completed
successfully.
```

Hawk Event Service Configurations

The Hawk Event Service records:

- All alerts raised and cleared by TIBCO Hawk Agents across the network, as well as the changes in Agent's alert level

- Record events reported by agents in text files or relational databases using JDBC

- Asynchronously notify using AMI

Refer to the *TIBCO Hawk Concepts Guide* for details about TIBCO Hawk Event Service.

All the required configuration parameters are stored in *CONFIG_FOLDER*/bin/hawkevent.cfg. The following table describes various Hawk Event Service related configuration properties in easy-to-understand logical groups. The various groups are as follows:

Table 16   Hawk Event Service Configuration Properties

Logical Group	Parameters
TIBCO Rendezvous (RVD) Session	-rvd_session *<service> <network> <daemon>*
TCP Transport for TIBCO Hawk	-tcp_session *<self_IP>:<port> <cluster_manager_IP>:<port>*
	-tcp_key_store *<key store file path>*
	-tcp_trust_store *<trust store file path>*
	-tcp_key_store_password *<key store password>*
	-tcp_key_password *<key password>*
	-tcp_trust_store_password *<trust store password>*
	-tcp_ssl_protocol *<security protocol>*
	-tcp_enabled_algorithms *<security algorithms>*
TIBCO Hawk Domain	-hawk_domain *<TIBCO Hawk domain name>*
Logging Information	-logdir *<directory to store Event Service logs>*
	-logmaxsize *<maximum size of one Event Service log>*
	-logmaxnum *<maximum number of Event Service logs>*

Table 16   Hawk Event Service Configuration Properties

Logical Group	Parameters
	-log_level *<desired trace level for logs>*
	-log_format *<Hawk or ActiveEnterprise format>*

Fault Tolerance

To enable fault tolerance, uncomment the -ft parameter.

This instance joins a fault tolerant group named
HawkEventService:hawkdomain, where *hawkdomain* is the domain of the agent.

> Separate instances of TIBCO Hawk must be running on at least two machines in order to use fault tolerance. Fault tolerance must be enabled on each instance

Weight

Assign the weight of this instance using a positive integer. The member with the highest weight receives rank 1 (so it outranks all other members). When an instance fails, the next-highest instance is activated and the member with the next highest weight receives rank 2; and so on.

Table 17   Hawk Event Service Configuration Properties

Logical Group	Parameters
Fault tolerance	-ft *<fault tolerance weight>*
	-ft_rvd_session *<service> <network> <daemon>*
File based event store	-datadir
	-datamaxsize
	-datamaxnum
Database based event store	-JDBCdriverClassName
	-JDBCuserName
	-JDBCpassword
	-JDBCurl
	-JDBCdbType

Table 17   Hawk Event Service Configuration Properties

Logical Group	Parameters
	-JDBCalertTableFields

Be careful not to confuse TIBCO Hawk Event Service data files (`Event.dat`) with Event Service log files (`Event.log`).

- `Event.dat` data files contain the data produced by the Event Service.

- `Event.log` log files record the state of the Event Service itself.

Each of the parameters listed above are explained in more detail, in the following table.

Table 18   Hawk Event Service Configuration Parameter Details

Property	Mandatory	Default Value	Description
-hawk_domain	Yes	"default"	See Hawk Domain for details.
-agent_name	Yes	Host Name of the computer	The name of the agent. Each Microagent being monitored must have agent_name, by which Microagent is being monitored
TIBCO Rendezvous Transport			
-rvd_session	No	7474 "" tcp:7474	Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO EMS as the primary transport. The format is: `-rvd_session <service> <network> <daemon>`. If you use this option, all three parameters must be present and separated by white space. Use a semicolon (;) to indicate a null value, or use an empty string, for example: `-rvd_session 7474 "" tcp:7474`
TCP Transport for TIBCO Hawk			

Table 18   Hawk Event Service Configuration Parameter Details

Property	Mandatory	Default Value	Description
-tcp_session	No	localhost:2582 localhost:2561	Set this option to configure the TCP Transport for TIBCO Hawk as the primary transport for the communication. The syntax of the property is: `-tcp_session <self_IP>:<port> <cluster_manager_IP>:<port>` where, • *<self_IP>:<port>* - The unique socket address of the Hawk Event service for joining the cluster. • *<cluster_manager_IP>:<port>* - The socket address of the Hawk Cluster Manager acting as the seed node for the cluster. This socket address is same as *<cluster_manager_IP>:<port>* specified for the `-tcp_session` parameter in `hawktcpdaemon.cfg`.
TCP Transport for TIBCO Hawk SSL Parameters The following TLS/SSL parameters are applicable to `-tcp_session` and `-ami_tcp_session`.			
-tcp_key_store	No	-	Path of the key store file
-tcp_trust_store	No	-	Path of the trust store file
-tcp_key_store_password	No	-	Password for the key store file
-tcp_key_password	No	-	Encrypted key password
-tcp_trust_store_password	No	-	Password for the trust store file
-tcp_ssl_protocol	No	TLSv1.2	Protocol for a secure connection
-tcp_enabled_algorithms	No	TLS_RSA_WITH_AES_128_CBC_SHA	Algorithm to be used for the security protocol. You can specify multiple algorithms as comma-separated list without space.
TIBCO EMS Transport			

Table 18   Hawk Event Service Configuration Parameter Details

Property	Mandatory	Default Value	Description
-ems_transport	No		Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO Rendezvous as the primary transport. Specifies location of EMS server. For example, -ems_transport tcp://server1:7222. Note: If EMS is configured as Transport, the ami_rvd_session parameter should be configured.
TIBCO EMS SSL Parameters (In case EMS Server is configured for SSL communication).			
-ssl_vendor	No	J2se	The name of the vendor of the SSL implementation. The valid choices are • j2se-default—Use this option when you want to use the default JCE bundled with the Java JRE. On IBM platforms (such as AIX), this option defaults to ibm. • j2se • entrust61—Use this option when you want to use the Entrust libraries. • ibm—On non-IBM platforms, this option can be used only if the IBM version of JCE is installed.
-ssl_ciphers	No	-	Cipher suite name
-ssl_no_verify_host	No	-	Indicate not to verify the EMS server
-ssl_trusted	No	-	File name of the server certificates. The file should be accessible locally/ shared drive
-ssl_no_verify_hostname	No	-	Indicates not to verify the name in CN field of the server certificate
-ssl_expected_hostname	No	-	If the -ssl_no_verify_host is not specified, the option -ssl_trusted has to be used. Along with the option-ssl_trusted specify either -ssl_no_verify_hostname or -ssl_expected_hostname.
-ssl_identity	No	-	Digital certificate
-ssl_private_key	No	-	Private key

Table 18   Hawk Event Service Configuration Parameter Details

Property	Mand atory	Default Value	Description
-character_encoding	No	UTF-8	Character encoding to be used across the configured transport
Logging			
-logdir	No	*CONFIG_F OLDER*/lo gs	The directory in which to store log files generated by the TIBCO Hawk Event Service
-logmaxsize	No	10M	The maximum size of a rotating log files in Kbytes
-logmaxnum	No	10	The maximum number of rotating log files
-log_level	No	7	Specifies the level of diagnostic information stored in the logs. The following are the logging levels: 4 - Indicates error level trace messages should be enabled 6- Indicates warning level trace messages should be enabled 7 - Indicates information level trace messages should be enabled 8 - Indicates debug level trace messages should be enabled 16 - Indicates AMI level trace messages should be enabled A value of zero turns all tracing off. A value of -1 turns all tracing on.
-log_format	No	"default"	The format for trace log messages
–script	No	-	Specifies the fully-qualified name of an executable file to be executed when an agent is lost.
-security_policy	No	-	Fully qualified name of the Java class which implements security policy. For more information refer to Chapter 4, TIBCO Hawk Security Model.
-variables	No		Properties file to specify variables file. The variables file can pass data to define external variables to be passed to rules for use in Rulebase configurations.
Configuration for AMI communication			

Table 18   Hawk Event Service Configuration Parameter Details

Property	Mand atory	Default Value	Description
-ami_rvd_session	No		Configures the agent with a RVD session to be used to communicate with applications implementing the TIBCO Hawk Application Management Interface. Multiple -ami_rvd_session parameters may be specified. If none are specified, the RV session used for AMI is the primary session of the Self Module.
			# Note: When using TIBCO EMS transport for communication, 127.0.0.1 should be used as the network parameter. For example: ami_rvd_session 7474 127.0.0.1 tcp:7474
-ami_tcp_session	No	localhost:2 575 localhost:2 571	Configures the agent with a TCP session to be used to communicate with applications implementing the TIBCO Hawk Application Management Interface.
			The syntax for the property is:
			`-ami_tcp_session <self_IP>:<port> <hawk_agent_IP>:<AMI_session_port>`
			where,
			• *<self_IP>:<port>* - The unique socket address of the Hawk Event service for AMI communication. The socket address should be different from the *<self_IP>:<port>* specified for the `-tcp_session` property of Hawk Event Service.
			• *<hawk_agent_IP>:<AMI_session_port>* - The socket address of the Hawk agent for AMI communication. This socket address is same as *<self_IP>:<port>* specified for the `-ami_tcp_session` parameter in `hawkagent.cfg`.
Fault Tolerance			
-ft	No	-1	Fault tolerance weight
-ft_rvd_session	No	7474 127.0.0.1 tcp:7474	TIBCO Rendezvous session used for fault tolerance. This option is ignored if the `-ft` option is not specified.
File Based Event Store			

Table 18 Hawk Event Service Configuration Parameter Details

Property	Mandatory	Default Value	Description
-datadir	No	null	Specifies the location to store data files generated by the TIBCO Hawk Event Service. If not specified, events are not logged.
-datamaxsize	No	1M	The maximum size of a rotating data file in KB. You may apply a suffix m or M for indicating MB values (for example, 10m).
-datamaxnum	No	4	The maximum number of rotating data files
Database Based Event Store			
-JDBCdriverClassName	No	-	Class name for the vendor's JDBC driver. For example, com.microsoft.jdbc.sqlserver.SQLServerDriver
-JDBCuserName	No	-	User name to connect to the database
-JDBCpassword	No	-	User's password to connect to the database
-JDBCurl	No	-	URL which identifies the database connection
-JDBCdbType	No	-	Database vendor, valid/supported values are ORACLE, SQLSERVER, DB2 or SYBASE
-JDBCalertTableFields	No	-	User defined alert action property fields to be created as additional columns in the HawkAlertClearInfo table

Database Configuration

To setup database, add the appropriate `.jar` file of the JDBC driver classes, from the database vendor, to the *HAWK_HOME*/`lib` based on the value of the `-JDBCdbType` parameter.

-JDBCdbType Value	Required .jar Files
ORACLE	ojdbc6.jar
SQLSERVER	sqljdbc.jar sqljdbc4.jar
DB2	jconn3.jar

-JDBCdbType Value	Required .jar Files
SYBASE	db2jcc4.jar

Hawk Display Configurations

All the required configuration parameters are stored in *CONFIG_FOLDER*/bin/hawkdisplay.cfg. The following table describes various Hawk Display related configuration properties in easy-to-understand logical groups. The various groups are as follows:

Table 19   Hawk Display Configuration Properties

Logical Group	Parameters
TIBCO Rendezvous (RVD) Session	-rvd_session <service> <network> <daemon>
TCP Transport for TIBCO Hawk	-tcp_session *<self_IP>:<port> <cluster_manager_IP>:<port>*
TIBCO Hawk Domain	-hawk_domain <TIBCO Hawk domain name>
Logging Information	-logdir <directory to store Hawk Display logs>
	-logmaxsize <maximum size of one Hawk Display log>
	-logmaxnum <maximum number of Hawk Display logs>
	-log_level <desired trace level for logs>
	-log_format <Hawk or ActiveEnterprise format>

Each of the parameters listed above are explained in more detail, in the following table.

Table 20   Hawk Display Configuration Parameter Details

Property	Mandatory	Default Value	Description
-hawk_domain	Yes	"default"	See Hawk Domain for details.
TIBCO Rendezvous Transport			
-rvd_session	No	7474 "" tcp:7474	Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO EMS as the primary transport. The format is: `-rvd_session <service> <network> <daemon>` If you use this option, all three parameters must be present and separated by white space. Use a semicolon (;) to indicate a null value, or use an empty string, for example: `-rvd_session 7474 "" tcp:7474`

Table 20   Hawk Display Configuration Parameter Details

Property	Mand atory	Default Value	Description
TCP Transport for TIBCO Hawk			
-tcp_session	No	localhost:2581 localhost:2561	Set this option to configure the TCP Transport for TIBCO Hawk as the primary transport for the communication. The syntax of the property is: `-tcp_session` *\<self_IP\>:\<port\>* *\<cluster_manager_IP\>:\<port\>* where, • *\<self_IP\>:\<port\>* - The unique socket address of Hawk Display for joining the cluster. • *\<cluster_manager_IP\>:\<port\>* - The socket address of the Hawk Cluster Manager acting as the seed node for the cluster. This socket address is same as *\<cluster_manager_IP\>:\<port\>* specified for the `-tcp_session` parameter in the Hawk Cluster Manager (`hawktcpdaemon.cfg`).
TIBCO EMS Transport			
-ems_transport	No		Comment this option if you are using TCP Transport for TIBCO Hawk or TIBCO Rendezvous as the primary transport. Specifies the location of the EMS server. For example, `-ems_transport tcp://server1:7222`. Note: If EMS is configured as Transport, the `ami_rvd_session` parameter should be configured.
TIBCO EMS SSL Parameters (In case EMS Server is configured for SSL communication).			
-ssl_vendor	No		The name of the vendor of the SSL implementation. The valid choices are • j2se-default—Use this option when you want to use the default JCE bundled with the Java JRE. On IBM platforms (such as AIX), this option defaults to ibm. • entrust61—Use this option when you want to use the Entrust libraries. • ibm—On non-IBM platforms, this option can be used only if the IBM version of JCE is installed.

Table 20   Hawk Display Configuration Parameter Details

Property	Mandatory	Default Value	Description
-ssl_ciphers	No		Cipher suite name
-ssl_no_verify_host	No		Indicate not to verify the EMS server
-ssl_trusted	No		File name of the server certificates. The file should be accessible locally/ shared drive
-ssl_no_verify_hostname	No		Indicates not to verify the name in CN field of the server certificate
-ssl_expected_hostname	No		If the -ssl_no_verify_host is not specified, the option -ssl_trusted has to be used. Along with the option-ssl_trusted specify either -ssl_no_verify_hostname or -ssl_expected_hostname.
-ssl_identity	No		Digital certificate
-ssl_private_key	No		Private key
-character_encoding	No		Character encoding to be used across the configured transport
Configuration for AMI communication			
Logging			
-logdir	No		The directory in which to store log files generated by the TIBCO Hawk Display.
-logmaxsize	No		The maximum size of a rotating log files in Kbytes.
-logmaxnum	No		The maximum number of rotating log files

Table 20   Hawk Display Configuration Parameter Details

Property	Mandatory	Default Value	Description
-log_level	No	7	Specifies the level of diagnostic information stored in the logs. The following are the logging levels: 4 - Indicates error level trace messages should be enabled 6- Indicates warning level trace messages should be enabled 7 - Indicates information level trace messages should be enabled 8 - Indicates debug level trace messages should be enabled 16 - Indicates AMI level trace messages should be enabled A value of zero turns all tracing off. A value of -1 turns all tracing on.
-log_format	No		The format for trace log messages
-display_file	No		Specify the location of the display file (.hdp) to be loaded by Hawk Display. This file contains the saved UI state of the Network Topology.
-security_policy	No		The fully qualified name of the Java class which implements security policy. For more information refer to Chapter 4, TIBCO Hawk Security Model.
-variables	No		Properties file to specify variables file. The variables file can pass data to define external variables to be passed to rules for use in Rulebase configurations.

Chapter 3 **Configuring the Rulebase Repository**

This chapter describes TIBCO Hawk configuration modes and how configuration objects such as schedules and rulebases are managed. It also explains how to work with configuration objects in a Repository.

For more information about RuleBase, refer to *TIBCO Hawk Concepts Guide*.

The rulebase repository supported only in Hawk Display (deprecated in Hawk 5.0) and Hawk WebConsole (deprecated in Hawk 6.1).

Topics

-

Choosing a Configuration Mode

On your network, configuration objects such as schedules and rulebases are retrieved using either manual or automatic configuration. The mode you choose might depend on the number of TIBCO Hawk agents running on your network, and the number and complexity of configuration objects.

- With automatic configuration, all changes applied to the agent are permanent. In this mode, you automatically specify rulebases for the agent to load at startup by saving and deleting rulebases from the auto-configuration directory.

- With manual configuration, you manually configure which rulebases an agent loads by editing the rulebase map or adding them to the –rulebases configuration parameter. At startup, the agent searches one or more directories or Repositories to find the specified configuration object. All changes are temporary, until you decide to make them permanent by saving them to a file or a Repository. For more Information, see Using the Repository Option.

Manual configuration mode is supported only in Hawk Display (deprecated in Hawk 5.0) and Hawk WebConsole (deprecated in Hawk 6.1).

You specify a configuration mode and other parameters when starting a TIBCO Hawk agent, and the agent searches the configuration source for configuration objects. A configuration source is one or more directories on the agent machine, or one or more Repository names on the network.

This section describes how configuration objects are stored and retrieved.

Using Automatic Configuration

Automatic Configuration is the default mode for storing configuration objects. In Automatic Configuration mode, the configuration source is a single directory specified in the -auto_config_dir startup option. The agent locates the automatic configuration directory at startup and loads schedules first, then rulebases. Since all rulebases found are loaded, a rulebase map is not used in Automatic Configuration mode.

After an agent is started, in this mode additional rulebases can be loaded by deploying rulebases through Hawk Console, or by invoking the RuleBaseEngine:loadRuleBaseFromFile() method. For more information about specific methods, see the *TIBCO Hawk Microagent Reference*.

Using Manual Configuration

Manual configuration mode is supported only in Hawk Display (deprecated in Hawk 5.0) and Hawk WebConsole (deprecated in Hawk 6.1).

In Manual Configuration mode, the configuration source is one of the following:

- One or more directories specified in the `config_path` parameter
- One or more Repositories specified in the `repository_path` parameter

These two options are mutually exclusive. If no path is specified, the current directory is used by default.

In Manual Configuration mode, the agent performs the following sequence of tasks to load startup rulebases:

1. At startup, the agent searches the configuration source for schedules, then for a rulebase map.

2. The agent searches the configuration source and loads all rulebases specified in the rulebase map.

3. The agent searches the configuration source for any additional rulebases specified in the `–rulebases` command line option and loads them.

4. If these rulebases have Include lists of other rulebases, the agent searches the configuration source for included rulebases and loads them.

After an agent is started in Manual Configuration mode, additional rulebases can be loaded by deploying rulebases through WebConsole or by invoking the `RuleBaseEngine: loadRuleBase()` or

`RuleBaseEngine:loadRuleBaseFromFile()` methods. For more information about `RuleBaseEngine()` methods, see the *TIBCO Hawk Microagent Reference*.

If a rulebase loaded using one of these procedures has an Include list, included rulebases are also loaded.

Using the Configuration Path Option

With the Configuration Path option, the configuration source is one or more directories specified in `-config_path`. With this option, any rulebases loaded by the agent are not written out to a local cache. The only rulebases an agent loads at startup are those specified in the rulebase map, by the `–rulebases` parameter, and in the Include lists of those rulebases.

Using the Repository Option

With the Repository option, the configuration source is one or more Repositories specified in `-repository_path`. All agents that use the same Repository load all changes saved to the Repository on startup.

A Repository is a network application that distributes configuration objects to agents. Users send new and updated objects to the Repository, and it responds to configuration requests from TIBCO Hawk agents. You specify a Repository for an agent to use with the `–repository_path` parameter, and one or more Repository names. A particular agent on the network hosts each Repository and has a Repository microagent with methods for accessing configuration objects. For more information about microagents, see the *TIBCO Hawk Microagent Reference*.

In addition, you can configure an agent to maintain a backup of configuration objects in local cache with the `-repository_cache` parameter. This feature is useful for implementing fault-tolerance and for minimizing unnecessary object transfer across the network. Agents compare locally cached rulebases with those stored in the Repository, and retrieve only new or updated objects. If a Repository defined in the `-repository_path` option for an agent does not respond to a request within 15 seconds, the agent searches the local cache directory for the configuration object.

Understanding Configuration Scenarios

Complicated scenarios can result from the various rulebase tasks and configuration modes. Table 7 describes some of these scenarios and their consequences in Manual and Automatic Configuration modes.

Table 21   Configuration Scenarios

Action	Manual Configuration	Automatic Configuration
Specify startup rulebases.	You specify one or more directory paths or Repositories for the TIBCO Hawk agent to find rulebases to load at startup. You can explicitly state the names of additional rulebases the TIBCO Hawk agent should load, as well as a rulebase map.	You specify an auto-configuration directory, and the TIBCO Hawk agent loads all files in that directory at startup.
Create a rulebase and send it to an agent.	The rulebase exists only in memory. You must explicitly save the rulebase to a file or Repository if you want it to exist after the agent process ends. The agent does not load the rulebase at startup unless you add the rulebase name to the rulebase map, the explicit list of startup rulebases, or an Include list.	The rulebase is created in memory and also copied to a file in the auto-configuration directory. Because the file is in the auto-configuration directory, it is reloaded at startup.

Table 21   Configuration Scenarios (Cont'd)

Action	Manual Configuration	Automatic Configuration
Change a rulebase and apply the change to an agent.	The changes are applied only to the copy of the rulebase in memory. You must explicitly save your changes to a rulebase file or Repository to save them after the agent process ends.	The rulebase is changed in memory, and the rulebase file in the auto-configuration directory is changed.
Rename a rulebase and apply the change to an agent.	The name is changed only in memory. You must explicitly save the rulebase to a file or Repository to save the new name after the agent process ends. To load the rulebase with the new name on startup, you must modify the rulebase map, explicit list of startup rulebases, or Include list.	The name is changed in memory, the old rulebase file (with the old name) has been deleted, and the new rulebase file has been saved (with the new name) in the auto-configuration directory.
Delete a rulebase and apply the change to an agent.	The rulebase is deleted only from memory. The rulebase file is not deleted, and it is reloaded at startup if it is specified in the rulebase map, explicit list of startup rulebases, or Include list.	The rulebase is deleted from memory, and the rulebase file is deleted from the auto-configuration directory.
Send a rulebase across the network to an agent.	The rulebase is copied to memory only on the machine you send it to. To make the change permanent, you must copy the rulebase file to that machine or send it to a Repository; then modify the rulebase map, explicit list of startup rulebases, or Include list.	The rulebase is copied to memory on the machine you send it to, and copied to a file in that agent's auto-configuration directory. Because the file is in the auto-configuration directory, it is reloaded at startup.
Delete a rulebase across the network for an agent that has this type of configuration.	You delete the rulebase from memory only on that machine. To permanently remove a rulebase from multiple agents you must remove it from the rulebase map, explicit list of startup rulebases, and Include lists.	You delete the rulebase from memory; you also delete the rulebase file in the agent's auto-configuration directory; and it is not reloaded at startup.
Load a rulebase using the `RuleBaseEngine: loadRuleBase()` method.	The agent searches the list of configuration path directories or Repositories for rulebases with the specified name.	The method invocation fails.

Table 21   Configuration Scenarios (Cont'd)

Action	Manual Configuration	Automatic Configuration
Manually copy a rulebase file into the auto-configuration directory.	Nothing happens and the rulebase is not loaded at startup.	Not applicable.

Chapter 4 **TIBCO Hawk Security Model**

This chapter discusses the security models for TIBCO Hawk system.

Topics

Trusted Security Model

TIBCO Hawk uses Trusted Security model to guarantee that only authorized users can perform restricted actions.

The Trusted model uses an ASCII file as a simple yet effective entitlement server. This has the benefit of being easily distributed to all nodes, making it a very scalable mechanism. A scan of the ASCII file for information about the user determines if the request is granted.

Users are explicitly granted or denied access through the access control file. A user who is not in this file is not allowed to perform any operations on the TIBCO Hawk system. Access control information is in a plain ASCII file located in the *TIBCO_HOME*\hawk\<version>\examples\security folder.

Copy this file to *CONFIG_FOLDER*\security manually. See Access Control File, for more details.

Trusted Model

The Trusted model provides a simple yet effective mechanism for addressing authorization concerns. It addresses security issues as follows:

- **Authentication**: the Trusted security model does not guarantee the authenticity of the request.

- **Integrity**: the Trusted security model does not guarantee the integrity of the request.

- **Authorization**: the Trusted security model guarantees that only authorized users can perform restricted actions.

- **Privacy**: the Trusted security model does not address the privacy of the request. All requests are sent using plain text.

Authorization

The Trusted model uses an ASCII file as a simple yet effective entitlement server. This has the benefit of being easily distributed to all nodes, making it a very scalable mechanism. A scan of the ASCII file for information about the user determines if the request is granted.

Users are explicitly granted or denied access through the access control file. A user who is not in this file is not allowed to perform any operations on the TIBCO Hawk system. Access control information is in a plain ASCII file located in the *HAWK_HOME*/examples/security folder.

Copy this file to *CONFIG_FOLDER*/security manually. See Access Control File, for more details.

Logging

All trusted requests (both Trusted and TrustedWithDomain) can be logged to rolling log files in a directory of your choice.

The current log file is named Trusted.log. When it reaches the maximum size (size), it is closed and renamed Trusted*1*.log, and a new Trusted.log is started. When the number of logs exceeds the maximum (n), log entries roll over to reuse the oldest log file.

To activate logging, add the following line to the access control file:

<LogService> -log_dir *<logDir>* -log_max_size *<size>* -log_max_num *<n>*

where:

Option	Description
logDir	The directory where the log file is saved. Make sure this directory exists before you activate logging.
size	The maximum size of the rolling log file in KB. The suffix m or M can be used for indicating MB.
n	The maximum number of rolling log files.

Example Log File Entries

This is an example log entry for an authorized request:

```
Tue Dec 31 11:14:13 EST 2002: Trusted operation:
userID=HAWK-TRUSTDMN\hawkuser, node=hawkuser-DT:none:default,
microagent=COM.TIBCO.hawk.microagent.SysInfo, method=
getOperatingSystem.
```

This is an example of an entry for an unauthorized request:

```
Tue Dec 31 11:19:54 EST 2002: Trusted operation: userID=
HAWK-TRUSTDMN\hawkuser, node=hawkuser-DT:none:default, microagent=
COM.TIBCO.hawk.microagent.Repository, method= getRBMap -
permission denied.
```

Using both Trusted and TrustedWithDomain

An agent using the Trusted or TrustedWithDomain security model allows users with either Trusted or TrustedWithDomain to access the agent.

- To allow access to a user who starts Hawk Display (or the Console API application) in Trusted security mode, the entry for *<user>* specified in the agent's Trusted.txt or TrustedWithDomain.txt *should not* include the domain of the user who actually starts Hawk Display (or the Console API application).

- To allow access to a user who starts Hawk Display in TrustedWithDomain security mode, the entry for *<user>* specified in the agent's Trusted.txt or TrustedWithDomain.txt *should* include the domain of the user who actually starts Hawk Display.

To Use the Trusted Model

Two sample access control files are included with TIBCO Hawk.

- `Trusted.txt` can be used on UNIX or Microsoft Windows. It is used when the command line specifies `Trusted`.

- `TrustedWithDomain.txt` is for use on Microsoft Windows only, and is used when the command line specifies `TrustedWithDomain`.

The access control files, `Trusted.txt` and `TrustedWithDomain.txt`, are described in the next section.

To use the Trusted model:

If you have multiple Hawk agents running on a machine and these Hawk agents, in turn, belong to different Hawk domains, you can specify separate access control files for each domain.

1. For each Hawk domain, create a directory:

   CONFIG_FOLDER/hawk/domain/<domain-name>/security where *<domain-name>* is the name of the Hawk domain.

2. Provide a remote `Trusted.txt` file to configure a security URL on Agent,

   — add/append the following system parameter to
   `java.extended.properties` in `tibhawkagent.tra`

   -Dhawk.security_file_url=f**ile:///D:/temp/Trusted.txt**

   Or

   -Dhawk.security_file_url=http://*<hostname:port>*/Trusted.txt

   The Agent always gives precedence to the local file, if found in hawk/domain folder.

3. Modify the appropriate sample access control file, `Trusted.txt` or `TrustedWithDomain.txt`, according to the requirements of your system.

4. Save the modified file in the directory you created, without changing the filename. The program automatically searches for the access control file in this directory.

5. Ensure that the `security_policy` parameter in Hawk agent configuration is set to one of the following, before starting TIBCO Hawk Agent and Hawk Console:

   ```
   COM.TIBCO.hawk.security.trusted.Trusted
   ```

   or

```
COM.TIBCO.hawk.security.trusted.TrustedWithDomain
```

The Trusted model is now in effect. The security policy stays in force as long as the process is running.

Access Control File

To store access control information, the Trusted model uses an ASCII file. Two sample access control files are included with TIBCO Hawk: `Trusted.txt` and `TrustedWithDomain.txt`.

Sample access control files are shipped with the TIBCO Hawk software, in the directory *HAWK_HOME*/`examples/security/`.

Trusted.txt

This access control file can be used with UNIX or with Microsoft Windows XP.

The user for authorization is the login ID of the TIBCO Hawk Display owner.

TrustedWithDomain.txt

This file can only be used with Microsoft Windows XP, and only when specified in the command used to start TIBCO Hawk agent and Display, as in `-security_policy COM.TIBCO.hawk.security.trusted.TrustedWithDomain`.

The user is the login ID and the domain where the user is logged on. For example, for user1 in domainX, the user is *<domainX>*\`user1`.

Group Operations

A group operation effectively performs a method invocation simultaneously on all of the specified target microagents. It is useful for affecting a group of microagents in a single operation. There are two kinds of group operation: network query and network action.

Wildcards characters + and * affect permissions on group operations and point-to-point invocations as shown in Access Control File.

- Use + in node access to allow access to group operations.
- Use * in node access to allow access to point-to-point invocations.
- Use + in method access to allow access to all INFO and ACTION methods.
- Use * in method access to allow access.

Access Control File Conventions

The access control file uses the following conventions to grant or deny access.

- Explicit access for a particular resource implicitly denies access to all other resources in the same class. The defined classes are nodes, microagents, and methods.

- Explicit restriction for a particular resource implicitly allows access to all other resources in the same class, provided they have been explicitly granted. The defined classes are nodes, microagent, and methods.

- Permissions always default to the most restrictive case.

File Settings for the Trusted Model

This table presents how individual restrictions and permissions are defined for nodes, microagents, and methods. Individual node, microagent, and method names can be specified. In addition, wildcard characters can be used as shown in the table.

Each individual setting is represented by one line in the access control file. Complex permissions and restrictions can be defined using sets of related lines. For example, you can give a user access to all methods on a node in one line, then in the following line, restrict that user's access to one of those methods. See Disable Custom Microagent, for further details.

Permissions are granted to a user using the user name. Restrictions are defined by prefixing a bang (!) character to the user name, as shown in the table.

Table 22   Access Control File Settings

Effect	User	Node	Microagent	Method
Full Access Grants full access to all methods on all microagents on all nodes, including group operations.	*<user>*			
Full Restriction Denies access to all methods on all microagents on all nodes, including group operations	! *<user>*			
Node Access: All Nodes Grants point-to-point and group operation invocation access to all methods on all microagents.	*<user>*	+		

Table 22   Access Control File Settings (Cont'd)

Effect (Cont'd)	User	Node	Microagent	Method
Node Access: All Nodes Grants point-to-point invocation access to all methods on all microagents. Does not grant group operation invocation access.	*<user>*	*		
Node Access: Named node Grants invocation access to all methods on all microagents on the named node. You can add several lines for one user to provide access to a set of nodes.	*<user>*	*<node>*		
Node Restriction: All Nodes Denies point-to-point and group operation invocation access to all methods on all microagents.	! *<user>*	*		
Node Restriction: All Nodes Denies group operation invocation access to all methods on all microagents. (Does not deny point-to-point operation invocations.)	! *<user>*	+		
Node Restriction: Named node Denies invocation access to all methods on all microagents on the named node. You can add several lines for one user to provide access to a set of nodes.	! *<user>*	*<node>*		
Microagent Access Grants access to all methods on the specified microagent. Wildcard characters can be used in place of a specific node name. See *Node Access*.	*<user>*	*<node>*	*<microagent>*	
Microagent Restriction Denies access to all methods on the specified microagent. Wildcard characters can be used in the Node columns. See *Node Restriction* above.	! *<user>*	*<node>*	*<microagent>*	

Table 22   Access Control File Settings (Cont'd)

Effect (Cont'd)	User	Node	Microagent	Method
Method Access Grants access to all ACTION and INFO methods on the specified microagent (but not ACTIONINFO methods). Wildcard characters can be used in the Node and Microagent columns.	*<user>*	*<node>*	*<microagent>*	+
Method Access Grants access to all INFO methods on the specified microagent (but not ACTION or ACTIONINFO methods). Wildcard characters can be used in the Node and Microagent columns.	*<user>*	*<node>*	*<microagent>*	*
Method Access Grants access to the specified method on the specified microagent. Wildcard characters can be used in the Node and Microagent columns.	*<user>*	*<node>*	*<microagent>*	*<method>*
Method Restriction Denies access to all methods on the specified microagent. Wildcard characters can be used in the Node and Microagent columns.	! *<user>*	*<node>*	*<microagent>*	*
Method Restriction Denies access to all ACTION and ACTION_INFO methods on the specified microagent. Wildcard characters can be used in the Node and Microagent columns.	! *<user>*	*<node>*	*<microagent>*	+

Table 22   Access Control File Settings (Cont'd)

Effect (Cont'd)	User	Node	Microagent	Method
Method Restriction Denies access to the specified method on the specified microagent. Wildcard characters can be used in the Node and Microagent columns.	! *<user>*	*<node>*	*<microagent>*	*<method>*

Disable Custom Microagent

The Custom microagent can be disabled by leveraging the Security TrustModel supported by TIBCO Hawk. Users are explicitly granted or denied access through the access control file.

The following steps describe how to disable Custom microagent execution.

1. If multiple Hawk agents are running on a machine and these Hawk agents in turn belong to different Hawk domains, specify separate access control files for each domain.

   For each Hawk domain create a directory *HAWK_HOME*/domain/<domain-name>/security where <domain-name> is the name of the Hawk domain.

2. According to the requirements of your system, copy *HAWK_HOME*/examples/security/Trusted.txt or *HAWK_HOME*/examples/security/TrustedWithDomain.txt to *CONFIG_FOLDER*/security/.

3. Modify the file to add the following lines:

   ```
   *   *   **
   none        *       COM.TIBCO.hawk.microagent.Custom                 +
   ```

   The first line grants access to all users, on all nodes, and for all microagent methods.

   The second line grants access only to the user none, on all nodes for the Custom microagent, where none is a non-existent user. This effectively prevents anyone from executing the Custom microagent.

4. Ensure that the security_policy parameter in Hawk agent configuration is set to one of the following, before starting TIBCO Hawk Agent and Hawk Console:

   ```
   COM.TIBCO.hawk.security.trusted.Trusted or
   COM.TIBCO.hawk.security.trusted.TrustedWithDomain
   ```

Trusted.txt and TrustedWithDomain File Examples

The following example files demonstrates how a `Trusted.txt` and `TrustedWithDomain.txt` access control file might be constructed. The permissions and restrictions defined in this file are explained in the previous section.

Explanation of Settings

The settings in the example files below provide access to the following users as shown here:

- Grant `user1` point-to-point access to all methods on all microagents, except:
    - All `ACTION` methods on the `Custom` microagent on all nodes.
    - The specified methods on the `Repository` microagent on all nodes.
    - The specified methods on the `RuleBaseEngine` microagent on `nodeA`.
- Grant `user2` point-to-point and group operation invocation access to all methods on all microagents, except:
    - All `ACTION` methods on the `Custom` microagent on all nodes.
    - All `ACTION` methods on the `Repository` microagent on all nodes.
    - All `ACTION` methods on the `RuleBase` microagent on all nodes.
- Grant `user3` point-to-point and group operation invocation access to all methods on all microagents on all nodes, except:
    - group operation invocation access to all `ACTION` methods on the `RuleBase` microagent.
- Grant `user4` full access to all methods on all microagents on `nodeB`.
- Grant `user5` point-to-point access to all `INFO` methods on all microagents on all nodes.

Trusted.txt Example File

```
#
# This file is used by agent running with COM.TIBCO.hawk.security.trusted.Trusted
# security model.
#
#
# Explanation of Settings:
#
# Grant "user1" point-to-point access to all methods on all Microagents, EXCEPT
#       - all ACTION methods on the Custom microagent on all nodes.
#       - the specified methods on the Repository microagent on all nodes.
#       - the specified methods on the RuleBaseEngine microagent on "nodeA".
```

```
#
# Grant "user2" point-to-point and network access to all methods on all
# Microagents, EXCEPT
#        - all ACTION methods on the Custom microagent on all nodes.
#        - all ACTION methods on the Repository microagent on all nodes.
#        - all ACTION methods on the RuleBase microagent on all nodes.
#
# Grant "user3" point-to-point and network access to all methods on all
# Microagents on all nodes, EXCEPT
#        - network access to all ACTION methods on the RuleBase microagent.
#
# Grant "user4" full access to all methods on all microagents on nodeB.
#
# Grant "user5" point-to-point access to all INFO methods on all microagents
# on all nodes.
#
#
# Wildcard characters + and * usage:
#
# - Use + in node access for allowing access to group operations.
# - Use * in node access for allowing access to  point-to-point invocations.
# - Use + in method access for allowing access to all INFO and ACTION methods.
# - Use * in method access for allowing access to all INFO methods only.
#
#
# File format:
#
# user      node                    microagent                   method
#        access                       access                      access
#          &                            &                            &
#      restrictions              restrictions                  restrictions
#
user1          *
!user1         *      COM.TIBCO.hawk.microagent.Custom                +
!user1         *      COM.TIBCO.hawk.microagent.Repository      addRuleBase
!user1         *      COM.TIBCO.hawk.microagent.Repository      updateRuleBase
!user1         *      COM.TIBCO.hawk.microagent.Repository      deleteRuleBase
!user1         *      COM.TIBCO.hawk.microagent.Repository      setSchedules
!user1         *      COM.TIBCO.hawk.microagent.Repository      setRBMap
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine addRuleBase
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine updateRuleBase
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine deleteRuleBase
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine loadRuleBase
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine unloadRuleBase
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine loadRuleBaseFromFile
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine setSchedules
!user1      nodeA     COM.TIBCO.hawk.microagent.RuleBaseEngine setRBMap

user2          +                        *                            +
!user2         *      COM.TIBCO.hawk.microagent.Custom                +
!user2         *      COM.TIBCO.hawk.microagent.Repository            +
!user2         *      COM.TIBCO.hawk.microagent.RuleBaseEngine        +

user3
!user3         +      COM.TIBCO.hawk.microagent.RuleBaseEngine        +

user4       nodeB
```

```
user5            *                        *                        *

#
# To activate logging, uncomment the following:
# <LogService>  -log_dir logDir  -log_max_size size  -log_max_num n
#
# where: logDir is the directory where the log file is stored
#        size is the maximum size of a rotating log file in KB.
#           A suffix m or M  can be used for indicating MB .
#           n is the maximum number of rotating log files.
```

TrustedWithDomain.txt Example File

```
#
# This file is used by agent running with
# COM.TIBCO.hawk.security.trusted.TrustedWithDomain security model.
#
# To allow a user running with COM.TIBCO.hawk.security.trusted.TrustedWithDomain
# security model on Windows platform to access this agent, the user
# specified should include the domain of the user.
# For example, for user1 in domainX, the user should be specified as
# "domainX\user1".
#
# Note that agents using the TrustedWithDomain security model also allow
# users running with COM.TIBCO.hawk.security.trusted.Trusted security model
# to access this agent.  For these users, the domain should not be
# included in the user.
#
#
# Explanation of Settings:
#
# Grant "user1" point-to-point access to all methods on all Microagents, EXCEPT
#- all ACTION methods on the Custom microagent on all nodes.
# - the specified methods on the Repository microagent on all nodes.
# - the specified methods on the RuleBaseEngine microagent on "nodeA".
#
# Grant "user2" point-to-point and network access to all methods on all
# Microagents, EXCEPT
#- all ACTION methods on the Custom microagent on all nodes.
#- all ACTION methods on the Repository microagent on all nodes.
#- all ACTION methods on the RuleBase microagent on all nodes.
#
# Grant "user3" point-to-point and network access to all methods on all
# Microagents on all nodes, EXCEPT
#- network access to all ACTION methods on the RuleBase microagent.
#
# Grant "user4" full access to all methods on all microagents on nodeB.
#
# Grant "user5" point-to-point access to all INFO methods on all microagents
# on all nodes.
#
#
```

```
# Wildcard characters + and * usage:
#
# - Use + in node access for allowing access to group operations.
# - Use * in node access for allowing access to  point-to-point invocations.
# - Use + in method access for allowing access to all INFO and ACTION methods.
# - Use * in method access for allowing access to all INFO methods only.
#
#
# File format:
#
# user      node                    microagent                      method
#           access                   access                          access
#           &                        &                               &
#        restrictions             restrictions                    restrictions
#
user1         *
!user1        *    COM.TIBCO.hawk.microagent.Custom                    +
!user1        *    COM.TIBCO.hawk.microagent.Repository       addRuleBase
!user1        *    COM.TIBCO.hawk.microagent.Repository       updateRuleBase
!user1        *    COM.TIBCO.hawk.microagent.Repository       deleteRuleBase
!user1        *    COM.TIBCO.hawk.microagent.Repository       setSchedules
!user1        *    COM.TIBCO.hawk.microagent.Repository       setRBMap
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine addRuleBase
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine updateRuleBase
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine deleteRuleBase
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine loadRuleBase
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine unloadRuleBase
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine loadRuleBaseFromFile
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine setSchedules
!user1     nodeA   COM.TIBCO.hawk.microagent.RuleBaseEngine setRBMap

user2         +                        *                               +
!user2        *    COM.TIBCO.hawk.microagent.Custom                    +
!user2        *    COM.TIBCO.hawk.microagent.Repository                +
!user2        *    COM.TIBCO.hawk.microagent.RuleBaseEngine            +

user3
!user3        +    COM.TIBCO.hawk.microagent.RuleBaseEngine            +

user4      nodeB

user5         *                        *                               *

#
# To activate logging, uncomment the following:
# <LogService>  -log_dir logDir  -log_max_size size  -log_max_num n
#
# where: logDir is the directory where the log file is stored
#        size is the maximum size of a rotating log file in KB.
#          A suffix m or M  can be used for indicating MB .
#        n is the maximum number of rotating log files.
```

Running with a localhost rvd

As a further precaution, AMI applications are required to specify `localhost` as part of the TIBCO Rendezvous daemon parameter in order to prevent remote connections to its `rvd` daemon. Instructions to do this for UNIX and Microsoft Windows platforms are given below.

UNIX Procedure

1. Add a command to start the localhost `rvd` prior to starting any TIBCO Hawk processes, as follows:

   ```
   rvd -listen tcp:127.0.0.1:<daemon>
   ```

2. Modify `hawkagent.cfg` and `hawkhma.cfg` and, in the `-rvd_session` parameter, specify the following:

   ```
   tcp:127.0.0.1:<daemon>
   ```

Microsoft Windows Procedure

Use `rvntsreg.exe` to install a localhost `rvd` as a Microsoft Windows service.

1. Create an `rvd` service using `rvntsreg.exe`. Use the following parameters:

   ```
   -listen tcp:127.0.0.1:<daemon>
   ```

2. Make all TIBCO Hawk services dependent upon this new `rvd` service.

3. In the Configuration Utility, modify the daemon parameter to the following:

```
tcp:127.0.0.1:<daemon>
```

Trusted Security Sample Implementation

The sample implements the Trusted model describes in Trusted Model. This implementation is similar to the default security model provided by Hawk.

Code

The sample implementation for Trusted Security is provided in the `/examples/security` directory.

Compile

While compiling the security sample, your CLASSPATH must include `console.jar` from TIBCO Hawk `lib` folder.

Run

To enable the security for the Hawk Agent and Display, use `-security_policy`.

To use a specific security policy, specify the name of the security policy class on each machine where you want to use the policy. Do not enter the file extension. For example, if your Java class file is named `ASecurityPolicy.class` you would specify `ASecurityPolicy`.

Ensure that this class file is bundled in a jar and placed in *HAWK_HOME*`/lib/ext`.

Using Trusted Security Model in Hawk Console

You can use Hawk Trusted Security Model in Hawk Console to ensure that only authorized users can perform restricted actions. You can specify security policy to be applied to a domain when registering a domain using Hawk Console web interface or using configuration file.

To store access control information, the Trusted model uses an ASCII file. For more information about access control files and other configuration, see To Use the Trusted Model.

For more information about how to apply security policy when registering a domain using Hawk Console web interface, see *TIBCO Hawk Console User's Guide.*

To apply security policy when registering a domain using configuration file, set the `securityPolicy` parameter in the file `DomainTransportConfig.yml` to one of the following:

COM.TIBCO.hawk.security.trusted.Trusted

or

COM.TIBCO.hawk.security.trusted.TrustedWithDomain

Chapter 5 **Using the TIBCO Hawk Messaging Microagent**

The Messaging microagent provides methods to send and receive messages using either TIBCO Rendezvous or TIBCO EMS. This chapter gives an overview of this microagent and describes how to configure and use the microagent.

Topics

Overview

The Messaging microagent provides methods to send and receive messages using either TIBCO Rendezvous or TIBCO EMS. For a detailed description of these methods refer *TIBCO Hawk Method Reference Guide*.

Using XML configuration files, you can specify the subject and message structure to be sent or received for each method. If transport parameters are not specified in the configuration files, the transport specified for TIBCO Hawk Agent is used. If using RVCM, the transport parameters have to be specified in the method element for each method. If using EMS as the default transport, only messages send or received with JMS topic are supported.

A set of sample configuration files are copied to the installation area in the samples/msghma directory. These files contain sample methods, as well as several default method definitions that are helpful for performing routine tasks. The configuration file, msghma.xml, used by the default Messaging microagent is located in the TIBCO_CONFIG_FOLDER/tibco/cfgmgmt/hawk/bin directory. You can configure additional Messaging microagents by using the TIBCO Hawk plug-in microagent mechanism. To configure additional Messaging microagents:

1. Copy the .hma file for the microagent to the plug-in directory. The plugin directory is specified by the -hma_plugin_dir option in the hawkagent.cfg file. If using the Configuration Utility, the plug-in directory is specified by the **Plugin** field in the **Agent** tab.

2. Make sure the xml file specified in the hma file is present in the expected location.

3. Re-start the TIBCO Hawk Agent.

⚠️ Do not edit or delete the msghma.xml file used by the default Messaging microagent.

Configuration files of the TIBCO Hawk Rendezvous Messaging Adapter can be used as-is. However, any non-applicable attributes are ignored and if more than one microagent is defined, only the first microagent configuration is loaded.

Configuration File Elements and Attributes

The `msghma.dtd` file defines the grammar for all the constructs used in an microagent XML configuration file. With this file included, the XML configuration file can be syntax checked using any validating XML parser.

The following tables describe the attributes that can be set in an XML configuration file:

- TIBHAWK_AMI Element Attributes
- microagent Element Attributes
- method Element Attributes
- inputParameter Element Attributes
- valueChoices Element Attribute
- legalValueChoices Element Attribute
- constantParameter Element Attributes
- outputParameter Element Attributes

The top level element, TIBHAWK_AMI describes transport parameters and tracing attributes that can be applied to all microagents. Some of the attributes can be redefined for an individual method in the `method` element.

You can specify different transport parameters for each method as attributes of the `method` element. The attributes of the `method` element take precedence over those specified by the `microagent` or `TIBHAWK_AMI` elements.

Table 23   TIBHAWK_AMI Element Attributes

Attribute	Type	Description
dtd_type	enumeration	REQUIRED. (MSGHMA).
dtd_version	enumeration	REQUIRED. (1.0).
xml_file_version	string	IMPLIED. Can be used to identify the version of this XML file. It must be in the form of *<major>.<minor>.<update>*, for example, `1.1.0`.

Table 23   TIBHAWK_AMI Element Attributes

Attribute	Type	Description
ami_rvd_service ami_rvd_network ami_rvd_daemon	string	IMPLIED. These attributes together configure the TIBCO Rendezvous parameters for creating an TIBCO Rendezvous transport for the communication with the TIBCO Hawk agent. These attributes are maintained for backward compatibility only and is not used.
rvService rvNetwork rvDaemon	string	IMPLIED. These attributes together configure the TIBCO Rendezvous parameters for creating a TIBCO Rendezvous transport.
ems_url ems_uid ems_pw	string	These attributes together configure the TIBCO EMS parameters for creating a TIBCO EMS transport.
ssl_trace ssl_debug_trace ssl_vendor ssl_trusted ssl_expected_hostname ssl_identity ssl_identity_encoding ssl_password ssl_verify_hostname ssl_verify_host ssl_cipher	string	These attributes are used when using SSL to connect to the EMS server. When specifying values for attributes `ssl_verify_hostname` and `ssl_verify_host`, valid values are `enabled` and `disabled`. When specifying values for attributes for `ssl_trace` and `ssl_debug_trace`, valid values are `true` and `false`.

Table 23   TIBHAWK_AMI Element Attributes

Attribute	Type	Description
cmName cmLedgerName	string	IMPLIED. These attributes together form an RVCM (TIBCO Rendezvous Certified Message) transport. All methods in this microagent that use RVCM use this RVCM transport. cmName is the RVCM reusable name which represents a persistent correspondent. If cmLedgerName is specified, it must be a valid file name. The cmLedgerName attribute is ignored if cmName is not specified.
rvAdvisoryTraceLevel	enume ration	IMPLIED. One of: ERROR, WARN or INFO. Specifies the lowest level of TIBCO Rendezvous advisory messages to be tracked by the microagent. For example, if WARN is specified, then all WARN or ERROR advisory messages are tracked by this microagent. The default value WARN. If an advisory message not tracked by the microagent is received, it is sent to the microagent standard output if of class WARN or ERROR and discarded if of class INFO.
rvAdvisoryForward	string	IMPLIED. Either true or false. Specifies whether a tracked advisory message must be sent to the TIBCO HAWK Agent as an unsolicited message. The default is false, which means tracked advisory messages are logged to the adapter's log file.
ftGroupName	string	IMPLIED. Specifies the name of the TIBCO Rendezvous fault tolerance group. This attribute is maintained for backward compatibility only and is not used.

Table 23 TIBHAWK_AMI Element Attributes

Attribute	Type	Description
ftWeight ftActiveGoal ftHeartbeatInterval ftPrepInterval ftActiveInterval	string	IMPLIED. These attributes together define TIBCO Rendezvous fault tolerance parameters. The default values are: • ftWeight 100. • ftActiveGoal 1 • ftHeartbeatInterval 30 seconds • ftPrepInterval 60 seconds These attributes are used only if the ftGroupName is specified. These attributes are maintained for backward compatibility only and are not used.
traceFile traceFileMaxSize traceFileMaxNumber traceLevel	string	IMPLIED. These attributes together specify the tracing parameters. If not defined, tracing is sent to stdout. traceFile. Absolute pathname of the trace file. traceFileMaxSize. Maximum size (in KB) the trace file is allowed to grow. traceFileMaxNumber. Maximum number of roll over trace files to be maintained. traceLevel. Starting trace level.

At least one method must be defined for the microagent.

Table 24 microagent Element Attributes

Attribute	Type	Description
name	string	REQUIRED. Name for the microagent.
help	string	IMPLIED. Help text describing the microagent. Each `help` attribute is paired with a `name` attribute. If not defined, the `name` attribute value is used as the help text.

Table 24   microagent Element Attributes

Attribute	Type	Description
displayName	string	IMPLIED. Name that is displayed in the TIBCO Hawk Display.
rvService, rvNetwork, and rvDaemon or ems_url ems_uid ems_pw ssl_trace ssl_debug_trace ssl_vendor ssl_trusted ssl_expected_hostname ssl_identity ssl_private_key ssl_password ssl_verify_hostname ssl_verify_host ssl_cipher	string	IMPLIED. These attributes together configure the transport parameters for the microagent. If any of the attributes are specified differently from those specified for the TIBHAWK_AMI element, a new rvd transport is created and all the methods that belong to this microagent use the new transport. If the attributes are not specified, the values specified for the corresponding attributes associated with the TIBHAWK_AMI element are used. When specifying values for attributes `ssl_verify_hostname` and `ssl_verify_host`, valid values are `enabled` and `disabled`. When specifying values for attributes for `ssl_trace` and `ssl_debug_trace`, valid values are `true` and `false`.

Table 24 microagent Element Attributes

Attribute	Type	Description
cmName cmLedgerName	string	IMPLIED. These attributes together form an RVCM (TIBCO Rendezvous Certified Message) transport. All methods in this microagent that use RVCM use the RVCM transport. cmName is the RVCM reusable name which represents a persistent correspondent. If cmLedgerName is specified, it must be a valid file name. The cmLedgerName attribute is ignored if not specified.
maxThreads	string	IMPLIED. Defines the maximum number of threads a microagent can have to perform method invocations in parallel. The default value is 1. This attribute is maintained for backward compatibility only and is not used.
traceFile traceFileMaxSize traceFileMaxNumber traceLevel	string	IMPLIED. These attributes together specify the tracing parameters for this microagent. If not defined, tracing is sent to stdout. The attributes override the corresponding attributes associated with the TIBHAWK_AMI element. • traceFile. Absolute pathname of the trace file. • traceFileMaxSize. Maximum size (in KB) the trace file is allowed to grow. • traceFileMaxNumber. Maximum number of roll over trace files to be maintained. • traceLevel. Starting trace level. These attributes are maintained for backward compatibility only and are not used.

If a method has parameters, the method must have at least one input or constant parameter. If a method has a return value, it must have at least one output parameter.

Table 25   method Element Attributes

Attribute	Type	Description
name	string	REQUIRED. The method name.
help	string	IMPLIED. Help text describing the method. Each `help` attribute is paired with a `name` attribute. If not defined, the `name` attribute value is used as the help text.
index	string	IMPLIED. If a method returns more than one row of information, the index attribute must be specified with the name of the output parameter which can uniquely identify each row. If multiple output parameters are required to uniquely identify a row (that is, a composite index), the index attribute must be specified with parameter names separated by commas.
subject	string	IMPLIED. Specifies the subject to subscribe or to publish. For a subscription subject, the subject name segments may contain "*", and the last segment may be ">". The attribute is required if the first input parameter is not named **Subject** or if the method publishes RVCM messages.
timeout	string	IMPLIED. The `timeout` attribute is meaningful (and required) only for RPC methods. If the timeout interval expires and no reply is received, the first return `timeout` parameter is set to true. Note that the thread executing the RPC is blocked while waiting for the reply. If a microagent expects multiple simultaneous RPC calls, the `maxThreads` attribute for the microagent must be adjusted higher accordingly.

Table 25   method Element Attributes

Attribute	Type	Description
heartbeatInterval	string	IMPLIED The `heartbeatInterval` attribute (in seconds) is meaningful only for `publisher` methods. If this `heartbeatInterval` attribute exists, in additional to the normal behavior, at every heartbeat interval, a message is published. Note that this kind of method cannot have inputParameters; only constant Parameters can be used.
handlerType	enumeration	REQUIRED. One of: P, SU, RPC, DS, T or S Specifies how a method should be handled: • P. Publishers sending messages. • SU. Subscribers receiving messages. • RPC. RPC client sending messages, then waiting for the reply. • DS. Used for the factory provided methods `tibrvlisten`, `tibrvecho` and `dynamicSubscribe`. • T. Used for the factory provided method `timeoutTest` only. • S. Used for factory provided system methods, which include `reviewLedger` and `shutdown`. For subscriber and RPC methods (with `handlerType SU` and `RPC` respectively) the specified fields must have a one to one correspondence with the method's return (output) parameters. For publisher methods (with `handlerType P` and `RPC` respectively), the message publish subject and all fields must be specified in the message.
useCM	string	IMPLIED. If set to true, the method is an RVCM publisher or subscriber. If not specified, RVCM is not used.

Table 25   method Element Attributes

Attribute	Type	Description
cmListenerList	string	IMPLIED. Only meaningful if the `useCM` attribute is set to `true` and the method `handlerType` value is `P` (is a publisher method). The cmListenerList attribute specifies a list of `cmName` names in the form: *<name1>, <name2>, <name3>, ...*

For methods with `handlerType` SU, P, or RPC, if the first `inputParameter` is named **Subject**, it is used as the subject for subscription or publish. (Note: In this case, the `subject` attribute for the method should not be defined.) This allows subjects to be specified at runtime.

For each parameter, you can define either one or more acceptable choices in a `valueChoices` element, or one or more legal choices in a `legalValueChoices` element. If one of these elements is included in the parameter definition, users can select method argument values from a dropdown list in TIBCO Hawk Display. If neither is included, the corresponding method argument is represented by an editable field.

Table 26   inputParameter Element Attributes

Attribute	Type	Description
name	string	REQUIRED. Name for the input parameter.
help	string	IMPLIED. Help text describing the input parameter. Each `help` attribute is paired with a `name` attribute. If not defined, the `name` attribute value is used as the help text.
type	enumeration	REQUIRED. The supported datatypes are: BOOL, F32, F64, I8, I16, I32, I64, U8, U16, U32, STRING, XML
fieldName	string	IMPLIED. Must be in the form of F1[.F2[...[.FN]]] where F1 - FN are the message field names in each nested level. If the `fieldName` attribute is not specified, it is assumed to be the same as the `name` attribute. See Specifying Field Names in Parameters for details.

Table 26   inputParameter Element Attributes

Attribute	Type	Description
pattern	string	IMPLIED. Specifies a pattern to convert string data to a desired form. The pattern syntax is based on the `java.text.MessageFormat` class specification.
		For example, a pattern `{0, number}` KB could be used to convert a string `123  KB` to a number `123` (not a string). If the pattern in the example is `{0} KB`, a string of `123` is extracted.
		Note that only the first argument placeholder (that is, `{0..}`) is used to extract the value for the parameter and others are ignored.

An input parameter may have an optional element, `valueChoices` or `legalValueChoices` but not both.

The `valueChoices` element defines some acceptable values for an `inputParameter` element. These values are included in the dropdown list for method arguments in TIBCO Hawk Display. Users can also type a value not in the list. This element is optional, and can only be used if the `legalValueChoices` element is not specified

Table 27   valueChoices Element Attribute

Attribute	Type	Description
value	string	IMPLIED. Defines suggested values. The values are separated by comma characters. For example: 0, 30, 45, 60, 90

The `legalValueChoices` element defines the only possible values that can be specified in an `inputParameter` method. This element is optional, and can only be used if `valueChoices` is not specified. Use this element to limit users to specific values, which are included in the dropdown list for method arguments in TIBCO Hawk Display. Users can only specify values included in the list.

Table 28   legalValueChoices Element Attribute

Attribute	Type	Description
value	string	IMPLIED. Defines legal values only. The values are separated by comma characters. For example: 0, 30, 45, 60, 90

Constant parameters are not exposed to the TIBCO Hawk Agent or TIBCO Hawk Display. Constant parameter values are passed to the msghma method internally. This type of parameters are used when some fixed constant values need to be passed to msghma methods.

Constant parameters are used to fill in constant value fields in the message.

Table 29   constantParameter Element Attributes

Attribute	Type	Description
name	string	REQUIRED. Name for the constant parameter.
help	string	IMPLIED. Help text describing the input parameter. Each `help` attribute is paired with a `name` attribute. If not defined, the `name` attribute value is used as the help text.
type	enumeration	REQUIRED. The supported datatypes are: BOOL, F32, F64, I8, I16, I32, I64, U8, U16, U32, STRING, XML
fieldName	string	IMPLIED. Must be in the form of F1[.F2[...[.FN]]] where F1 - FN are the message field names in each nested level.
		If the `fieldName` attribute is not specified, it is assumed to be the same as the `name` attribute.
		See Specifying Field Names in Parameters for details.

For subscriber methods (with method `handlerType` SU or DS), there are three special outputParameter names:

- **Subscription Subject**. Returns the subject used in the subscription. It can contain wild card characters.

- **Message Subject**. Returns the actual subject used by the publisher to publish the received message.

- **Reply Subject**. Returns the reply subject of the received message. The reply subject is blank if the sender does not specify a reply subject

For RPC methods (with method `handlerType RPC`), there is a special
`outputParameter` with the name **Timeout** and type `BOOL`. It is required and must
be the first `outputParameter`. It is used to indicate whether a timeout has
occurred while waiting for the reply.

Table 30   outputParameter Element Attributes

Attribute	Type	Description
name	string	REQUIRED. Name for the output parameter.
help	string	IMPLIED. Help text describing the input parameter. Each `help` attribute is paired with a `name` attribute. If not defined, the `name` attribute value is used as the help text.
type	enume ration	REQUIRED. The datatypes follow the TIBCO Rendezvous 6.x datatypes convention: BOOL, F32, F64, I8, I16, I32, I64, U8, U16, U32, STRING
fieldName	string	IMPLIED. Must be in the form of F1[.F2[...[.FN]]] where F1 - FN are the message field names in each nested level. If the `fieldName` attribute is not specified, it is assumed to be the same as the `name` attribute. See Specifying Field Names in Parameters for details.
pattern	string	IMPLIED. Specifies a pattern to convert string data to a desired form. The pattern syntax is based on the `java.text.MessageFormat` class specification. For example, a pattern {0, number} KB could be used to convert a string 123 KB to a number 123 (not a string). If the pattern in the example is {0} KB, a string of 123 is extracted. Note that only the first argument placeholder (that is, {0..}) is used to extract the value for the parameter and others are ignored.

Specifying Field Names in Parameters

The `fieldName` attribute in an `inputParameter`, `outputParameter`, or `constantParameter` element can specify a single field name, nested fields, repeating fields or arrays.

The following example shows how to specify a single field name:

```
<constantParameter
    name = "A first level field"
    fieldName = "STR_FIELD"
    type = "STRING"
    value = "test"
>
</constantParameter>
```

A nested field must be in the form of F1[.F2[...[.FN]]] where F1 - FN are the message field names in each nested level. For example, a message has a field NESTED_FIELD, which is another message and that message has a field L2. For a parameter corresponding to the value of the field L3 in NESTED_FIELD.L2, its `fieldName` attribute should be:

```
<constantParameter
    name = "A nested field"
    fieldName = "NESTED_FIELD.L2.L3"
    type = "I8"
    value = "1"
    >
</constantParameter>
```

If a field is a repeating field, the instance number (starting from 1) must also be specified using the notation of {*instance number*} appended after the field name. For example, NESTED_FIELD.L2.L3R{1} means the field L3R belongs to the first instance of the repeating field L3R of NESTED_FIELD.L2. In the second example, NESTED_FIELD.L2.L3R{2} means the field L3R belongs to the second instance of the repeating field L3R of NESTED_FIELD.L2.

```
<constantParameter
    name = "First repeating field L3R in L2"
    fieldName = "NESTED_FIELD.L2.L3R{1}"
    type = "I16"
    value = "2"
>
</constantParameter>
<inputParameter
    name = "Second repeating field L3R in L2"
    fieldName = "NESTED_FIELD.L2.L3R{2}"
    type = "I64"
>
</inputParameter>
```

If a field is an array, a parameter can be used to represent only one element in an array. The element index number (starting from 0) must be specified using the notation of [*index number*] appended after the field name. For example, NESTED_FIELD.L2.L3A[0] means the first array element in field L3A where L3A is a field of L2 and L2 is field of NESTED_FIELD. In the second example, NESTED_FIELD.L2.L3A[1] means the second array element in field L3A where L3A is a field of L2 and L2 is field of NESTED_FIELD.

```
<constantParameter
    name = "First array element of L3A in L2"
    fieldName = "NESTED_FIELD.L2.L3A[0]"
    type = "U32"
    value = "4"
>
</constantParameter>
<inputParameter
    name = "Second array element of L3A in L2"
    fieldName = "NESTED_FIELD.L2.L3A[1]"
    type = "U8"
>
</inputParameter>
```

Note that the type of "array of TibrvMsg" is not supported and a fieldName such as F1.F2[2].F3 is not valid. When repeating fields or array fields appear in the input or constant parameters (for sending), the sequence numbers or the index numbers must be in order that is., no skipping is allowed.

Appendix A **Program Internationalization**

This appendix describes how to change encoding in TIBCO Hawk.

TIBCO Hawk Console does not support internationalization.

Topics

Using Japanese Characters

The information in this section applies to configurations using Japanese characters on Microsoft Windows platforms.

Japanese Characters in Agents and Repositories

When TIBCO Hawk Display runs on an English machine, it cannot discover or display agents and repositories that have data containing Japanese characters. Therefore, if you have a mixed environment of Japanese and non-Japanese machines, you must run TIBCO Hawk Display on a Japanese machine. This allows TIBCO Hawk Display to see all the machines and the repositories.

It is recommended that the UTF-8 encoding be used throughout in this type of mixed environment.

Japanese Characters in External Variables File

If your external variables file contains Japanese characters, you must use the included `native2ascii` utility to convert the file *before starting the agent*.

> The `native2ascii` utility is in the JDK bin directory. The utility is not available in the JRE.

To convert the external variables file:

1. Open a command prompt window.

2. Run the `native2ascii` utility, providing the input file and output file as arguments. For example, to convert an external variables file named `abc.var` to `xyz.var`, type:

   `native2ascii abc.var xyz.var`

3. Before starting the agent, specify `xyz.var` as a value to the `-variables` option in the Agent's configuration file.

> Rulebase names may contain only numeric digits, underscore (_), hyphen (-), or a letter as defined by the UNICODE 2.0 standard. The latest version of the UNICODE specification can be found at www.unicode.org/ucd.

Changing the Encoding

The default encoding used by TIBCO Hawk is UTF-8. This encoding works for all locales and should not need to be changed.

The character encoding used by TIBCO Hawk on Microsoft Windows is configured by the *Codepage* and *Character Encoding* configuration parameters in the Configuration Utility.

- The Codepage configuration option indicates the desired character encoding to be used by the HMA. This value is specified using Microsoft Windows code page values.

- The Character Encoding configuration option indicates the desired character encoding to be used by the Agent, Display, and Event Service. This value is specified using the Java Character Encoding identifier.

- These two configuration options must be compatible. Refer to the *TIBCO Hawk Installation, Configuration, and Administration* manual for complete details on the Codepage and Character Encoding configuration parameters.

Appendix B   **Troubleshooting and Frequently Asked Questions**

This appendix presents some common problems and error conditions encountered during TIBCO Hawk installation and describes how to resolve them.

Topics

Troubleshooting

This section lists possible installation errors on Microsoft Windows along with solutions.

Packet Fragmentation Errors with Multicast

You may encounter packet fragmentation errors when using multicast on Microsoft Windows XP. This is due to a known issue in Microsoft Windows.

You may need to apply a Microsoft hot fix. Information about obtaining the fix is in Microsoft Knowledge Base Article Q319627.

Error Message

A message similar to the following appears in the Microsoft Windows Event Log:

```
2002 Sep 13 09:01:31:035 GMT -8 HawkHMA Info [Application]
HWKHMA-007012 PdhGetFormattedCounterValue for object PhysicalDisk
and instance _Total and counter Split IO/Sec failed with error
0x800007D8.
```

Code	Text
0x8000078D8	A counter with a negative value was detected.
0x8000078D6	A counter with a negative denominator was detected.

The Microsoft Windows Performance API is driven by a set of Microsoft Windows and third-party extension DLLs, which implement the various performance objects and associated counters. These extension DLLs may occasionally return counter values that cause mathematical errors in performance statistics calculations. These messages are reported by the Microsoft Windows Performance API.

These messages are reported by HMA for information purposes and do not have any adverse effect on functionality. They are not caused by HMA. They are caused by bugs or design flaws in the associated extension DLL.

TIBCO Hawk Services Fail to Start After Installation

After you have completed TIBCO Hawk installation on Microsoft Windows, if none of the TIBCO Hawk services start, use the Event Viewer to check for error messages related to the TIBCO Hawk services in the Application Log.

Troubleshooting and FAQs

The following sections section provides answers to some commonly asked questions about TIBCO Hawk:

Alerts

How can I isolate the alerts for one agent into their own log file?

You can track information specific to one agent, microagent or application by writing this information to a log file in an action that is part of a rule. To do this, set up a rule that retrieves specific information (such as free disk space), give it a test that always evaluates to true, and write the important information to a log file. For example, you might create a rule with the data source `Performance: LogicalDisk: percent free Space` (Microsoft Windows) or `file system: getByPartition: percent free` (Unix) to be collected every five minutes. The rule might have a test such as `percent free != -1` which would always be true. The test might have an action such as echo `logfile.dat` (which would be prefixed in Microsoft Windows with cmd /c). This would append information on free disk space to a specific log file.

Platform: Not Specified

Version: All

Why did the log parser fail?

If TIBCO Hawk alert or notification messages contain line feed characters, a log file parser cannot properly evaluate the TIBCO Hawk Event Service file, `Event.dat`. The line feed characters are usually derived from parameter variable substitution from the following microagents:

- `Logfile:onNewLine`
- `${nextLine}`

- `Custom::executeForString|Number, ${returnString|Number}`

Avoid using line feed characters in alert or notification messages. If line feed characters cannot be avoided, use the Console API to evaluate alerts and notifications containing line-feeds. You can also use the Hawk 4.1 Event Service microagents in lieu of directly reading `Event.dat`.

Configuring Agents

Do I need to run both the HMA and the agent?

Yes, the HMA provides system-specific microagents that could be used in monitoring system resources such as cpu utilization, disk space usage, or process instance count. The agent depends on HMA and other microagents to provide its own set of non-platform-specific microagents which allows the execution of custom scripts or programs and log file monitoring.

Platform: Not Specified

Version: All

How do I notify someone if the agent dies?

Use event service and provide it with a script to send an e-mail (or page) to an administrator. When an agent's heartbeat is not received by the event service, it executes the script specified at start-up, providing it with two arguments (first argument being the hostname of the dead agent and the second argument being the dead agent's IP address).You may create the script to accept one or both arguments.

Platform: Not Specified

Version: All

How can I create my own microagents?

By Instrumenting your application with TIBCO Hawk Application Management Interface (AMI) API in your application.

Refer to the TIBCO Hawk *Programmer's Guide* for further details. The sample AMI API code provided in *HAWK_HOME*/`examples/ami_api` may help you in understanding the concepts and getting started.

Platform: Not Specified

Version: All

Error messages

When I try to open a Solaris rulebase on a Microsoft Windows machine, I get the message "Invalid Microagent ... Unable to construct Test Editor"

Some rulebases are platform-independent whereas some rulebases are platform-independent.

When editing a rulebase, all of the microagents used within that rulebase must be loaded locally in the agent (or the repository's host agent) used as the editing platform. Otherwise, the agent does not have access to the necessary descriptors.

Platform: Not Specified

Version: All

When you open a rulebase loaded by an agent, you can look at all of its rules. However, you cannot choose a data source that is unavailable to that agent, and you cannot edit tests that rely on unavailable data sources. Why?

If you want to examine or change rules whose data sources are not available from the machine on which you are using the TIBCO Hawk Display, interact with an agent located on a machine on which the data sources are available. For example, if you have Microsoft Windows and Solaris machines in your network and you want to examine a Solaris rulebase from a Microsoft Windows machine, select an agent running on a Solaris machine, choose 'Get RuleBases', and examine or change the rules there.

Platform: Not Specified

Version: All

Why is the Application Event Log full of performance DLL errors?

Under certain conditions the TIBCO Hawk Performance Microagent can cause the Application Event Log to fill rapidly with messages similar to:

```
"The open procedure for service "htpps4.1" in DLL
e:\netscape\server\bin\htps\nsctr.dll failed. Performance data for
this service is not available. Status code returns DWORD0 1008".
```

This error occurs whenever a Microsoft Windows service's performance DLL (service `htpps4.1` in this case) fails to load. Each failed load also causes the application (Hawk HMA) to leak memory. The problem lies in the Microsoft Windows performance counter libraries. To fix this problem, rename the DLL listed in the error message.

Platform: Microsoft Windows 2000

Version: All

The Microsoft Windows Performance API reports errors regarding counter values that cause mathematical errors in performance statistics calculations.

The Microsoft Windows Performance API is driven by a set of Microsoft Windows and third-party extension DLLs, which implement the various performance objects and associated counters. These extension DLLs may occasionally return counter values that cause mathematical errors in performance statistics calculations. These errors are reported by the Microsoft Windows Performance API. For example:

Error Code	Error Text
0x8000078D8	A counter with a negative value was detected.
0x8000078D6	A counter with a negative denominator was detected.

These errors are reported by HMA for information purposes. The errors are not caused by HMA. They are caused by bugs or design flaws in the associated extension DLL.

Platform: Microsoft Windows

Version: All

Why do I get an error when I call a method of my instrumented application?

Check that the message descriptor in your describeMethods return messages that match up exactly with the messages returned by your methods. If the identifiers do not match, an error is returned. See the TIBCO Hawk *Programmer's Guide* for further details.

Platform: Not Specified

Version: All

What does a NoDataSource error mean?

This type of error means that a rule attempted to obtain information from a data source that did not exist at the time of the rule evaluation and the specified information could not be obtained.

- If the data source is a HMA microagent method, check to see that the HMA process is running. When the operating system starts, make sure your HMA process starts before your TIBCO Hawk agent process.

  If the HMA process is running, there may be some reason why the communication between the agent and the HMA is upset.

- If the data source is a log file, check to see that the log file has not been renamed or moved.

- If the data source is an instrumented application, check to see if the application is running.

Rules that operate on applications instrumented with AMI can only work when the application is running.

Platform: Not Specified

Version: All

Command Lines and Process Names

I can't use a quoted string as a command argument in UNIX.

On UNIX, quoted strings with embedded blanks cannot be passed as command arguments to UNIX shell scripts by means of the `Custom::execute`, `Custom::executeForNumber` and `Custom::executeForString` methods. The Java Virtual Machine (JVM) parses these strings as blank delimited tokens and passes them as separate arguments.

To work around this, utilize a shell script as the executable. Pass all arguments that do not contain spaces first. Then use the "shift" shell command and a wildcard argument variable, "$*", to pass the space containing argument at the end.

I'm trying to execute a command line using custom: execute, and it won't work -- but when I shorten the command line it works. What should I do?

This is a known problem because some operating system shells limit the size of command lines that can be passed to them. To get around this problem, write a script with the long command line, and call that script from the `custom:execute` method.

Platform: Not Specified

Version: All

Why can't I match long process names?

When using the `process:getProcess` method (UNIX) or `performance: ProcessCount method` (Microsoft Windows), you may find that process names longer than a certain length cannot be matched exactly. This limit on process names comes from the operating system functions used to collect this information.

There are several workarounds to the limitation of process names:

- Only specify process names that are less than 14 characters.

- Use regular expressions to match process names. For example, to find process `abcdefghijklmn` you might search for the regular expression `abcdef.*`.

- Invoke the `Process::getProcess` method with no arguments to view the supported process name length.

- Use the `Process::getIntancesByCommand` method to match on the process's Command string.

- Use the Process microagent.

The full command is not returned by my operating system. What do I do?

In the `Process::getProcess` and Process::getInstanceCountbyCommand methods, the full command may not be returned. The command is truncated to between 55 and 80 characters, depending upon the operating system, and contains the same information as the `ps -ef` utility. To get the full command, use a script that utilizes the UCB `ps` utility (for example, `/usr/ucb/ps -auxww | grep -c mycommand`) in conjunction with `Custom::executeForNumber()`.

Methods

When I start a GUI process with the method `custom:execute` **in the Microsoft Windows environment, the process only runs in the background. How can I cause such a process to run in the foreground?**

To start a process you want to run in the foreground, create a utility that the TIBCO Hawk agent can invoke with `custom:execute` and pass it the process you want to execute in the foreground. This utility is responsible for setting all the permissions required to start and display the GUI application.

Custom: execute run in the foreground on a system wide basis by changing how the TIBCO Hawk agent service is configured. Follow these steps:

1. Select Start--Settings--Control Panel, then double-click Services.

2. Choose the TIBCO Hawk service and click Startup.

3. In the Service window that appears, click the System Account radio button in the Log On As panel.

4. Check the Allow Service to Interact with Desktop check box.

All processes spawned by the TIBCO Hawk agent are now in the foreground.

Platform: Not Specified

Version: All

I call a script using the method
`custom:executeForNumber(executeForString)`**, but the microagent terminates the script before it is finished because it takes too long. What should I do?**

Here are a few possibilities. Note that your script has to return within 10 seconds.

- If the script collects information over an interval of time, you can split the functionality of the script into multiple scripts and call them using a set of actions with increasing escalation periods.

- The script can spawn an application instrumented with AMI that collects the information and returns it to the rulebase asynchronously. You can then create a rule that responds to the asynchronous information.

- The script can spawn a process that writes information to a log file, and you can create a rule that responds to additions to the log file.

Platform: Not Specified

Version: All

Why do I get a negative ID Process or ID Thread number?

When subscribing to Process/Thread methods on the performance microagent, the ID Process or ID Thread column may display a negative number other than -1. This is not an error; the negative number signifies that this particular instance of Process/Thread no longer exists and this row is taken out in the next subscription interval. In this case, -1 as a Process ID is reserved for Process instance _Total, and -1 as a Thread ID is resolved for Thread instance _Total/_Total.

Rulebases

How many rules can you have in a rulebase? How many rulebases can you load onto an agent? How many alerts can you generate?

There is no theoretical limit to the number of rules you can have in a rulebase or the number of rulebases a TIBCO Hawk agent can process. However, you may experience a practical limit in terms of memory use, speed, and operating system limitations such as the maximum number of open files per process.

Platform: Not Specified

Version: All

If I use one rulebase across many computers, can I disable some rules on some computers?

You might think that turning on and off rules would be a good way to adapt a rulebase for use on many slightly different computers. However, it presents a problem. If you could disable rules on individual agents, any rulebases distributed across the network would remove those differences, because the rulebases would still have the same names.

One of the most important parts of planning your monitoring effort is deciding how rules must be organized into rulebases and how rulebases are to be distributed over your network. Rulebases can range from very general (for example, all_computers) to very specific (for example, important_app). You might have a set of rulebases you can mix and match to meet the specific needs on each computer.

So if you need to tailor rulebases to specific computers, we suggest that you first look at what functions those computers are performing and how those functions can be organized into rulebase distributions. If you find that you have completely individual needs for each computer, the best approach is to design a rulebase with a unique name that corresponds to that computer.

Platform: Not Specified

Version: All

What rulebases are available with the TIBCO Hawk monitoring software?

The TIBCO Hawk software provides OS-specific rulebases for the platforms supported by it, as well as agent and RV rulebases. You can find all these rulebases stored under *HAWK_HOME*/examples/rulebases where *HAWK_HOME* is the directory where the TIBCO Hawk software is installed.

Platform: Not Specified

Version: All

Why does the Posted Condition display as `PostedConditionExist`?

In the Rulebase Test Editor, if `PostedCondition` is specified as `${Posted.x} > 0` and saved, it is displayed by the Test editor as `PostedConditionExist` when you reopen the rulebase. Both of these represent the same expression. Similarly, `${Posted.x} == 0` is displayed as `!PostedConditionExist`.

When I use the external variable such as ${External.testvar}in rulebase action type execute or `method:Custom:Execute` on Microsoft Windows platform, while variable file is specified as for example:

testvar=c:\temp\abc.bat, it does not work. What's wrong?

In the Microsoft Windows environment, when you specify the variable file which contains a directory path, instead of specifying

`testvar=c:\temp\abc.bat`

you should use forward slash or another backward slash to escape the '\', such as:

`testvar=c:/temp/abc.bat`

or

`testvar=c:\\temp\\abc.bat`

And this would solve the problem.

Platform: Windows

WebConsole

Why do I get the following exception when I start TIBCO Hawk WebConsole with the persistence mode set to false in web.xml file?

`org.h2.jdbc.JdbcSQLException: Connection is broken`

To resolve this issue, comment the <Resource> tag that points to H2 database from `context.xml` file in *HAWK_HOME*/webconsole/tomcat/webapps/hawkwebconsole/META-INF folder to work in no database mode.

Appendix C   **Interpreting TIBCO Hawk Log Files**

This appendix describes the types of log files that can be created on machines running TIBCO Hawk components. Representative log file entries are shown, along with an explanation of the rolling log file mechanism.

This appendix interprets log files based on the old logging mechanism, which can be enabled using the property `hawk.logging.4xcompatmode=true` in tra files of respective components that is, Hawk Agent, Hawk Display, Hawk Event Service.

TIBCO HMA logging is not log4j enabled as explained here.

Topics

Overview

TIBCO Hawk log files record specific TIBCO Hawk events as they occur to provide a permanent record of changes and to help you troubleshoot problems. This feature is built in and cannot be disabled. However, you can specify where and how log files are written.

Depending on installed components, the following types of log files are created on each machine running a TIBCO Hawk product component:

- `Hawk.log`, which records information about the TIBCO Hawk agent

- `Display.log`, which records information about the TIBCO Hawk Display application

- `Event.log`, which records information about the TIBCO Hawk Event Service.

- `Hawk_<microagent>.log` and `Hawk_HMA.log` , which records information about microagent activities

On Microsoft Windows systems you can have the log entries written to the Microsoft Windows application event log rather than a separate log file. In that case, select the Application Log in Microsoft Windows Event Viewer to view log entries.

By default, log files are saved in your *CONFIG_FOLDER*/`logs` directory, maximum file size is 1024 kilobytes, and the maximum number of files is five. You can modify these settings by specifying `LogService` agent startup parameters. For more information, see *TIBCO Hawk Installation and Configuration*.

Interpreting the TIBCO Hawk Agent Log

The TIBCO Hawk Agent log, `Hawk.log`, includes information about:

- Starting or stopping microagents and AMI applications

- Managing rulebases (loading, unloading, saving, deleting, using rulebases)

- Starting and stopping subscriptions to microagent methods using TIBCO Hawk Display

Following are some representative lines in an agent log file:

```
INFO : Configured Console RV Transport =[ 7474 ; tcp:7474] ## Fri
Aug 17 13:11:16 IST 2018 ##
INFO : Configured AMI RV Transport =[] ## Fri Aug 17 13:11:16 IST
2018 ##
INFO : Initialized Agent RVD Transport with service=7474,
network=;, daemon=tcp:7474 ## Fri Aug 17 13:11:21 IST 2018 ##
INFO : Creating AmiTibrvService using primary
session=TibrvRvdTransport[service=7474,network=;,daemon=tcp:7474]
## Fri Aug 17 13:11:21 IST 2018 ##
INFO : Loading microagent from class
COM.TIBCO.hawk.agent.msghma.MsgHma ## Fri Aug 17 13:11:21 IST 2018
##
INFO : Adding MicroAgent: COM.TIBCO.hawk.microagent.Messaging:0 ##
Fri Aug 17 13:11:21 IST 2018 ##
INFO : Loading microagent from class
COM.TIBCO.hawk.microagent.self.SelfMicroAgent ## Fri Aug 17
13:11:21 IST 2018 ##
```

Interpreting the TIBCO Hawk Display Log

The TIBCO Hawk Display log, `Display.log`, includes information about:

- Agent activation and deactivation

- Agent alert state changes

- Actions taken by TIBCO Hawk Display, such as purging duplicate and cleared alerts

Do not rely on this log as an auditing tool for TIBCO Hawk agents. Although the Display log tracks some agent state changes, it is maintained only when the TIBCO Hawk Display application is running. Changes in agent state not detected by TIBCO Hawk Display are excluded from the log file. For a complete record of agent states, view the TIBCO Hawk Event Service data files. For more information, see Interpreting the TIBCO Hawk Event Service Log.

```
15 Jan 2013 11:14:53,850 INFO main
[COM.TIBCO.hawk.display.HawkDisplay] - Initialized log service at

15 Jan 2013 11:14:53,850 INFO main
[COM.TIBCO.hawk.display.HawkDisplay] - Java Virtual Machine(JVM)
version - 1.8.0_40, vendor - Oracle Corporation

15 Jan 2013 11:14:53,866 INFO main
[COM.TIBCO.hawk.display.HawkResources] - User Home Directory is
C:\Users\ngoyal

15 Jan 2013 11:14:53,866 INFO main
[COM.TIBCO.hawk.display.HawkResources] - Resources Directory is
C:/ProgramData/hawkv16/tibco/cfgmgmt/hawk\resource\

15 Jan 2013 11:14:53,897 ERROR main
[COM.TIBCO.hawk.display.HawkResources] - Unsupported resources
version: 6.0.0 ...

15 Jan 2013 11:14:53,897 INFO main
[COM.TIBCO.hawk.display.ImageIconLoader] - Image Directory is
jar:file:/C:/hawkv16/hawk/6.0/lib/display.jar!/COM/TIBCO/hawk/disp
lay/images/

15 Jan 2013 11:14:55,051 INFO main
[COM.TIBCO.hawk.display.preference.HawkPreferenceBasePanel] -
Missing resources file
C:\Users\ngoyal\.hawk\HawkPreference.properties...
```

Interpreting the TIBCO Hawk Event Service Log

The TIBCO Hawk Event Service log, `Event.log`, includes information about starting and stopping the TIBCO Hawk Event Service. This type of file tracks the status of the Event Service itself, not the monitored events recorded in `Event.dat`.

Following are some representative lines in a typical event service log file.

```
INFO    01/15/2013 11:14:53 TIBCO Hawk HMA microagent
COM.TIBCO.hawk.hma.EventLog initialization completed successfully.

DEBUG   01/15/2013 11:14:58 [T00000001] CALLBACK      ENTERING
CALLBACK<_ami_TimerCallback>. TRACE<LINE:1227
FILE:ami_callbacks.c>.

DEBUG   01/15/2013 11:14:58 [T00000001] SUBSCRIPTION  SCANNED
TOTAL<0> EXPIRED<0> INVOKED<0> EXPIRATION FAILURES<0> INVOCATION
FAILURES<0>. TRACE<LINE:1325 FILE:ami_callbacks.c>.

DEBUG   01/15/2013 11:14:58 [T00000001] CALLBACK      EXITING
CALLBACK<_ami_TimerCallback>. TRACE<LINE:1331
FILE:ami_callbacks.c>.

DEBUG   01/15/2013 11:15:03 [T00000001] CALLBACK      ENTERING
CALLBACK<_ami_TimerCallback>. TRACE<LINE:1227
FILE:ami_callbacks.c>.

DEBUG   01/15/2013 11:15:03 [T00000001] SUBSCRIPTION  SCANNED
TOTAL<0> EXPIRED<0> INVOKED<0> EXPIRATION FAILURES<0> INVOCATION
FAILURES<0>. TRACE<LINE:1325 FILE:ami_callbacks.c>.

DEBUG   01/15/2013 11:15:03 [T00000001] CALLBACK      EXITING
CALLBACK<_ami_TimerCallback>. TRACE<LINE:1331
FILE:ami_callbacks.c>.

DEBUG   01/15/2013 11:15:08 [T00000001] CALLBACK      ENTERING
CALLBACK<_ami_TimerCallback>. TRACE<LINE:1227
FILE:ami_callbacks.c>.
```

Interpreting TIBCO Hawk HMA Log Files

The TIBCO Hawk HMA process creates log files for each microagent, such as `Hawk_Process.log`. The HMA process also creates a `Hawk_HMA.log` file for microagent-generic errors.

You control the size and level of detail in HMA log files using the `setTraceLevel()` and `setTraceParameters()` methods. These standard methods are included for default platform-specific microagents, and can be added when instrumenting an application using the AMI protocol.

Following are some representative lines in an HMA log file for the `Services` microagent:

```
INFO    08/17/2018 13:23:33 PROGRAM: NAME<TIBCO Hawk HMA>
VERSION<6.1.0_V9> DATE<August 15 2018>
INFO    08/17/2018 13:23:33
OPTIONS: Transport: RV
RV Session : Service : 7474 -- Network : ; -- Daemon : tcp:7474
Timeout : 10000
CodePage : 65001
TraceLevel : 7
Logdir : C:/ProgramData/tibco/cfgmgmt/hawk/logs -- LogMaxSize :
1024 -- Max Log Files : 5 -- Log Format : default
INFO    08/17/2018 13:23:33 TIBCO Hawk HMA microagent
COM.TIBCO.hawk.hma.Services initialization completed successfully.
```

The first line identifies the AMI application, and the second identifies command line options in effect. Remaining lines are warnings and errors generated by the AMI application.

Viewing Rolling Log Files

TIBCO Hawk uses a rolling log file mechanism to manage log file space. When one file has reached a maximum size, it is closed and renamed, and a new log file with the same name is started. When the number of files of a particular type exceeds a maximum, log entries roll over to reuse the oldest log file. Using the `LogService` agent startup parameters, you can specify the maximum size of a log file before the next file is started, and how many log files of each type to keep.

For example, Figure 11 shows the current TIBCO Hawk Event Service data file `Event.dat`, accompanied by five filled data files. In this example, the maximum size of a data file is set to 1024 K (it is shown rounded) and the maximum number of data files is set to five. When the current data file `Event.dat` is filled, the most recent data file (`Event1.dat`) is renamed to `Event2.dat`, and so on, rotating `Event5.dat` out of the list. Then the current data file, `Event.dat`, is renamed to `Event1.dat` and new messages are written to the new `Event.dat`.

Figure 2   Rolling File Mechanism

This is the Event Service data file, where event information is written.

Name	Date modified	Type
Event.dat	15-01-2013 16:17	DAT File
Event1.dat	15-01-2013 16:17	DAT File
Event2.dat	15-01-2013 16:16	DAT File

In this example, Event Service data file options are:
maximum number of files: 5
maximum file size: 1024 K

When Event.dat is full, this file drops out of the list and Event1.dat is renamed to Event2.dat

Appendix D **Error Codes**

This appendix lists error codes for all TIBCO Hawk components.

Topics
_____

Introduction

Error handling techniques provide an efficient way to track down the cause of a problem. The techniques allows you to track the state of a business object as it moves from its source to its destination. Error messages are standardized to a particular format. Each message is divided into a number of fields, which are explained in the next table:

Table 31   Error Handling Fields

Field Name	Explanation
MessageCode	Unique code for the message. For example: `HWKAMI-000001`
Description	Informative text message explaining the trace message.
Category	Name of the component which generated the message.
Role	Role of the trace message: Error — Unrecoverable errors. If an error of this type is not addressed, the component may continue with the next operation or may stop altogether. Warning — An abnormal condition was found, but it does not prevent processing to be performed. Special attention from an administrator is recommended. Information — A significant processing step was reached and it has been logged for tracking or auditing purposes. Debug — Debug mode should not be used unless directed by TIBCO Support.
Resolution	Suggested solution to resolve the problem.

Error Code List

HWKAMI-000001   Unable to create AMI error due to memory allocation failure.

Role   Error.

Category   TIBCO Hawk AMI API

Resolution   Insufficient memory available for process.

HWKAMI-000002   Insufficient memory to process request.

Role   Error

Category   TIBCO Hawk AMI API

Resolution   Insufficient memory available for process.

HWKAMI-000003   Specified AMI error handle is invalid.

Role   Error

Category   TIBCO Hawk AMI API

Resolution   Programming error. AMI error handle passed to function is null.

HWKAMI-000004   Specified AMI error handle is invalid or corrupted.

Role   Error

Category   TIBCO Hawk AMI API

Resolution   Programming error. AMI error handle passed to function is invalid, corrupted or was previously destroyed.

HWKAMI-000005   Required argument not specified (null).

Role   Error

Category   TIBCO Hawk AMI API

Resolution   Programming error. Null value specified for a required function argument.

HWKAMI-000006   Invalid argument specified.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. Invalid value specified for a function argument.

HWKAMI-000007   Specified AMI session handle <handle value (hex)> is invalid.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI session handle passed to function is null.

HWKAMI-000008   Specified AMI session handle <handle value (hex)> is invalid or corrupted.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI session handle passed to function is invalid, corrupted or was previously destroyed.

HWKAMI-000009   Specified AMI method handle <handle value (hex)> is invalid.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI method handle passed to function is null.

HWKAMI-000010   Specified AMI method handle <handle value (hex)> is invalid or corrupted.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI method handle passed to function is invalid, corrupted or was previously destroyed.

HWKAMI-000011   Specified AMI subscription handle <handle value (hex)> is invalid.

Role	Error
Category	TIBCO Hawk AMI API

Resolution	Programming error. AMI subscription handle passed to function is null.
HWKAMI-000012	Specified AMI subscription handle <handle value (hex)> is invalid or corrupted.
Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI subscription handle passed to function is invalid, corrupted or was previously destroyed.
HWKAMI-000013	Specified AMI parameter list handle <handle value (hex)> is invalid.
Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI parameter list handle passed to function is null.
HWKAMI-000014	Specified AMI parameter list handle <handle value (hex)> is invalid or corrupted.
Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI parameter list handle passed to function is invalid, corrupted or was previously destroyed.
HWKAMI-000015	Specified AMI parameter list handle <handle value (hex)> is invalid.
Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI parameter list handle passed to function is null.
HWKAMI-000016	Specified AMI parameter list handle <handle value (hex)> is invalid or corrupted.
Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI parameter list handle passed to function is invalid, corrupted or was previously destroyed.
HWKAMI-000017	Specified AMI parameter handle <handle value (hex)> is invalid.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI parameter handle passed to function is null.

HWKAMI-000018   Specified AMI parameter handle <handle value (hex)> is invalid or corrupted.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. AMI parameter handle passed to function is invalid, corrupted or was previously destroyed.

HWKAMI-000019   TIBCO Rendezvous error <error number> <error text>.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	The specified TIBCO Rendezvous error occurred. Refer to TIBCO Rendezvous documentation.

HWKAMI-000020   Received invocation request for unknown AMI method <method name>.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	An agent (e.g. TIBCO Hawk Agent or Console API application) has invoked a non-existent method on this AMI session. Contact TIBCO Support for assistance.

HWKAMI-000021   Method <method name> does not have a parameter named <parameter name>.

Role	Error
Category	TIBCO Hawk AMI API
Resolution	Programming error. Parameter function called for non-existent parameter. Check the method creation code to insure that the specified parameter was actually added to the method.

HWKAMI-000022   Failed to add object to linked list.

Role	Error

Category   TIBCO Hawk AMI API

Resolution Link list add failed due to insufficient memory available for process.

HWKAMI-000023   TIBCO Rendezvous error <error number> occurred attempting to get value for argument <argument name> of method <method name>. <error text>.

Role   Error

Category   TIBCO Hawk AMI API

Resolution The specified TIBCO Rendezvous error occurred when attempting to get argument value. Refer to TIBCO Rendezvous documentation.

HWKAMI-000024   <method name> invocation received for unknown subscription with context <context number> and reply subject <subject name>.

Role   Error

Category   TIBCO Hawk AMI API

Resolution Internal error. Contact TIBCO Support for assistance.

HWKAMI-000025   Attempt made to announce an AMI session which is already announced.

Role   Error

Category   TIBCO Hawk AMI API

Resolution Programming error. An AMI session cannot be announced while it is currently announced.

HWKAMI-000026   Attempt made to stop an AMI session which has not been announced.

Role   Error

Category   TIBCO Hawk AMI API

Resolution Programming error. An AMI session cannot be stopped if it is not currently announced.

HWKAMI-030101   Unable to request ami heartbeat: <com.tibco.rv.TibrvException>

Role   Error

Category   Application TIBCO Hawk Agent

Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030102	Unable request ami refresh: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030103	Unable to get CONTEXT field in AMI reply message for <microagent_id>, <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030104	COM.TIBCO.hawk.agent.mafactories.AmiMsgFormatError <error>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An AMI message is incorrectly formatted. Consult the documentation for the AMI instrumented application.
HWKAMI-030105	Unknown message type received for <microagent_id>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKAMI-030106	Received asynchronous data message for non-existent subscription in: <microagent id>
Role	Warning
Category	Application TIBCO Hawk Agent

Resolution	Contact TIBCO Support
HWKAMI-030107	Unable to process AMI reply message in: <microagent_id>, <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030109	Async method control msg reply contained non-empty RETURN field, Async method may have sent data to incorrect reply-subject
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAMI-030110	<microagent_id>:COM.TIBCO.hawk.agent.mafactories.AmiMsgFormatError <error>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An AMI message is incorrectly formatted. Contact the vendor of the AMI instrumented application.
HWKAMI-030111	<microagent_id>:COM.TIBCO.hawk.talon.MicroAgent
Resolution	Exception <error>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An error has been received from an AMI instrumented application. Consult the documentation for the AMI instrumented application.
HWKAMI-030112	Unable to stop subscription: <com.tibco.rv.TibrvException>
Role	Error

Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.

HWKAMI-030113 stopSubscription called for non-existent subscription: <subscription> in <microagent id>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAMI-030121 Method <name> returned tabular data but INDEX was not specified. Ignoring all but first RETURNS field

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An AMI instrumented application is returning tabular data for a method that was not described to return tabular data. Contact the vendor of the AMI instrumented application.

HWKAMI-030501 Multiple startup announcement messages received for <microagent id>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAMI-030502 Unable to process AMI announcement message: <com.tibco.rv.TibrvException>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.

HWKAMI-030503 Unable to process AMI announcement message: <ami_msg_format_error>

Role	Error

Category	Application TIBCO Hawk Agent
Resolution	An AMI message is incorrectly formatted. Contact the vendor of the AMI instrumented application.
HWKAMI-030504	Announced AMI application <application name> did not respond to first heartbeat request. Presumed dead.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAMI-030505	Discovering methods. AMI App: <name>, exception: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030506	Timed out waiting for reply to _describeMethods. AMI App: <name>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKAMI-030507	Unable to process AMI _describeMethods reply: <ami_msg_format_error>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An AMI message is incorrectly formatted. Contact the vendor of the AMI instrumented application.
HWKAMI-030508	Unable to process AMI _describeMethods reply: <exception>
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Contact TIBCO Support.
HWKAMI-030509	Creating AMI microagent <name>, <COM.TIBCO.hawk.talon.MicroAgentException>;
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKAMI-030510	Creating AMI microagent <name>, <com.tibco.rv.TibrvException>;
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKAMI-030511	Adding discovered AMI microagent <name>, <exception>;
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKAMI-030512	Unable to process AMI stop message: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030513	Unable to process AMI stop message: <ami_msg_format_error>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An AMI message is incorrectly formatted. Contact the vendor of the AMI instrumented application.

HWKAMI-030514   Unable to remove AMI microagent <name>,
                    <COM.TIBCO.hawk.talon.MicroAgentException>

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Contact TIBCO Support.

HWKAMI-030515   Unable to send announcement request: <com.tibco.rv.TibrvException>

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous
             documentation.

HWKAMI-030516   Internal error, AMI Microagent not successfully removed <name>

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Contact TIBCO Support.

HWKAMI-030517   Unable to remove <name>, <COM.TIBCO.hawk.talon.MicroAgentException>;

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Contact TIBCO Support.

HWKAMI-030519   Unable to process AMI unsolicited msg: <com.tibco.rv.TibrvException>

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous
             documentation.

HWKAMI-030520   Unable to process AMI unsolicited msg: <ami_msg_format_error>

Role   Error

Category	Application TIBCO Hawk Agent
Resolution	An AMI message is incorrectly formatted. Contact the vendor of the AMI instrumented application.
HWKAMI-030521	AmiTibrvService dispatch thread was interrupted: <java.io.InterruptedException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAMI-030522	AmiTibrvService dispatch thread caught exception: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A TIBCO Rendezvous error has occurred. Consult the TIBCO Rendezvous documentation.
HWKAMI-030523	AmiTibrvService dispatch thread caught exception: <java.lang.Throwable>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKHMA-001000	Unknown message template ID specified.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Internal error. Attempt to lookup an unknown error message. Contact TIBCO Support for assistance.
HWKHMA-001001	Trace function <function name> failed with error <error number> <error text>
Role	Error

Category	TIBCO Hawk HMA
Resolution	TIBCO Hawk HMA tracing function failed for the specified reason. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00100 2	PROGRAM: NAME <program name> VERSION <version> DATE <build date>
Role	Information
Category	TIBCO Hawk HMA
Resolution	Used to log product name, version and build date.
HWKHMA-00100 3	TIBCO Rendezvous error <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	The specified TIBCO Rendezvous error occurred. Refer to TIBCO Rendezvous documentation.
HWKHMA-00100 4	Insufficient memory to process request.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available for process.
HWKHMA-00100 5	Null or invalid argument specified.
Role	Error
Category	TIBCO Hawk HMA
Resolution	An invalid value was specified for a command line option. Refer to TIBCO Hawk documentation for command line description.
HWKHMA-00100 7	TIBCO Hawk HMA initialization completed successfully.

Category	TIBCO Hawk HMA
Resolution	An error occurred for the specified file function. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00101 4	An option specified is invalid.
Role	Error
Category	TIBCO Hawk HMA
Resolution	An invalid command line option was specified. Refer to TIBCO Hawk documentation for command line description.
HWKHMA-00101 5	Invalid value specified for option <option name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	An invalid value was specified for a command line option. Refer to TIBCO Hawk documentation for command line description.
HWKHMA-00101 6	Value missing for option <option name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	No value was specified for a command line option. Refer to TIBCO Hawk documentation for command line description.
HWKHMA-00101 7	Error processing specified TIBCO Hawk HMA command line. Error <error code>: <error test>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	The specified error was encountered processing the specified command line. Refer to TIBCO Hawk documentation for command line description.

HWKHMA-00102 0	OPTIONS RVD_SESSION<rendezvous parameters> TRACELEVEL<trace level> LOGDIR<log directory> LOGMAXSIZE<maximum log size> LOGMAXNUM<maximum log number>
Role	Information
Category	TIBCO Hawk HMA
Resolution	Used to log specified command line options to the TIBCO Hawk log files.

HWKHMA-00102 1	TIBCO Hawk HMA microagent <microagent name> initialization completed successfully.
Role	Information.
Category	TIBCO Hawk HMA

HWKHMA-00102 3	Error <error number> occurred on thread <thread ID (hex)> at line <line number> in file <file name>. <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Wrapper used to report errors with thread ID, file name, and line number. Actual error could be any of the errors documented for the TIBCO Hawk HMA.

HWKHMA-00102 5	Function <function name> failed. OS error <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	An error occurred for the specified function. If resolution is not obvious from the error description, contact TIBCO Support for assistance.

HWKHMA-00102 6	Stopping TIBCO Hawk HMA in response to a <signal name> signal.
Role	Information
Category	TIBCO Hawk HMA

HWKHMA-00102 7	Unable to install signal handler for signal <signal name>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-001028 Internal error. Unable to obtain TIBCO Hawk HMA configuration. <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Unable to obtain configuration for TIBCO Hawk HMA. If resolution is not obvious from the error description, contact TIBCO Support for assistance.

HWKHMA-001029 This asynchronous method does not support synchronous invocation.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Attempt was made to synchronously invoke an asynchronous method. Specific method does not support synchronous invocation.

HWKHMA-001030 Unknown microagent name, <microagent name>, specified in option <option name>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Invalid microagent name was specified in command line option. Refer to TIBCO Hawk documentation for command line description.

HWKHMA-001031 TIBCO Hawk HMA microagent <microagent name> has been disabled via disable command line option.

Role	Information
Category	TIBCO Hawk HMA

HWKHMA-001032 Internal HMA event <event name> received.

Role	Information
Category	TIBCO Hawk HMA

**HWKHMA-00103
3** HMA restart event received for microagent <microagent name>.

Role	Information
Category	TIBCO Hawk HMA

**HWKHMA-00103
4** HMA restart event processed for microagent <microagent name>.

Role	Information
Category	TIBCO Hawk HMA

**HWKHMA-00103
5** Unknown internal HMA event, <event name>, received.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

**HWKHMA-00103
6** Attempt to increase default thread stack size failed. Function <function name> returned error <Error code>

Role	Error
Category	TIBCO Hawk HMA
Resolution	Internal error. Contact TIBCO Support for assistance.

**HWKHMA-00103
7** TIBCO Hawk HMA signal handling for signal <signal name> has been disabled via command line option.

Role	warning
Category	TIBCO Hawk HMA
Resolution	This message logs the fact that the HMA has been configured via command line option -disable to ignore the specified signal. This disables the default HMA signal handling for that signal.

**HWKHMA-00103
8**
Unable to set signal disposition for signal <signal name>.

Role Error

Category TIBCO Hawk HMA

Resolution The HMA was unable to set the default signal handling for the specified signal. The default signal handling is not in effect. Contact TIBCO Support for assistance.

**HWKHMA-00103
9**
This instance of microagent <microagent name> has a stop request pending. Restart ignored.

Role Error

Category TIBCO Hawk HMA

Resolution If a restart method invocation is made against a microagent already in the process of restarting then this error is generated. You cannot restart a microagent which is being stopped by a previous restart invocation.

**HWKHMA-00200
0**
Internal error. Unable to obtain service name.

Role Error

Category TIBCO Hawk HMA

Resolution Contact TIBCO Support for assistance.

**HWKHMA-00200
1**
Internal error. Unable to obtain service startup parameters.

Role Error

Category TIBCO Hawk HMA

Resolution Contact TIBCO Support for assistance.

**HWKHMA-00200
2**
Internal error. Unable to parse service startup parameters.

Role Error

Category TIBCO Hawk HMA

| Resolution | Contact TIBCO Support for assistance. |

**HWKHMA-00200
3** Internal error. Unable to obtain service start type.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

**HWKHMA-00200
4** Internal error. Invalid service start type specified.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

**HWKHMA-00200
5** Internal error. Unable to obtain service control command code.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

**HWKHMA-00200
6** Internal error. Unable to construct discovery reply.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

**HWKHMA-00200
7** Internal error. OpenSCManager failed. WIN32 error <error code> (<error code hex>): <error text>

| Role | Error |
| Category | TIBCO Hawk HMA |

Resolution	This error contains the OS specific error description. If resolution is not obvious from the error description, contact TIBCO Support for assistance.
HWKHMA-002008	Internal error. Unable to allocate memory for services array.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available to process. Contact TIBCO Support for assistance.
HWKHMA-002009	Internal error. Unable to construct Windows NT service configuration message.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available to process. Contact TIBCO Support for assistance.
HWKHMA-002010	Internal error. Unable to construct Windows NT service status message.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available to process. Contact TIBCO Support for assistance.
HWKHMA-002011	Internal error. Unable to allocate memory for services enumeration.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available to process. Contact TIBCO Support for assistance.
HWKHMA-002012	Internal error. GetServiceDisplayName failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA

Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00201 3
Internal error. QueryServiceConfig failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00201 4
Internal error. EnumServicesStatus failed. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00201 5
StartService failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00201 6
OpenService failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00201 7
ControlService failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-002018	QueryServiceStatus failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-002019	ChangeServiceConfig failed for service "<service name>". WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-002022	Conversion from UNICODE to UTF8 failed.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-003000	Internal error. Unable to obtain process virtual base address.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00300 1	Unable to retrieve process command line for this Microsoft Operating System version. Contact TIBCO Hawk technical support.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00300 2	Internal error. EnumProcesses failed. WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00300 3	Unable to retrieve process count.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00300 4	Function getprocs returned a process with a PID of 0. Process was skipped.
Role	Information
Category	TIBCO Hawk HMA
HWKHMA-00300 5	HMA could not load NTDLL.DLL.Check path environment variable.
Category	TIBCO Hawk HMA
Role	Error
Resolution	HMA process could not load ntdll.dll. Make sure that PATH environment variable contains path which points to ntdll.dll.

HWKHMA-00300 6	Could not locate entry point for function NtQueryInformationProcess in dll NTDLL.DLL. 'Parent Process ID' column for all processes are set to -1.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance
HWKHMA-00400 0	Failure to obtain kernel stats for network interface <interface name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Make sure TIBCO Hawk HMA is running with root permission. If not resolved then contact TIBCO Support for assistance.
HWKHMA-00400 1	Failed to read kernel stats for network interface <interface name> errno <errno>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00400 2	Failure to obtain kernel stats for network-related statistics <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00400 3	get_lanstats returned error <error text>
Role	Error
Category	TIBCO Hawk HMA

Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00400 4 get_lanstats on <id> returned <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00400 5 Unable to obtain statistics for interface name <interface name>.

Role	Warning.
Category	TIBCO Hawk HMA
Resolution	Statistics unavailable. No resolution necessary.

HWKHMA-00400 6 <function name> socket(AF_INET,SOCK_DGRAM,0) returned [<socket>] errno[<error number] [<error text>]

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00400 7 <function name> ioctl(<socket>, <ioctl function id>,) returned [<ioctl rc>] errno[<error number] [<error text>]

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00401 1 <function name> ioctl(<socket> NIC[%d] returned [<ioctl rc>] errno[<error number] [<error text>]

Role	Warning.

Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-004013 lseek(<file handle>, <seek operation>, <seek position>) returned [<return code>] errno[<error number] [<error text>]

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-004015 read(<file handle>, <buffer address>, <buffer size>) returned [<return code>] errno[<error number] [<error text>]

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-004018 <function name> Can not open /dev/kmem file errno[<error number] [<error text>]

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance. If "access denied" is indicated then make sure TIBCO Hawk HMA is running with root permission.

HWKHMA-004019 <function name> knlist lookup on symbol [<symbol name] failed - res[<return code>] errno[<error number] [<error text>].

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00402 3	<function name> malloc failed with errno <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available for process.

HWKHMA-00402 4	Unexpected implementation of kernel stats for network interface <interface name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00402 6	get_lanstats returned no info on interface <interface name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00402 7	get_lanstats returned no info on interface <interface name>, nmid <nmid>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00402 8	Can not open /dev/kmem file errno[<error number] [<error text>]
Role	Error
Category	TIBCO Hawk HMA
Resolution	Make sure TIBCO Hawk HMA is running with root permission. If not resolved then contact TIBCO Support for assistance.

HWKHMA-00402 9	Function <function name> failed for file <file name>. OS Error <OS error code> <OS error text>.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Make sure that file indicated by error message exist at given location.
HWKHMA-00 4030	Invalid record format encountered in file <file name>.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00403 1	Failed to open /dev/dlpi. errno = <error number> errormessage = <error text>
Category	TIBCO Hawk HMA
Role	Error
Resolution	Make sure that file indicated by error message exist at given location.
HWKHMA-00403 2	No Physical Point of Attachment. Network statistics not available.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00403 3	<interface name> interface is attached on PPA number <PPA number>.
Category	TIBCO Hawk HMA
Role	Information
HWKHMA-00403 4	putmsg stream function failed for primitive <primitive name> errno = <error number> and errormessage = <error text>.

Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00403 5 getmsg stream function failed with errno = <error number> and errormessage = <error text>.

Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00403 6 Name Of Driver: <driver name>, PPA Number assigned to LAN interface: <interface number>, NMID No: <nmid number>, Card Instance Number: <card instance number>, Media Access Control: <media access control>.

Category	TIBCO Hawk HMA
Role	Information

HWKHMA-00403 7 Total Number of valid PPAs currently installed in system is <total ppa number>.

Category	TIBCO Hawk HMA
Role	Information

HWKHMA-00403 8 Failed to retrieve proper control code for primitive <primitive name>.

Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00403 9 Error attaching PPA number: <ppa number>.

Category	TIBCO Hawk HMA
Role	Error

Resolution	Contact TIBCO Support for assistance.
HWKHMA-004040	Failed to get required control message. Expected Primitive: \<primitive number\>, Primitive in error: \<primitive error\>, DLPI error code: \<dlpi error code\>, UNIX error code: \<unix error code\>
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-004041	Received Wrong Primitive. Expected Primitive: \<primitive number\>, Received Primitive: \<primitive number\>.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-004042	Received only data portion of the message. Failed to receive control portion of the message
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-004043	No message found in stream. May be system call was interrupted.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-004044	Failed to get Network Statistics for PPA: \<ppa number\>.
Category	TIBCO Hawk HMA
Role	Error

Resolution	Contact TIBCO Support for assistance.

HWKHMA-005000 kstat_open() returned null, errno <error number> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005001 kstat_read() returned error, errno <error number> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005002 kstat_lookup() on %s returned null, errno <error number> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005003 kvm_open() returned error, errno <error number> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005004 kvm_nlist() returned error, errno <error number> <error text>.

Role	Error

Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005005   kvm_read() returned error, errno <error number> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005006   Can't open <file name> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005007   Can't knlist <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005008   Failure to fseek <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-005009	Failure to read <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-005010	pstat_getdynamic() returned <return code>, errno <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-005011	malloc failed with errno <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Insufficient memory available for process.
HWKHMA-005013	pstat_getvminfo returned <return code>, errno <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-005014	pstat_getstatic() returned <return code>, errno <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA

Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00501 7	ERROR returning from system swapctl function SC_LIST errno <error number> <error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00600 0	Failed to get host address for specified network parameter.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Invalid network parameter specified in Rendezvous microagent network parameter. Refer to *TIBCO Hawk Microagent Reference* manual.
HWKHMA-00600 1	hma_getHostAddr() returned <error code> for network <network parameter> and daemon <daemon parameter>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 2	Rendezvous transport key not found for Rendezvous advisory message: <message text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 3	<function name>: received advisory message with subject: <subject name> message: <message text>.
Role	Error

Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 4	\<function name\>: Failed to allocate context.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 5	\<function name\>: Failed to allocate host status context.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 6	\<function name\>: Failed to get host name.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 7	\<function name\>: Failed to get host entry for \<host name\>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00600 8	\<function name\>: Failed to register context.
Role	Error
Category	TIBCO Hawk HMA

Resolution	Contact TIBCO Support for assistance.
HWKHMA-006009	<function name>: Unable to unregister context.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-006010	Error getting value for argument <argument name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-006011	Failed to send unsolicited message: <message text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-006012	Failed to send pending RVD.DISCONNECTED advisory message.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-006013	Failed to send async data on advisory message <subject name>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

**HWKHMA-00601
4**
<function name>: Unable to parse RV version: <version>.

Role   Error

Category   TIBCO Hawk HMA

Resolution   Contact TIBCO Support for assistance.

**HWKHMA-00601
5**
<function name>: Unable to get field <field name> due to RV error: <RV error text>.

Role   Error

Category   TIBCO Hawk HMA

Resolution   Contact TIBCO Support for assistance.

**HWKHMA-00601
6**
The argument "HMA_N_INTERVAL" is less than 90 seconds. It has been changed to the default value of 90 seconds.

Role   Warning

Category   TIBCO Hawk HMA

Resolution   Interval argument must be 90 seconds or greater.

**HWKHMA-00601
7**
<function name>: Failed to create RV timer due to RV error: <RV error text>.

Role   Error

Category   TIBCO Hawk HMA

Resolution   Contact TIBCO Support for assistance.

**HWKHMA-00601
8**
<function name>: Failed to create RV listener because of RV error: <RV error text>.

Role   Error

Category   TIBCO Hawk HMA

Resolution   Contact TIBCO Support for assistance.

HWKHMA-00601 9	<function name>: setUpRvAdvisoryMonitoring failed. <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 0	createRvdTransport failed. <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 1	tibrvEvent_CreateListener failed. RV error: <RV error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 2	util_ListCreate failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 3	util_ListFindObj failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00602 4	util_ListAdd failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 5	Unable to create new RV transport because the internal buffer limit has been exceeded.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 6	Required tibrvTransport argument is null.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 7	Unable to create RV parameter key.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00602 8	tibrvTransport_Create failed for '<session>' '<network>' '<daemon>'. RV error: <RV error text>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.

HWKHMA-00602 9	Sending unsolicited message: <message text>.
Role	Information
Category	TIBCO Hawk HMA
HWKHMA-00603 0	No RV daemon status was received in the last reporting interval.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Make sure that RVD is running on the system.
HWKHMA-00603 1	Unable to determine RV daemon statistics because some daemon status information were missing in the last reporting interval.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Make sure that RVD is running on the system.
HWKHMA-00700 0	PdhOpenQuery failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00700 3	Object <object name> has no counters. Ignoring object.
Role	Warning
Category	TIBCO Hawk HMA
Resolution	Object encountered with no defined counters so no data can be returned. Object is being ignored. No action required.
HWKHMA-00700 5	No open query for this subscription.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-007006	PdhCollectQueryData for method <method name> instance <instance name> failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-007007	Object <object name> has been removed.
Role	Warning
Category	TIBCO Hawk HMA
Resolution	Performance object was removed by system and is no longer available. No action required.
HWKHMA-007008	PdhEnumObjectItems for object <object name> failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-007009	PdhEnumObjects failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-007010	PdhAddCounter for counter <counter name> failed with error <error code>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00701 1	PdhCollectQueryData for object <object name> and instance <instance name> failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00701 2	PdhGetFormattedCounterValue for object <object name> and instance <instance name> and counter <counter name> failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00701 3	PdhRemoveCounter for object <object name> and instance <instance name> and counter <counter id> failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00701 4	PdhCloseQuery for object <object name> and instance <instance name> failed with error <error code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00701 5	Failed to get instance and counter information for method <methodname>. Ignoring method: <method name>
Category	TIBCO Hawk HMA

Role	Information
Resolution	Specified Object (Method) does not contain any Counter and Instance Information. Skipping this Object(Method) from announcing it as a method during discovery process.

HWKHMA-007016 Found duplicate counter name: <counter name> for method: <method name>. Ignoring method: <method name>.

Category	TIBCO Hawk HMA
Role	Information
Resolution	Specified Object contains duplicate counter name. Skipping this Object from announcing as method during discovery process.

HWKHMA-007017 PdhLookupPerfNameByIndex failed with Pdh status code: <status code> <method name>

Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.

HWKHMA-008000 Key must be specified.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Registry microagent key argument is a required argument.

HWKHMA-008001 Entry must be specified.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Registry microagent entry argument is a required argument.

HWKHMA-008002 Value must be specified.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Registry microagent value argument is a required argument.

HWKHMA-008003 Invalid system key name.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Registry microagent key argument specified is invalid or non-existent.

HWKHMA-008004 Invalid key path.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Registry microagent key path argument specified is invalid or non-existent.

HWKHMA-008005 RegOpenKeyEx failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-008007 RegFlushKey failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-008008 RegCloseKey failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-008009 RegQueryValueEx failed for key <key name> entry <entry name>. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-008013 RegEnumValue failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-008014 SubKey must be specified.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Registry microagent subkey argument is a required argument.

HWKHMA-008015 Specified key <key name> already exists.

Role	Error
Category	TIBCO Hawk HMA
Resolution	Attempt to create an existing key was made.

**HWKHMA-00801
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RegEnumKeyEx failed for key <key name>.

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00801
7**

RegCreateKeyEx failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00801
8**

RegSetValueEx failed for key <key name> entry <entry name> value <value>. WIN32 error <error code> (<error code hex>): <error text>

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00801
9**

RegSetValueEx failed for key <key name> entry <entry name> value <value>. WIN32 error <error code> (<error code hex>): <error text>

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00802
0**

Value for key <key name> entry <entry name> is not of type <type name>.

Role   Error

Category   TIBCO Hawk HMA

Resolution	Registry microagent value specified is not the specified type. Check actual registry entry for correct data type.
HWKHMA-00802 1	Root key specified is invalid.
Role	Error
Category	TIBCO Hawk HMA
Resolution	An invalid system root key was specified. See *TIBCO Hawk Microagent Reference* for correct system key values.
HWKHMA-00802 2	RegFlushKey failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00802 3	RegCloseKey failed for key <key name>. WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00802 4	ExpandEnvironmentStrings failed for key <key name> entry <entry name>
Category	TIBCO Hawk HMA
Role	Error
Resolution	Contact TIBCO Support for assistance.
HWKHMA-00900 2	Unable to retrieve source parameter.
Role	Error

Category	TIBCO Hawk HMA
Resolution	EventLog microagent source argument is a required argument.

HWKHMA-00900 3 CreateEvent failed. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00900 4 OpenEventLog failed for <event log name> event log. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00900 5 beginthread failed for <event log name> event log monitoring thread. System reports error <error number> <error text>.

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00900 6 RegOpenKeyEx failed for key "<key name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-00900 7 RegQueryValueEx failed for value "<value name>" under key "<key name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-009008 RegCloseKey failed for key "<key name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-009009 ExpandEnvironmentStrings failed. WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-009010 LoadLibraryEx failed for library "<library name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKHMA-009011 FormatMessage failed for event <event ID> of event source "<source name>". WIN32 error <error code> (<error code hex>): <error text>

Role	Error
Category	TIBCO Hawk HMA
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00901
2**
Message file name of event source "<source name>" exceeds maximum size of <maximum size> characters.

Role   Error

Category   TIBCO Hawk HMA

Resolution   Contact TIBCO Support for assistance.

**HWKHMA-00901
3**
RegisterEventSource failed for event source "<source name>". WIN32 error <error code> (<error code hex>): <error text>

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00901
4**
ReportServiceEvent failed for event source "<source name>". WIN32 error <error code> (<error code hex>): <error text>

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00901
5**
DeregisterEventSource failed for event source "<source name>". WIN32 error <error code> (<error code hex>): <error text>

Role   Error

Category   TIBCO Hawk HMA

Resolution   This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00901
6**
<event log name> event log overrun. <event count> events lost. Warning.

Category   TIBCO Hawk HMA

| Resolution | Due to extreme system load the EventLog microagent was unable to process new event log entries before they were discarded. This error is sent as an unsolicited message in order for rulebases to respond to this loss of events. |

HWKHMA-00901 7 <event log name> event record <record number> exceeded maximum size. Record skipped.

| Role | Error |

| Category | TIBCO Hawk HMA |

| Resolution | A single event log entry exceeded the maximum size and was skipped. This error is sent as an unsolicited message in order for rulebases to respond to this skipped event. |

HWKHMA-00901 8 <event log name> event monitoring thread shutdown due to errors encountered.

| Role | Error |

| Category | TIBCO Hawk HMA |

| Resolution | The dedicated processing thread encountered an unrecoverable error and has shutdown. This error is sent as an unsolicited message in order for rulebases to respond to this thread shutdown. |

HWKHMA-00901 9 Failed to get description for event <record number> in source "<source name>". Error <error number> <error text>.

| Role | Error |

| Category | TIBCO Hawk HMA |

| Resolution | This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance. |

HWKHMA-00902 1 WaitForMultipleObjects failed. WIN32 error <error code> (<error code hex>): <error text>

| Role | Error |

| Category | TIBCO Hawk HMA |

| Resolution | Internal error. Contact TIBCO Support. |

HWKHMA-00902 2	WaitForMultipleObjects returned unexpected value <return code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Internal error. Contact TIBCO Support.
HWKHMA-00902 3	WaitForSingleObject failed. WIN32 error <error code> (<error code hex>): <error text>
Role	Error
Category	TIBCO Hawk HMA
Resolution	Internal error. Contact TIBCO Support.
HWKHMA-00902 4	WaitForSingleObject returned unexpected value <return code>.
Role	Error
Category	TIBCO Hawk HMA
Resolution	Internal error. Contact TIBCO Support.
HWKHMA-00902 5	NotifyChangeEventLog failed for <event log name> event log.
Category	TIBCO Hawk HMA
Role	Error
Resolution	This error also contains the OS specific error description. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKHMA-00902 6	All attempts to reopen <event log name> event log have failed.
Category	TIBCO Hawk HMA
Role	Error

Resolution The EventLog microagent in the HMA attempts to reopen a Microsoft Windows
event log should its existing event log handle become invalid. This can happen if
the event log is manually cleared from the Microsoft Windows Event Viewer for
example. The microagent makes three (3) attempts to reopen the event log. If all
three retries fail this error message is logged and also sent as an unsolicted
message to the associated Hawk Agent. The event log monitoring thread is then
terminated. This error indicates a serious problem with the Windows Event Log
facility. If the Microsoft Windows Event Viewer does not provide a reason for this
failure then contact TIBCO Support for assistance.

**HWKHMA-00902
7**
ReadEventLog failed for <event log name> event log.

Category TIBCO Hawk HMA

Role Error

Resolution This error also contains the OS specific error description. If resolution is not
obvious from the error description then contact TIBCO Support for assistance.

**HWKHMA-00902
8**
The <event log name> event log has changed (e.g. cleared) between read
operations. Possible loss of events. Re-opening event log.

Category TIBCO Hawk HMA

Role Warning

Resolution This message is logged and sent as an unsolicted message to the associated Hawk
Agent whenever the EventLog microagent detects that a Microsoft Windows
event log has been modified by another application. The most common
occurrence of this is when an event log is manually cleared via the Microsoft
Windows Event Viewer. When the event log is cleared it is impossible for the
microagent to get any deleted events beyond the ones it has already read so that
events may have been lost. When monitoring a Microsoft Windows event log
your rulebase should subscribe to the EventLog:: _onUnsolicitedMsg method so it
receives a notification of this condition.

**HWKHMA-00902
9**
All attempts to resync <event log name> event log after overrun have failed.

Category TIBCO Hawk HMA

Role Error

Resolution	This message is logged and sent as an unsolicted message to the associated Hawk Agent whenever the EventLog microagent fails in all attempts to resynchronize with the Microsoft Windows Event Log after an overrun condition. Under extreme load the EventLog microagent may not be able to process new event log events before they are aged out (deleted). When an overrun is detected the EventLog microagent logs and sends an unsolicted message to the associated Hawk Agent indicating the condition and the count of lost events. It then attempts to resynchronize (catch-up) with the event log. When monitoring a Microsoft Windows event log your rulebase should subscribe to the EventLog:: _onUnsolicitedMsg method so it receives a notification of this condition.
HWKHMA-00903 0	Event category specified, <event category number>, is invalid. Category value must be between 0 and 65535 inclusive.
Category	TIBCO Hawk HMA
Role	Error
Resolution	Specify an event category between zero and 65353 inclusive. A zero indicates "no category".
HWKAGT-01020 1	Reading variables file <variable file name> java.io.FieNotFoundException
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the variable's file is readable and is in the proper Java properties format.
HWKAGT-01020 2	Reading variables file <variable's file name> java.io.SecurityException
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the variable's file is readable and is in the proper Java properties format.
HWKAGT-01020 3	Reading variables file <variable's file name> java.io.IOException
Role	Error

Category	Application TIBCO Hawk Agent
Resolution	Make sure that the variable's file is readable and is in the proper Java properties format.

HWKAGT-010204 Reading variables file <variable's file name> java.lang.Exception

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the variable's file is readable and is in the proper Java properties format.

HWKAGT-010205 Can not determine current working directory from system property user.dir Specify config path.

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Java Virtual Machine's System Property "user.dir" has to be set correctly.

HWKAGT-010207 No variables have been loaded

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the variable's file is readable and is in the proper Java properties format.

HWKAGT-010208 config path directory <path> does not yet exist.

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the specified configuration path exists

HWKAGT-010209 config path <path> is not a directory.

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the specified configuration path is a directory

**HWKAGT-01021
0**   config path directory <path> can not be read.

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the specified configuration path is readable and it contains TIBCO Hawk configuration files

**HWKAGT-01040
2**   java.io.IOException

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An internal error occurred while waiting to read the output from the executed command. Contact TIBCO Support

**HWKAGT-01040
5**   java.io.IOException

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An internal error occurred while executing the requested command. Contact TIBCO Support

**HWKAGT-01040
6**   A process is blocking, killing it

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01040 7	The process <cmd> timed out. It was terminated.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Try executing the command from a command prompt and report the results to TIBCO Support

HWKAGT-01050 2	Duplicate ami_rvd_transport parameters. Ignoring ami_rvd_transport <service> <network> <daemon>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Check the command line arguments and remove all duplicates

HWKAGT-01050 3	The rvd_transport and ami_rvd_transport parameters match. Ignoring ami_rvd_transport <service> <network> <daemon>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Check the command line arguments and remove all duplicates

HWKAGT-01050 7	Initialized Agent EMS Transport with <url=..> [username=..] [password=..]
Role	Information
Category	Application TIBCO Hawk Agent

HWKAGT-01050 8	Invalid number of Agent EMS Transport parameters.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the number of parameters following -ems_transport option are either one or three.

HWKAGT-01050 9	Retry connecting to EMS server...
Role	Information
Category	Application TIBCO Hawk Agent
HWKAGT-01051 0	Failed to connect to EMS server. Exception: <exception string>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Agent tries to connect to the server again. The number of attempts and the interval between attempts to connect can be changed by adding the following Java system properties

```
-Dcom.tibco.tibjms.reconnect.attempts=n[,i]
```

where `n` is number of attempts (default value is 1800) , and

`i` is interval in milliseconds between attempts (default value is 1000).

HWKAGT-01090 2	enableLogging() invoked without type
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Invoke the method "enableLogging() again after specifying a valid value for argument "Type"
HWKAGT-01090 3	enableLogging() invoked with invalid type
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Invoke the method "enableLogging() again after specifying a valid value for argument "Type"
HWKAGT-01090 4	disableLogging() invoked without type
Role	Error

Category	Application TIBCO Hawk Agent
Resolution	Invoke the method "disableLogging() again after specifying a valid value for argument "Type"

HWKAGT-01090 5 disableLogging() invoked with invalid type

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Invoke the method "disableLogging() again after specifying a valid value for argument "Type"

HWKAGT-01090 6 activateClass() invoked without class name

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01090 7 deactivateClass() invoked without class name

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01100 1 COM.TIBCO.hawk.microagent.Repository: Fatal error: no repository name

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01100 4 Initialization of -repository_dir failed: <COM.TIBCO.hawk.agent.source.SourceException>

Role	Error

Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01100 6	COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase <rulebase name>. Exception: <SourceException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01100 7	COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase <rulebase name>. Exception: <SourceTimeoutException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01100 8	COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase <rulebase name>. Exception: <SourceException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01100 9	COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase <rulebase name>. Exception: <SourceTimeoutException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01101 2	COM.TIBCO.hawk.microagent.Repository: Failed to load schedules. Exception: <SourceException>
Role	Warning
Category	Application TIBCO Hawk Agent

Resolution	Contact TIBCO Support

HWKAGT-011013 COM.TIBCO.hawk.microagent.Repository: Failed to load schedules. Exception: <SourceTimeoutException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-011014 COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase map <rulebase map name>. Exception: <SourceException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-011015 COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase map <rulebase map name>. Exception: <SourceTimeoutException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-011016 COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase map <rulebase map name>. Exception: <SourceException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-011017 COM.TIBCO.hawk.microagent.Repository: Failed to load rulebase map <rulebase map name>. Exception: <SourceTimeoutException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01102 2	COM.TIBCO.hawk.microagent.Repository: Failed to start request listener. Exception: TibrvException <>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01102 3	COM.TIBCO.hawk.microagent.Repository: Exiting on Fatal error
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An internal error has occurred. Contact TIBCO Support
HWKAGT-01102 4	COM.TIBCO.hawk.microagent.Repository: Fatal error: Duplicate repository(<name>) detected.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01102 7	COM.TIBCO.hawk.microagent.Repository: Failed to send ping reply.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKAGT-01102 8	COM.TIBCO.hawk.microagent.Repository: Configuration type <type> not a valid type.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01103 0	COM.TIBCO.hawk.microagent.Repository: Failed to send <type> inventory.

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01103 4	COM.TIBCO.hawk.microagent.Repository: Configuration Type <type> not valid.

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01103 6	COM.TIBCO.hawk.microagent.Repository: Failed to send <type> object <name>.

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01103 8	COM.TIBCO.hawk.microagent.Repository: Failed to retrieve rulebase <rulebase name>. Exception: <SourceException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01103 9	COM.TIBCO.hawk.microagent.Repository: Failed to retrieve rulebase <rulebase name>. Exception: <SourceTimeoutException>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKAGT-01104 2	addRuleBase() invoked without RulebaseXML parameter
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	This internal error occurred while adding (or updating) a rulebase in the repository. Contact TIBCO Support

HWKAGT-01104 6	addRuleBase() invoked without RulebaseXML parameter
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	This internal error occurred while adding (or updating) a rulebase in the repository. Contact TIBCO Support

HWKUTL-590307	Failed to decrypt. e=<exception string>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure the file `TIBCrypt.jar` is present in the EMS client directory and `jce.jar` is present in JRE lib directory.

HWKLMA-07040 1	<Pattern file access or pattern retrieval error message>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the "patternfile" argument specified to "onNewLineWithPatternFile" method is correct and the file contains at least one valid Perl5 pattern

HWKLMA-07040 2	Unable to evaluate logfile name: <filename with embedded quotes>
Role	Warning
Category	Application TIBCO Hawk Agent

Resolution	Make sure that the file name with embedded back quotes is correct
HWKLMA-07040 3	<file name> does not yet exist. Try reopening it later
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the file name does exist and has proper read permission
HWKLMA-07060 2	<file name> has been truncated.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	The file being monitored has been over written by some other application
HWKLMA-07060 4	java.io.IOException
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An internal error occurred while trying to read additional data from the logfile being monitored. Contact TIBCO Support
HWKLMA-07060 5	java.io.IOException
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	An internal error occurred while trying to close the logfile being monitored. Contact TIBCO Support
HWKLMA-07090 2	java.io.IOException
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	An internal error occurred while waiting to read the output from the executed command. Contact TIBCO Support
HWKLMA-07090 6	A process is blocking, killing it
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKLMA-07090 7	The process <cmd> timed out. It was terminated.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKRBE-04010 1	getAlertIDForClear found _currentAlertID=0 : <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-04010 2	Attempted activation of already active node: <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-04010 3	Internal rbengine error, sendAlert invoked with state of NONE
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Internal error, contact TIBCO Support.
HWKRBE-04030 2	DataSourceError with <datasource name>: <error> at, <path>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKRBE-04030 3	DataSourceError Cleared for <datasource name> at <path>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	This message merely indicates that a previous data source error has now cleared.
HWKRBE-04040 1	MAX_DATA_ELEMENTS exceeded, discarding data for rule <rule>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Data is being produced at a rate faster than the rule can process it. Usually due to a temporarily overloaded machine. Contact TIBCO Support if this error persists.
HWKRBE-04040 2	removing orphaned child at <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Rulebase engine encountered inconsistent data from microagent. Contact TIBCO Support.
HWKRBE-04040 3	can't create child: <reason> at <path>
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Internal error, contact TIBCO Support.
HWKRBE-04040 4	can't create child: <reason> at <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-04040 5	invalid data type received at <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	The rule at path received an unsupported data type from the microagent. Contact TIBCO Support.
HWKRBE-04050 1	getAlertIDForClear found currentAlertID=0 : <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-04050 2	NoValidDataSource for <rule> at <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	A valid data source does not exist for the rule. Instantiate a valid data source or modify the rulebase to use available data sources.
HWKRBE-04090 1	RBEngine timer dispatch thread caught exception: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Internal error, contact TIBCO Support.
HWKRBE-040902	RBEngine timer dispatch thread caught exception: <java.lang.Throwable>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-040903	RBEngine timer dispatch thread interrupted: <java.io.InterruptedException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKRBE-041202	Attempted activation of already active node: <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-041206	Processed clear for non-existent alert. ID:<id> Reason:<reason>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-041303	initializing subscription for rule <name>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.

HWKRBE-04130 4	Attempted activation of already active node: <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKRBE-04130 6	while canceling subscription for rule <rulename>, <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKRBE-04130 9	onSubscriptionPending, data source <data_source_instance> already exists.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.
HWKRBE-04131 1	initializing subscription for rule: <rulename>, microagent: <microagent name>, <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKRBE-04131 2	onSubscriptionError, data source <method_name>: <data_source_instance> not registered.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04131 4	onData, data source <method_name>: <data_source_instance> not registered.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04131 5	onData, subscription and data have inconsistent microagent id, subscription: <id>, data: <id>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04131 7	Rule datasource error for rule <path> exception: <COM.TIBCO.hawk.talon.MicroAgentException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKRBE-04131 8	onRoleError, data source <method_name>: <data_source_instance> not registered.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04131 9	adding DataSourceNode <method name>, <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04132 1 onErrorCleared, data source <method_name>: <data_source_instance> not registered.

Role — Error

Category — Application TIBCO Hawk Agent

Resolution — Internal error, contact TIBCO Support.

HWKRBE-04132 4 adding DataSourceNode <method name>, <exception>

Role — Error

Category — Application TIBCO Hawk Agent

Resolution — Internal error, contact TIBCO Support.

HWKRBE-04132 5 adding NoValidDataSourceNode <exception>

Role — Error

Category — Application TIBCO Hawk Agent

Resolution — Internal error, contact TIBCO Support.

HWKRBE-04140 1 Attempted activation of already active node: <path>

Role — Error

Category — Application TIBCO Hawk Agent

Resolution — Internal error, contact TIBCO Support.

HWKRBE-04140 7 can't evaluate test: <exception>, At: <path>

Role — Error

Category — Application TIBCO Hawk Agent

Resolution — Unable to evaluate test for stated reason.

HWKRBE-04140 8	can't evaluate test: <exception>, At: <path>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to evaluate test for stated reason.
HWKRBE-04141 0	Couldn't launch clear timer: <reason>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to launch timer for stated reason.
HWKRBE-04141 3	Unable to evaluate action: <action>, <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to evaluate action because of stated error.
HWKRBE-04141 4	clear action is not of type ActionNode <type>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Illegally formatted rulebase file.
HWKRBE-04141 5	Unable to evaluate action: <action>, <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to evaluate action because of stated error.

HWKRBE-04141 6	Unable to reset timer: <reason>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to restart timer for stated reason.

HWKRBE-04160 1	Scheduler registering node <node> with schedule <scheduleName> node already registered.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04160 2	Schedule <schedule name> is not loaded
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Try loading the schedule's file (schedules.hsf) using TIBCO Hawk Display's Schedules Editor

HWKRBE-04160 3	Invalid arguments for Scheduler.deregister(), node:<node>, scheduleName:<scheduleName>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04160 4	Scheduler deregistering node <node>. Schedule <scheduleName> not in active list.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04160 5	Scheduler deregistering node <node> with schedule <scheduleName>, node not found.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04160 8	Schedule <schedule name> is no longer loaded
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKRBE-04160 9	In Scheduler.evaluateSchedules() - node <node> threw exception <exception> in response to inSchedule() call. Deregistering node from scheduler.");
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04162 3	InterruptedException in Scheduler sleep <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support if this error persists.

HWKRBE-04170 5	Ignoring includes list of <rulebase name>. Include lists are not supported in auto config mode.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Edit the <rulebase name> and remove all the included rulebase lists

HWKRBE-04170 8   Error purging <config_file>: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to purge config_file from local cache. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKRBE-04170 9   Error examining inventory of source <config_source>: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to examine config_source inventory. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKRBE-04171 1   Error purging <schedules name>: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to purge config_source inventory cache. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKRBE-04171 2   Error examining inventory of source <config_source>: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to examine config_source inventory. If resolution is not obvious from the error description then contact TIBCO Support for assistance.

HWKRBE-04171 4   Error purging <rulebase name>: <exception>

Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Unable to purge config_source inventory cache. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKRBE-04171 5	Error examining inventory of source <rulebase name>: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to examine config_source inventory. If resolution is not obvious from the error description then contact TIBCO Support for assistance.
HWKRBE-04171 7	Corrupt rulebase <rulebase name> from <config source>, name of the rulebase does not correspond to the name of config object.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKRBE-04171 9	Error loading rulebase <name> from <config_source>: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to load named rulebase from named config_source. Check configuration according to exception or contact TIBCO Support.
HWKRBE-04172 0	Config object is of incorrect type: <config_object>, expected <type>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKRBE-04172 1	Requested config object <name> not found in config source
Role	Error

Category	Application TIBCO Hawk Agent
Resolution	Unable to locate config object in config source. Insure that it exists.

HWKRBE-04172 2	Error loading <config object name> from <config source>, <SourceException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKRBE-04172 3	Error loading <config object name> from <config source>, <SourceTimeoutException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKRBE-04172 4	Error loading <config object name> from <config source>, <java.lang.Exception>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKRBE-04172 5	Config object <config object name> was retrieved from an emergency source: <source name>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the specified config object exists in the config source directory

HWKRBE-04172 7	Config object is of incorrect type: <name>, expected Schedules.hsf
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Unable to locate Schedules.hsf in config source. Insure that it exists.

HWKRBE-04173 1   Config object is of incorrect type: <name>, expected rbmap.hrm

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to locate rbmap.hrm in config source. Insure that it exists.

HWKRBE-04173 4   Config object is of incorrect type: <name>, expected Schedules.hsf

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to locate Schedules.hsf in config source. Insure that it exists.

HWKRBE-04173 6   Error finding rulebase: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to examine auto-config directory. Check path and permissions.

HWKRBE-04173 7   Corrupt rulebase <rulebase name> from <config source>, name of the rulebase does not correspond to the name of config object.

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKRBE-04173 9   Error loading rulebase <name> from <config_source>: <exception>

Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Unable to load named rulebase from named config_source. Check configuration according to exception or contact TIBCO Support.

HWKRBE-04174 0 Config object is of incorrect type: <name>, expected COM.TIBCO.hawk.config.rbengine.rulebase.Rulebase

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to locate rbmap.hrm in config source. Insure that it exists.

HWKRBE-04174 1 Rulebase <name> found in inventory but unable to retrieve

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to retrieve named rulebase from config source. Check permissions.

HWKRBE-04174 4 Invoking method <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.

HWKRBE-04174 5 loadRuleBase() may not be invoked when agent is in auto-config mode. Use loadRuleBaseFromFile() instead.

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	The loadRuleBase() method of the RBEngineMicroAgent was used under conditions when it is not permitted. Use the loadRuleBaseFromFile() method instead.

HWKRBE-04174 6 loadRuleBase() invoked without rulebase name

Role	Error

Category	Application TIBCO Hawk Agent
Resolution	Modify method invocation to include a rulebase name.
HWKRBE-04174 8	Corrupt rulebase <rulebase name> from <config source>, name of the rulebase does not correspond to the name of config object.
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKRBE-04175 2	RuleBase file not found: <name>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Insure that the named rulebase file exists.
HWKRBE-04175 3	loadRuleBaseFromFile() invoked without rulebase name
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Modify method invocation to include a rulebase name.
HWKRBE-04175 5	unloadRuleBase() invoked without rulebase name
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Modify method invocation to include a rulebase name.
HWKRBE-04175 7	sendMail: messageNotDelivered.
Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Unable to deliver email. Check email server or sendMail method invocation.
HWKRBE-04175 8	sendMail: messagePartiallyDelivered.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to deliver email. Check email server or sendMail method invocation.
HWKRBE-04175 9	Send Mail Exception: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Unable to deliver email. Check email server or sendMail method invocation as per exception or contact TIBCO Support.
HWKRBE-04176 0	setSchedules() invoked without SchedulesXML parameter
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKRBE-04176 1	Error saving schedules in auto-config: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Check auto-config path or permissions.
HWKRBE-04176 3	Error deleting rulebase: <exception>
Role	Error
Category	Application TIBCO Hawk Agent

Resolution   Check auto-config path or permissions.

**HWKRBE-04176
4**   addRuleBase() invoked without RulebaseXML parameter

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Contact TIBCO Support.

**HWKRBE-04176
5**   Error saving rulebase <name> in auto-config: <exception>

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Check auto-config path or permissions.

**HWKRBE-04176
6**   updateRuleBase() invoked without rulebase

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Contact TIBCO Support.

**HWKRBE-04230
1**   Arbitrable node <node> threw exception <exception> in response to
wonArbitration() call. Deregistering node from Arbiter.

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Internal error, contact TIBCO Support.

**HWKRBE-04230
2**   Arbitrable node <node> threw exception <exception> in response to
wonArbitration() call. Queued for deregistration from Arbiter.

Role   Error

Category   Application TIBCO Hawk Agent

Resolution   Internal error, contact TIBCO Support.

HWKRBE-04270 1	Alert suspension thread interrupted, terminating thread.
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support if this error persists.

HWKRBE-04330 1	Fatal error in <thread_name> thread:<exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 2	SubscriptionMultiplexer error: null event received
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 3	Unchecked exception thrown in SubscriptionMultiplexer thread while processing SubscribeEvent for sub: <subscription>, microagent:<id>, exception: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 4	Unchecked exception thrown in SubscriptionMultiplexer thread while calling onSubscriptionError() for handler: <subscription>, microagent:<id>, exception: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 5	Unchecked exception thrown in SubscriptionMultiplexer thread by method Subscription.cancel() for sub: <subscription>, microagent:<id>, exception: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 7	Unchecked exception thrown in SubscriptionMultiplexer thread while processing MAAddedEvent for sub: <subscription>, microagent:<id>, exception: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 8	Unchecked exception thrown in SubscriptionMultiplexer thread while calling onSubscriptionError() for handler: <subscription>, microagent:<id>, exception: <exception>

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKRBE-04330 9	SubscriptionMultiplexer error: Unknown event type.

Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support.

HWKMAG-02031 0	stopSubscription call failed for <microagent_id>::<subscription>

Role	Error
Category	Application TIBCO Hawk Agent

Resolution	Contact TIBCO Support.
HWKMAG-02031 3	Inconsistent microagent state for method subscription <subscription>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKMAG-02031 4	Attempt to remove MicroAgent more than once, <microagent_id>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support.
HWKCON-22060 1	RemoteAccessServer dispatch thread caught exception: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22060 2	RemoteAccessServer dispatch thread caught exception: <java.lang.Throwable>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22060 3	RemoteAccessServer processRequest thread caught exception: <java.lang.Throwable>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKCON-22060 4	RemoteAccessServer.processRequest(), request type= <type> <java.lang.Throwable>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22060 5	Processing groupOp error reply: <COM.TIBCO.hawk.talon.MicroAgent
Resolution	Exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22060 6	Processing groupOp error reply: <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22060 7	Sending reply: <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22060 8	processing pingRequest: <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKCON-22060 9	processing commitRequest: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22061 0	processing refreshRequest: <com.tibco.rv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support
HWKCON-22061 1	RemoteAccessServer dispatch thread was interrupted: <java.io.InterruptedException>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Internal error, contact TIBCO Support
HWKCON-22070 1	DuplicateAgent
Resolution	Check dispatch thread caught exception: <exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Make sure there is only one agent running with the same startup parameters.
HWKCFG-12090 1	RBMap::toXML() - Unable to write to output stream.\n Exception: <java.io.IOException>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKCFG-13110 1	Failed to convert rulebase <rulebase name> ...
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKCFG-11010 1	MicroAgentDescriptorReader - Unable to read DataDescriptor.\n Exception: <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Agent
Resolution	Contact TIBCO Support

HWKDIS-274404	<COM.TIBCO.hawk.hawkeye.Error ExceptionEvent.getMessage()>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An internal error occurred in the TIBCO Hawk Console API. Contact TIBCO Support.

HWKDIS-274405	<COM.TIBCO.hawk.console.hawkeye.WarningExceptionEvent.getConsoleWarning().getMessage()>
Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	The warning exception event should provide additional details

HWKDIS-271604	Unable to locate container - <container>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while locating container when moving a container. Verify that the name of the container to be moved is valid.

HWKDIS-270502	Reading variables file <file name> <java.io.FileNotFoundException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while reading the specified variables file. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-270503   Reading variables file <file name> <java.io.SecurityException>

Role	Error
Category	Application TIBCO Hawk Display
	An error occurred while reading the specified variables file. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-270504   Reading variables file <file name> <java.io.IOException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while reading the specified variables file. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-270505   Reading variables file <file name> <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while reading the specified variables file. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-270506   Unable to load variables from file <file name>

Role	Warning
Category	Application TIBCO Hawk Agent
Resolution	Make sure that the variable's file is readable, it contains at least one valid variable and is in the proper Java properties format

HWKDIS-270508   Unable to openDisplay Display file - <fileName>

Role	Error

Category	Application TIBCO Hawk Display
Resolution	An error occurred while reading the specified display file. This message is followed by a message with detail reason for the failure.

HWKDIS-270509   Unable to openDisplay - <exception>

Role	Error
Category	Application TIBCO Hawk Display
	An error occurred while opening a display file. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-270511   Unable to initialize TIBCO Hawk Display : <COM.TIBCO.hawk.console.hawkeye.ConsoleInitializationException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while initializing TIBCO Hawk Display. If the resolution is not obvious from the exception description then contact TIBCO Support for assistance.

HWKDIS-270512   Unable to initialize TIBCO Hawk Display : <java.lang.Throwable>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while initializing TIBCO Hawk Display. If the resolution is not obvious from the exception description then contact TIBCO Support for assistance.

HWKDIS-270513   Unable to reinitialize TIBCO Hawk Display : <COM.TIBCO.hawk.console.hawkeye.ConsoleInitializationException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while reinitializing TIBCO Hawk Display. If the resolution is not obvious from the exception description then contact TIBCO Support for assistance.

HWKDIS-270514   Unable to reinitialize TIBCO Hawk Display : <java.lang.Throwable>

Role   Error

Category   Application TIBCO Hawk Display

Resolution   An error occurred while reinitializing TIBCO Hawk Display. If the resolution is not obvious from the exception description then contact TIBCO Support for assistance.

HWKDIS-270517   Unable to find <key> in HawkGui.properties ...

Role   Error

Category   Application TIBCO Hawk Display

Resolution   The specified key is not found in the HawkGui.properties file. The HawkGui.properties may be corrupted or of invalid version. Verify that the version HawkGui.properties is supported.

HWKDIS-270518   Unable to find <key> in HawkGui.properties ...

Role   Error

Category   Application TIBCO Hawk Display

Resolution   The specified key is not found in the HawkGui.properties file. The HawkGui.properties may be corrupted or of invalid version. Verify that the version HawkGui.properties is supported.

HWKDIS-270901   Unable to locate node in tree - <node>

Role   Error

Category   Application TIBCO Hawk Display

Resolution   An error occurred while locating the specified node in the display tree. Contact TIBCO Support.

HWKDIS-271602   Unable to locate parent node of - <node name>

Role   Error

Category   Application TIBCO Hawk Display

Resolution   Internal error. Contact TIBCO Support.

HWKDIS-271603	Unable to locate node in tree - <node name>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	Internal error. Contact TIBCO Support.

HWKDIS-271604	Unable to locate container - <container name>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	Internal error. Contact TIBCO Support.

HWKDIS-271605	Unable to find container Discovered
Role	Error
Category	Application TIBCO Hawk Display
Resolution	The default container Discovered is not found in the Display. A default Discovered is created. Retry the operation. If the error persist, contact TIBCO Support.

HWKDIS-271606	Varying versions of same rulebase <rulebase name> detected on agent <agent name>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	Multiple rulebases with the specified name is found on different agents. Some of the rulebases may be out of date. Replace out of date rulebases with the most up to date version.

HWKDIS-272701	Unable to open display file: <file name> - Error <java.io.FileNotFoundException>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	TIBCO Hawk Display is unable to open the specified display file. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-272702   Unable to open display file: <file name> - Error
                     <java.io.StreamCorruptedException>

Role   Error

Category   Application TIBCO Hawk Display

Resolution   TIBCO Hawk Display is unable to open the specified display file. If the resolution
              is not obvious from the exception description then contact TIBCO Support.

HWKDIS-272703   Unable to open display file: <file name> - Error <java.lang.Exceptin>

Role   Error

Category   Application TIBCO Hawk Display

Resolution   TIBCO Hawk Display is unable to open the specified display file. If the resolution
              is not obvious from the exception description then contact TIBCO Support.

HWKDIS-273903   Unsupported resources version: <version>

Role   Error

Category   Application TIBCO Hawk Display

Resolution   The properties file is of different version. Check or re-install Hawk to ensure that
              HawkGui.properties and Display are of the same version.

HWKDIS-273904   Missing resources file HawkGui.properties ... exiting

Role   Error

Category   Application TIBCO Hawk Display

Resolution   The HawkGui.properties file is not found in the resource directory. Check or
              re-install Hawk to ensure that HawkGui.properties is at the proper location.

HWKDIS-275502   Image Directory not found...

Role   Error

Category   Application TIBCO Hawk Display

Resolution   The image directory is not found. Check or re-install Hawk to ensure that
              HawkGui.properties is at the proper location.

HWKDIS-275601	Unable to send config object. - Error <COM.TIBCO.hawk.talon.MicroAgentException>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while sending rulebases or schedule to multiple agent. If the resolution is not obvious from the exception description then contact TIBCO Support for assistance.
HWKDIS-300401	ERROR: building method invocation while performing network query/action: <exception message>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while performing network query/action. The exception message should provide more details about the error.
HWKDIS-300402	ERROR: performing network query/action: <exception message>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while performing network query/action. The exception message should provide more details about the error.
HWKDIS-300403	ERROR: parsing results while performing network query/action: <exception message>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while performing network query/action. The exception message should provide more details about the error.
HWKDIS-300801	Unable to retrieve Micro Agents from - <hostname>. - Error: <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Display

Resolution	An error occurred while performing network query/action. The exception message should provide more details about the error.
HWKDIS-310101	Failed to invoke java command: <toolCommand>; Exception - <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while invoking the specified tool command. This message is followed by a message that displays an exception that describes the error. Verify that the Java class specified is valid and the classpath for the class is included in CLASSPATH.
HWKDIS-310402	Failed to load resources from input stream ...
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while loading resource such as an icon. Verify that the resource's path is valid.
HWKDIS-310403	Error saving preferences to resources file <file name>.
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while saving preferences to the resource file. The path of the file may be invalid or the file may have read-only access.
HWKDIS-310404	Failed to invoke java command: <toolCommand>; Exception - <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while invoking the specified tool command. This message is followed by a message that displays an exception that describes the error. Verify that the Java class specified is valid and the classpath for the class is included in CLASSPATH.
HWKDIS-310601	IllegalAccessException: <error text>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred when loading the class specified for the menu command. Hawk may not have access to the definition of the class because the class is a public class. The message is followed by a message that indicates the Java class in error.

HWKDIS-310602   IllegalArgumentException: <error text>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred when loading the class specified for the menu command. Hawk may not have access to the definition of the class because the class is a public class. The message is followed by a message that indicates the Java class in error.

HWKDIS-310603   InvocationTargetException: <error text>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An exception is thrown by the main or the constructor of the class specified for the menu command. The message is followed by a message that indicates the Java class in error.

HWKDIS-310604   ExceptionInInitializerError: <error text>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred during static initialization of the class specified for the menu command. The message is followed by a message that indicates the Java class in error.

HWKDIS-331201   Unable to save rulebase <rulebase name> to file <file name>

Role	Error
Category	Application TIBCO Hawk Display

Resolution	A error occurred while saving rulebase to a local file system. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331202   Unable to save Rulebase - <file name> \n <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while saving rulebase to a local file system. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331203   Unable to add rulebase - <rulebase name>; Exception: <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while sending the rulebase to the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331204   Unable to add rulebase - <rulebase name>; Exception: <COM.TIBCO.hawk.talon.MicroAgentException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while sending the rulebase to the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331205   Unable to update rulebase - <rulebase name>; Exception: <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while sending the rulebase to the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331206   Unable to update rulebase - <rulebase name>; Exception: <COM.TIBCO.hawk.talon.MicroAgentException>

Role	Error
Category	Application TIBCO Hawk Display

Resolution	A error occurred while sending the rulebase to the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331207 Unable to unload rulebase - <rulebase name>; Exception: <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while unloading the rulebase from the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331208 Unable to unload rulebase - <rulebase name>; Exception: <COM.TIBCO.hawk.talon.MicroAgentException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while unloading the rulebase from the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331209 Unable to send rulebase; Exception: <COM.TIBCO.hawk.talon.MicroAgentException>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while sending the rulebase to the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-331210 Unable to retrieve rulebase <rulebase name> from <agent or repository name>; Exception: <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while retrieving the rulebase from the agent (or the repository). If the resolution is not obvious from the exception description then contact TIBCO Support.

HWKDIS-332912 Unable to load Micro Agent Descriptors from - <host name>; Exception - <java.lang.Exception>

Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while trying to load microagent descriptors from the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.
HWKDIS-331301	Unable to clone rulebase for - <rulebase name>; Exception - <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	Internal Error Contact TIBCO Support.
HWKDIS-332901	Unable to export Micro Agent Descriptors from - <host name>; Exception - <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	A error occurred while trying to export microagent descriptors to the agent. If the resolution is not obvious from the exception description then contact TIBCO Support.
HWKDIS-340801	Unable to retrieve Micro Agents from - <agent name>; Exception - <java.lang.Exception>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while retrieving micro agents from the specified agent. The exception message should provide more details about the error.
HWKDIS-350401	Unable to execute command - <command string>
Role	Error
Category	Application TIBCO Hawk Display
Resolution	An error occurred while executing the specified command in the command file for Tekmon support. Verify that the command is a valid command.

HWKDIS-381301   Unable to retrieve schedules from - <host or repository name>. - Error
                       <java.lang.Exception>

    Role   Error

    Category   Application TIBCO Hawk Display

    Resolution   An error occurred while retrieving schedules from either the agent or repository.
                   The exception message should provide more details about the error.

HWKDIS-381401   Unable to send Schedules; Exception - <java.lang.Exception>

    Role   Error

    Category   Application TIBCO Hawk Display

    Resolution   An error occurred while sending schedules to either the agent or repository. The
                   exception message should provide more details about the error.

HWKEVT-390101   Missing -datadir and JDBC command line options. TIBCO Hawk events are not
                       persistent

    Role   Warning

    Category   Application TIBCO Hawk Event Service

    Resolution   Specify missing command line options if TIBCO Hawk events needs to be written
                   to file or database.

HWKEVT-390104   Setting data destination failed. Exiting !!

    Role   Error

    Category   Application TIBCO Hawk Event Service

    Resolution   Make sure that the directory specified for -datadir command line option has write
                   permission

HWKEVT-390106   java.lang.NumberFormatException

    Role   Error

    Category   Application TIBCO Hawk Event Service

    Resolution   Check command line options and verify that they are all correct

HWKEVT-390107	java.lang.UnsupportedEncodingException
Role	Error
Category	Application TIBCO Hawk Event Service
Resolution	Check command line option -characer_encoding and verify that it is valid
HWKEVT-390108	java.lang.Exception
Role	Error
Category	Application TIBCO Hawk Event Service
Resolution	Contact TIBCO Support
HWKEVT-390110	Failed to create FT TibrvRvdTransport - <com.tibco.tibrv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Event Service
Resolution	Check the TIBCO Rendezvous session -rvd_session command line option and verify that it is valid
HWKEVT-390111	Exception joining fault tolerance group - <com.tibco.tibrv.TibrvException>
Role	Error
Category	Application TIBCO Hawk Event Service
Resolution	Check the TIBCO Rendezvous fault tolerant -ft command line option and verify that it is valid

HWKEVT-390701   Unable to create RV session for AMI communication -
<com.tibco.tibrv.TibrvException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Check the TIBCO Rendezvous session -ami_rvd_session command line option
and verify that it is valid

HWKEVT-390802   JDBC Driver is unable to insert a record for "onAgentAlive" event.
<java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390803   JDBC Driver is unable to insert a record for "onAgentExpired" event.
<java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390804   JDBC Driver is unable to insert a record for "onAlert" event.
<java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390805   JDBC Driver is unable to insert a record for "onClear" event.
<java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390806   JDBC Driver is unable to insert a record for "onMicroAgentChange" event.
                     <java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390807   JDBC Driver is unable to insert a record for "onRulebaseChange" event.
                     <java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390808   JDBC Driver is unable to create table "HawkAgentInfo". <java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390809   JDBC Driver is unable to create table "HawkAlertClearInfo". <java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info

HWKEVT-390810   JDBC Driver is unable to close connection. <java.sql.SQLException>

Role   Error

Category   Application TIBCO Hawk Event Service

Resolution   Contact JDBC driver vendor for more info