Concept Guide

Fabasoft app.telemetry Concept Guide

Contents

1 Introduction

Fabasoft app.telemetry is an Application Performance Monitoring product designed for the use with business-critical applications on distributed production systems.

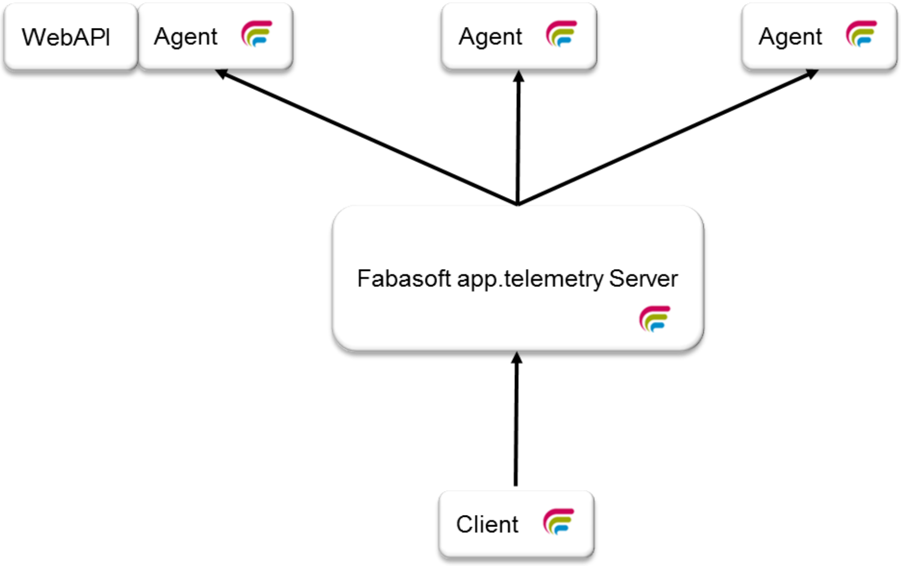
This concepts guide describes the common Fabasoft app.telemetry architecture and the methods that allow monitored applications to supply relevant performance data.

Please refer to the Fabasoft app.telemetry software product information for the complete list of supported platforms and interfaces.

2 Architecture

A standard Fabasoft app.telemetry installation consists of the following components:

- Fabasoft app.telemetry server
- Fabasoft app.telemetry agents
- Fabasoft app.telemetry WebAPI
- Fabasoft app.telemetry web browser client (hosted as web service on app.telemetry server)



2.1 Fabasoft app.telemetry Server

The Fabasoft app.telemetry server is the central component of Fabasoft app.telemetry. The server stores the complete Fabasoft app.telemetry configuration, controls the configured Fabasoft app.telemetry agents, manages Software-Telemetry sessions and administrates the evaluation of counter checks and availability checks and much more.

The Fabasoft app.telemetry server can be accessed by web browser clients through a web server like Apache or Microsoft Internet Information Services (the web server is running on the same server as the Fabasoft app.telemetry server). Supported authentication methods are Microsoft Windows integrated authentication (for Microsoft Windows platforms only) or basic authentication.

The Fabasoft app.telemetry server is distributed as one installation package but contains several sub components that are installed with the server on a dedicated management server:

- Fabasoft app.telemetry **server** service/daemon: this is the main server process communicating with the agents, processing telemetry data and service/counter checks, calculates SLA reports and statistics and similar tasks.
- Fabasoft app.telemetry **worker** service/daemon: this process was split off from the server (with version 14.2) and processes requests from the web service as well as loading of telemetry requests and sessions for analysis.
- Fabasoft app.telemetry **web service**: runs in a web service container like Apache or Microsoft Internet Information Services and provides the client user interface of the app.telemetry server to any web browser client accessing this instance.
- Fabasoft app.telemetry **ecomm** service/daemon: this services is responsible for communication with external services (forwarding of sessions to a service desk or to a cloud scrum project, OAuth authentication and sending of notifications).

It is essential for a working Fabasoft app.telemetry installation that all these 4 service components are running.

On a Linux server the 3 daemons: `apptelemetryserverd`, `apptelemetryworkerd` and `apptelemetryecommd` are managed by `init.d`-scripts and the web service `apm_module` (`webserver.so`) is running in an Apache web server container.

On a Microsoft Windows server the 3 services: “Fabasoft app.telemetry Server”, “Fabasoft app.telemetry Worker”, “Fabasoft app.telemetry Ecomm” are managed as normal Windows services and the “`apptelemetry`” web service can be managed with the IIS Manager.

The Fabasoft app.telemetry server is available for the latest versions of Microsoft Windows Server and Red Hat based Linux systems. The exact version of supported operating systems can be found in the “Software Product Information” document for Fabasoft app.telemetry.

2.2 Fabasoft app.telemetry Agent

The Fabasoft app.telemetry agent is a Microsoft Windows service or Linux daemon that is responsible for providing Software-Telemetry data to the Fabasoft app.telemetry server. The agent must be installed on systems that potentially should provide data for Fabasoft app.telemetry.

The Fabasoft app.telemetry agent is available on a wider range of operating system versions of Microsoft Windows Server and Red Hat based Linux systems. The exact version of supported operating systems can be found in the “Software Product Information” document for Fabasoft app.telemetry.

2.3 Fabasoft app.telemetry WebAPI

The Fabasoft app.telemetry WebAPI is a web service hosted in Apache or Microsoft Internet Information Services that is responsible for the transfer of Software-Telemetry data from Java Script instrumentations to a Fabasoft app.telemetry agent. The Fabasoft app.telemetry WebAPI must be installed on systems that also host a Fabasoft app.telemetry agent. The Fabasoft app.telemetry WebAPI is a prerequisite for the use of the Fabasoft app.telemetry integration for Java Script and must be available to the respective web browsers.

The Fabasoft app.telemetry WebAPI can be installed on all supported agent platforms.

2.4 Fabasoft app.telemetry Client

The Fabasoft app.telemetry client is a web browser client providing the Fabasoft app.telemetry functionality to the users. The client uses standard HTTP/HTTPS protocols to access the Fabasoft app.telemetry server.

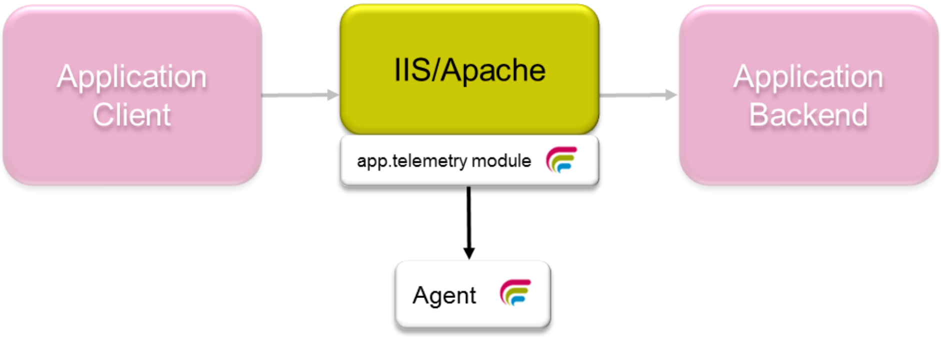
3 Monitoring Applications

Fabasoft app.telemetry works with performance data that is *supplied by the monitored applications*. The following methods can be used to provide these performance data:

- Use predefined modules or filters for standard web servers (see 3.1 Web Service Modules)
- Implement instrumentation points in the source code of the monitored application (see 3.2 Fabasoft app.telemetry SDK)
- Configure instrumentation points for applications running in Java virtual machines (3.3 Dynamic Java Instrumentation)

3.1 Web Service Modules

Fabasoft app.telemetry ships with modules for Apache and Microsoft Internet Information Services. These modules already have instrumentation points implemented and can be installed or configured into Apache or Microsoft Internet Information Services.

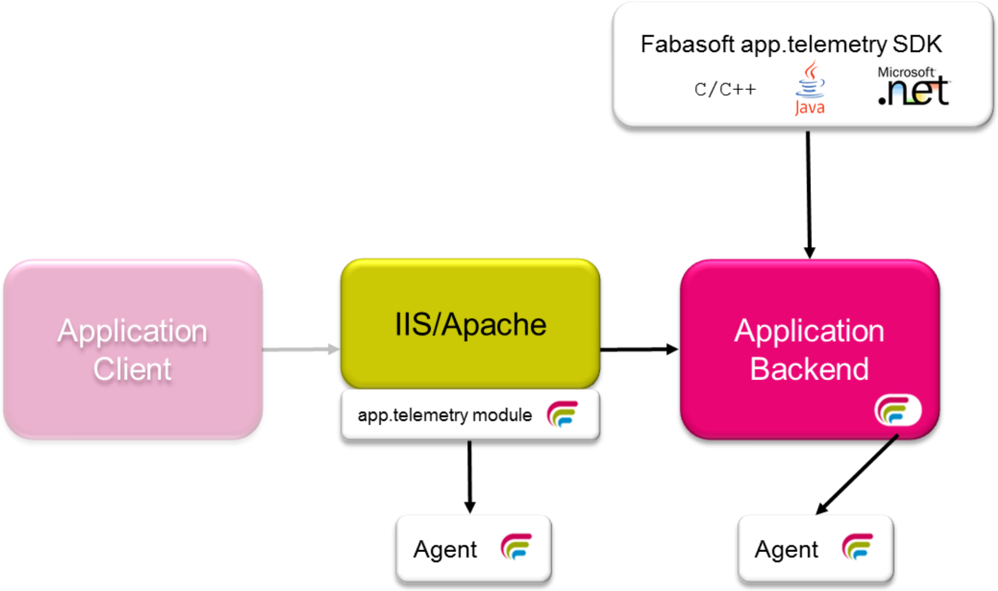


These modules allow a fast overview of a web application's response time characteristics at the web server (Apache or Microsoft Internet Information Services) tier but cannot provide performance data from the monitored application. Refer to the next chapters for how to receive performance data from monitored applications.

3.2 Fabasoft app.telemetry SDK

Applications can use the Fabasoft app.telemetry SDK to supply performance data to Fabasoft app.telemetry. Currently this is the most powerful method but it requires modification of the applications.

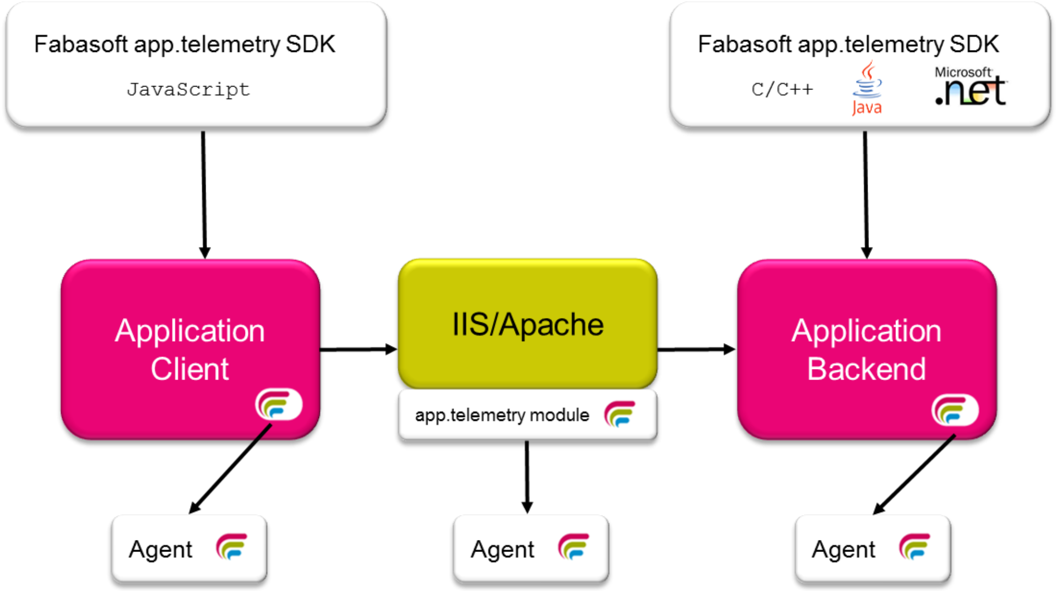
Using the Fabasoft app.telemetry SDK application developers can manually implement instrumentation points in the source code of the monitored application. This implementation also requires a rebuild/recompile and a redeployment of the affected application.



The Fabasoft app.telemetry SDK for C/C++, C# and Java is available on all agent platforms and supports the following interfaces (a list of all supported interface versions can be found in the "Software Product Information" document for Fabasoft app.telemetry):

- Microsoft Visual Studio (Microsoft Windows platforms)
- gcc 4.x (Linux platforms)
- Oracle Java Development Kit (JDK) 6/7

With the Fabasoft app.telemetry SDK for JavaScript application developers can manually implement instrumentation points in the JavaScript client part of the monitored application. This implementation also requires a redeployment of the affected client scripts but allows end-user experience monitoring for the instrumented application.



The Fabasoft app.telemetry SDK for JavaScript is available on all agent platforms and most popular client operating systems and supports the JavaScript interfaces of the most popular and modern web browser clients. An exact listing of all supported platforms and web browser clients can be found in the “Software Product Information” document for Fabasoft app.telemetry.

3.2.1 SDK Integration Overview

The Fabasoft app.telemetry SDK enables application developers to integrate their applications into Fabasoft app.telemetry. Applications can integrate by registering themselves into Fabasoft app.telemetry and by providing performance data (events). The Fabasoft app.telemetry SDK provides the following integration possibilities:

3.2.1.1 Registration

Applications can register themselves into Fabasoft app.telemetry and therefore can help to reduce manual configuration efforts.

3.2.1.1.1 Filter Registration

Fabasoft app.telemetry provides the functionality of Software-Telemetry sessions. A Software-Telemetry session can be started by selecting a registered application, by selecting one of the supported recording levels and by choosing an application specific filter value. The SDK provides the possibility for applications to register their application specific filter values.

3.2.1.1.2 Module Registration

In a Software-Telemetry session applications provide information that help analyzing the route of a request. Per default, the result of a Software-Telemetry session is partitioned in applications and servers as well as processes or threads. The SDK provides the possibility for applications to detail these partitions by using modules. A module is a part of an application that allows a better view of the request’s route within the application itself.

3.2.1.1.3 Event Registration

In a Software-Telemetry session registered applications provide information by using events. Each event consists of an id (unique id within an application module) and a text description. To reduce the amount of data transferred during a Software-Telemetry session, the SDK provides the possibility for applications to register their application specific events (id and text) so applications only have to pass the event id during an active Software-Telemetry session.

3.2.1.2 Events

In a Software-Telemetry session registered applications provide information by using events. By sending events applications can provide the following information to Fabasoft app.telemetry:

- The request enters a specific area in the application
- The request leaves a specific area in the application
- Debug or trace information to provide more details

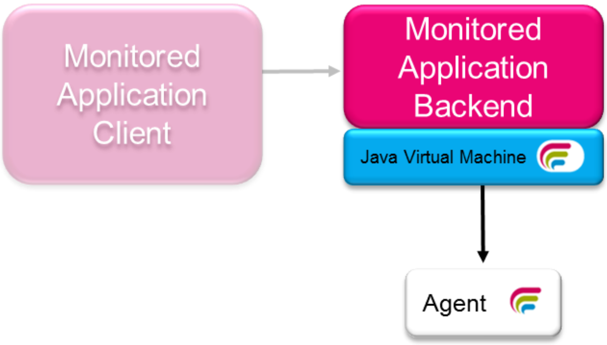
Applications provide recording level information (standard, detail or debug) for each event sent. Depending on the selected recording level of the current Software-Telemetry session, only events matching that selected recording level get transported to the Fabasoft app.telemetry server.

3.2.1.3 Context

In a Software-Telemetry session a request can be tracked through multiple threads, processes or services of integrated applications. The Fabasoft app.telemetry SDK provides the possibility for applications, to pass the therefore required information to Fabasoft app.telemetry. Applications can allocate a context to start the recording of a request and release a context to end the recording of a request. To pass a context between threads or processes applications get the current context on the calling side, transport the context and attach to that context on the called side. The transfer of the context must be implemented by the application.

3.3 Dynamic Java Instrumentation

Fabasoft app.telemetry can receive performance data (events) from applications running in an Oracle/Sun Java runtime environment 6 through the JVMTI interface. Fabasoft app.telemetry allows the configuration of instrumentation points – modification of the application's source code is not required.



In order to use this Fabasoft app.telemetry integration the Fabasoft app.telemetry modules have to be explicitly loaded at startup of the Java runtime.

Instrumentation points are configured using the Fabasoft app.telemetry client. One instrumentation point is set for one specific Java method. The Java method is identified by a package/object class and the specific method call (combination of method name and parameter list). The Java virtual machine has to be restarted whenever the configuration of instrumentation points changes.