Dynatrace Configuration

This document describes how to perform a basic setup of Dynatrace for SAP Hybris Commerce Monitoring and out-of-the-box performance analysis. It contains links to external resources with further information owned by Dynatrace.

Architecture

A Dynatrace environment consists of the Dynatrace Server plus one or multiple Dynatrace Collectors; these can be split out across different network locations for scalability or security requirements. In small to medium environments (~10 application servers) the Dynatrace Server and Collector are usually run on one host. The Dynatrace Server uses a dedicated database as a Performance Warehouse which also can be located on the same host.

To monitor a hybris environment the Dynatrace Agent is loaded with the Application or Webservers and it connects to the Dynatrace Collector and respectively to the Dynatrace Server. Once this initial connection is made all configuration is done via the Dynatrace Client.

The agents on the application and webservers will continuously report data to the Dynatrace Server which allows tracking every single request that passes through the system. Dynatrace represents those as PurePaths with end-to-end (user action to the database) tracking and a high level of visibility into code execution. From these PurePaths, Dynatrace extracts virtually any measurable performance or business indicators which allow for a rich variety of performance analysis and business dashboards. The Dynatrace Client is also used for focused deep dive and root cause analysis.

Besides the transactional analysis, Dynatrace also provides the traditional analysis capabilities like Memory Dump analysis, CPU Sampling, and visual Thread Dump Analysis making it a complete one-stop solution.

For Business users, Dynatrace provides easily accessible Web-Dashboards that provide insight into real-time data and offer key analytic views.

Licensing

Dynatrace is a commercial product and requires a license. However, you can sign up for a free trial license that is fully functional for 30 days. After 30 days it will continue to work but only for a local installation on your personal computer (personal license).

- Request a Free Trial license
- Contact Dynatrace for commercial license

Installation Dynatrace Components

If you want to use Dynatrace as an OnPremise installation you'll need to install the Dynatrace server/collector on a separate machine. For test or development environments it might be ok to run locally with your SAP Hybris instance,

but it's not recommended for real production-like setups or load testing. The Dynatrace Server is supported under Linux / Unix or Windows. Dynatrace also offers a managed hosting solution (using Amazon EC2) which, should the budget allow it, offers a great deal of convenience.

Installation on Linux

Download the latest installer from the DynatraceSaaS repository:

```
# download the latest dynatrace installer for linux 64bit
[opt]# wget http://downloads.dynatracesaas.com/freetrial/dynatrace-linux-x64.jar
```

Start the installation and follow the instructions

```
# start the installer and follow the instructions
[opt]# java -jar dynatrace-linux-x64.jar
```

Copy your Dynatrace license file to the server installation directory. This step is optional and only required when using the free trial license.

```
[opt]# cp dynaTrace_license_*.key /opt/dynatrace-<version>/server/conf/dtlicense.key
```

Now, before you start the Dynatrace server, download and install the SAP Hybris fastpack.

```
[opt]# cd /opt/dynatrace-<version>/server
[server]# mkdir deployment && cd deployment
[deployment]# wget -O
https://github.com/Dynatrace/Dynatrace-hybris-eCommerce-Fastpack/releases/download/latest/hy
bris-fastpack-latest.dtp
```

That's it! Your Dynatrace environment is ready and configured for SAP Hybris! Now start the Dynatrace services! To start them automatically with system startup please copy and link the init.d scripts.

```
[dynatrace-6.3]# ./init.d/dynaTraceServer start
[dynatrace-6.3]# ./init.d/dynaTraceCollector start
```

Installation on Windows

Download the latest installer from the DynatraceSaaS repository:

```
# download the latest dynatrace installer for windows 64bit
[opt]# wget http://downloads.dynatracesaas.com/freetrial/dynatrace-x64.msi
```

Execute the MSI installation package and do a *Basic Installation*. This will get you everything you need. Once the installation is finished, the Dynatrace services are usually started and running (note we are using MS PowerShell to execute these commands but you can of course also use the Windows Services UI):

```
PS C:\>Get-Service | Where-Object {$_.name -like "dynaTrace*"}
Status   Name               DisplayName
------   ----               -----------
Running  dynaTrace Colle... dynaTrace Collector <version>
Running  dynaTrace Front... dynaTrace Frontend Server <version>
Running  dynaTrace Serve... dynaTrace Server <version>
```

Copy your Dynatrace license file to the server installation directory. This step is optional and only required when using the free trial license.

```
PS C:\>copy dynaTrace_license_*.key "$env:programfiles/Dynatrace/dynaTrace
<version>/server/conf/dtlicense.key"
```

To pre-configure the Dynatrace setup for hybris we can now install the latest SAP Hybris fastpack:

```
PS C:\>cd "$env:programfiles/Dynatrace/dynaTrace <version>/server"
PS C:\>mkdir deployment & cd deployment
PS C:\>Invoke-WebRequest
https://github.com/Dynatrace/Dynatrace-hybris-eCommerce-Fastpack/releases/download/latest/hy
bris-fastpack-latest.dtp -OutFile hybris-fastpack-latest.dtp
```

Then restart the Dynatrace Server to finish the deployment, either via the command line or via the Windows Services control.

```
PS C:\>Restart-Service "dynaTrace Server <version>"
```

Network Configuration

Dynatrace is built for heterogeneous, distributed monitoring and analysis. As such, it needs to provide secure communication between components and uses various ports between those. You will need to make sure that these ports are available and not blocked in any firewall rules. The default ports and protocol are highlighted below:

Components to Connect	Port non-SSL	Port SSL	Protocol	Comment
Client to Frontend Server	2020	2021	TCP	Non-SSL disabled by default
Client to Frontend Server		8023	HTTP	Tunnel via HTTP. Sent data is by default encrypted.
Frontend Server to Server		2031	TCP	As of 6.0 there is a Frontend Server process separated from the backend running on the same host
Collector to Server	6698	6699	TCP	
Collector to Server		8033	HTTP	Tunnel via HTTP. Sent data is by default encrypted.
Collector to Server	8040	8041	HTTP(S)	For HTTP-based Agent connections [1)]
Agent to Collector	9998		TCP	Or Agent to Server-embedded Collector if enabled for demo scenarios
Administrative Web Interface on Server	8020	8021	HTTP(S)	Web interface for RESTful Server administration, to start the Webstart Client, Automated Reporting...
Web Dashboards on Frontend Server		9911	HTTPS	The Dynatrace Server publishes Webdashboards on this port

Dynatrace Client

There are two ways to access the Dynatrace Monitoring and Analysis data: via Browser using the Dynatrace Web Access or - for deep dive analysis - the Dynatrace Client.

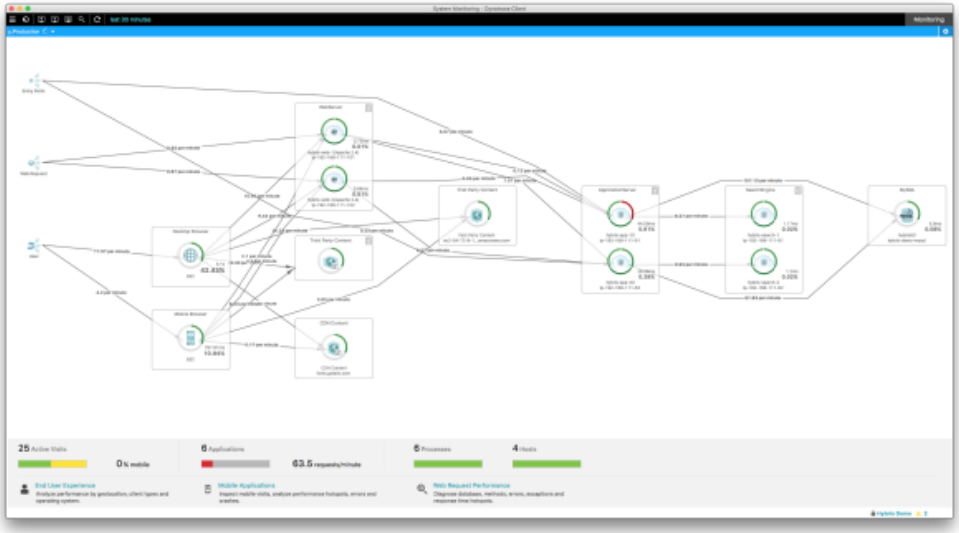
Dynatrace Client

The Dynatrace standalone Client is an application that you need to install on any desktop machine to access the

performance data stored on the Dynatrace Server. It's also used to configure the whole environment and provides dashboards for visualization. It's available for Windows, Mac OS X and Linux.

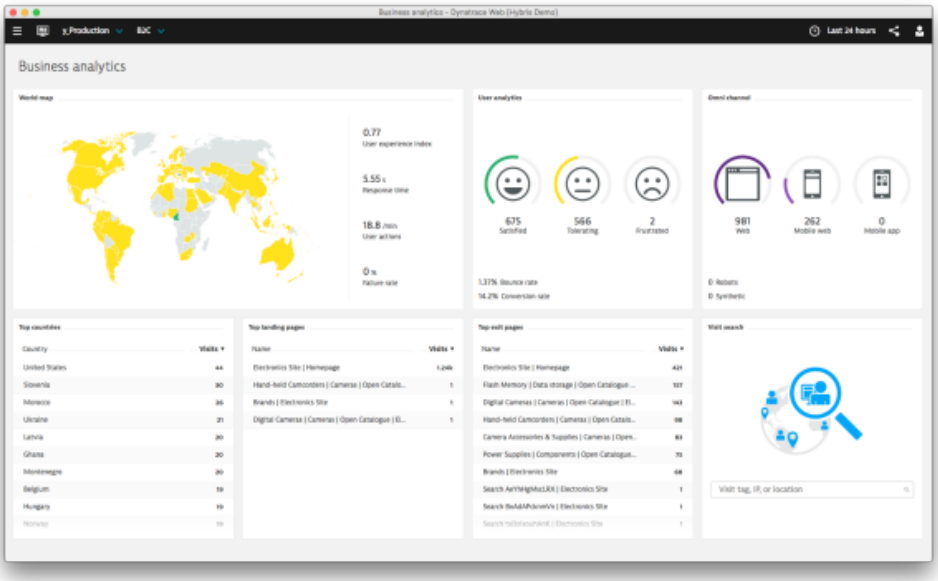
- Dynatrace Client for Windows
- Dynatrace Client for Mac OS X
- Dynatrace Client for Linux

When you launch the Dynatrace Client for the first time it will prompt you to connect to your Dynatrace server. Use the initial credentials (admin/admin) to connect.



Dynatrace Web Access

To access Dynatrace via browser just point it to https://<your dynatrace server>:9911/. Log in with the default credentials (admin/admin)



Connecting Hybris Application Servers and Webserver to Dynatrace

Hybris Servers

You will need the permissions to change the SAP Hybris server's properties to add a few Dynatrace specific settings. The Dynatrace Agent is already included with the SAP Hybris platform and only needs to be enabled. This works by adding an additional JVM command line parameter to the tomcat instance.

Edit either ${HYBRIS_DIR}/bin/platform/global.properties or ${HYBRIS_DIR}/config/local.properties file and add these lines:

local.properties Expand source

```
#### Dynatrace Config: uncomment agent library for your platform ####

## dynatrace agent windows 64bit
#dt.agentlib=${HYBRIS_BIN_DIR}/platform/resources/dynatrace/agent/lib64/dtagent.dll
## dynatrace agent linux 64bit
dt.agentlib=${HYBRIS_BIN_DIR}/platform/resources/dynatrace/agent/lib64/libdtagent.so
## dynatrace agent OS X 64bit
#dt.agentlib=${HYBRIS_BIN_DIR}/platform/resources/dynatrace/agent/lib64/libdtagent.dylib

## provide a unique name for this appserver agent,
## to work with the standard fastpack use
## "hybris-app-x" for application server
## "hybris-adm-x" for admin servers
## "hybris-dhb-x" for datahub servers
dt.name=hybris-app-${cluster.id}


## the IP/hostname where the dynatrace server/collector is running
## e.g. localhost or 127.0.0.1
dt.collector=<your dynatrace server/collector>


## add dynatrace options to tomcat options (make sure to not overwrite custom settings)
dt.jvm-opts=-agentpath:${dt.agentlib}=name=${dt.name},server=${dt.collector},wait=45
tomcat.javaoptions=${dt.jvm-opts}
```

Propagate the changes to each app server and restart the application server by executing 'ant server' (if the server is running this will apply the changes and restart it):

```
[hybris/bin/platform]# . ./setantenv.sh
[hybris/bin/platform]# ant server
```

When you now start up the SAP Hybris application server you should see Dynatrace log messages that confirm that the Dynatrace agent is loaded and successfully connected to the Dynatrace server:

log

Expand source

```
2016-03-22 14:14:36 [bc7ce8bb] info [native]
------------------------------------------------------------------------------
2016-03-22 14:14:36 [bc7ce8bb] info [native] dynaTrace Agent for Java Copyright (C)
2004-2015 Dynatrace, http://www.dynatrace.com
2016-03-22 14:14:36 [bc7ce8bb] info [native]
------------------------------------------------------------------------------
2016-03-22 14:14:36 [bc7ce8bb] info [native] Version ..................... 6.3.0.1305
. . .
2016-03-22 14:14:36 [bc7ce8bb] info [native] Server/Collector .............
hybris-demo-dtserver:9998
2016-03-22 14:14:36 [bc7ce8bb] info [native] Trying to connect to Server/Collector for up to
45 seconds
2016-03-22 14:14:36 [bc7ce8bb] info [native] Instrumentation channel connected successfully
2016-03-22 14:14:36 [bc7ce8bb] info [native] Received instrumentation blacklist (25160
classes, 1921 KiB)
2016-03-22 14:14:36 [bc7ce8bb] info [native] Connected to Server/Collector
hybris-demo-dtserver:9998
```

Web Servers (Apache)

For a complete end-to–end visibility we recommend to also enable Dynatrace for your webservers. This is optional but it's worth it. To install the webserver agents for apache simply follow the steps below:

```
[opt]# wget http://downloads.dynatracesaas.com/freetrial/dynatrace-wsagent-linux-x64.tar

[opt]# tar xvf dynatrace-wsagent-linux-x64.tar
[opt]# dynatrace-wsagent-<version>-linux-x64.sh
```

Then edit the agent configuration file located at <dynatrace install dir>/agent/conf/dtwsagent.ini and change the Name and Server setting at the top of the file:

```
# The name of the web server agent (used for agent mapping on the dynaTrace Server).
Name hybris-web-1
# The address of the dynaTrace Collector this agent should connect to.
Server <IP/DNS of Dynatrace Server/Collector>
```

Then start the Dynatrace Webserver Master Agent:

```
[opt]# /opt/dynatrace-<version>/init.d/dynaTraceWebServerAgent start
```

Finally, add the Dynatrace module to your httpd.conf and restart apache httpd:

```
LoadModule dtagent_module /opt/dynatrace-6.3/agent/lib64/libdtagent.so
```

Other Webservers (NGINX, IIS)

Dynatrace also provides Agents for these webservers, please see the Dynatrace Documentation on how to enable those agents.

Analysis and Monitoring with Dynatrace

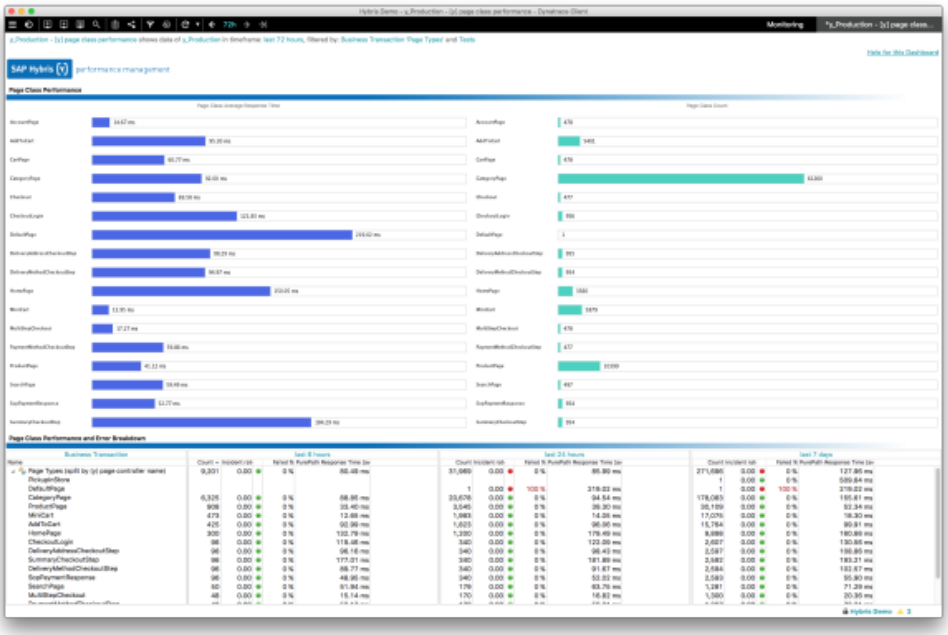
After all your application environment components are successfully connected, Dynatrace will automatically detect and

start monitoring. The installed out-of-the-box configuration (Dynatrace Fastpack for Hybris) will immediately start collecting performance data.

These areas are covered:

- Different Page Types (Homepage, Product Detail, Category Page, Checkout, Search, ...) are detected automatically and monitored
- External Requests (Webservices and Web-Requests)
- Database Monitoring (Statements per Page/Transaction, Execution and Connection Pool)
- SOLR Performance
- Cron Jobs
- Caches
- Active User Sessions
- JVM Metrics (Memory, CPU, Garbage Collection, Thread Count, ...)
- OS Metrics (Memory, CPU, Disk, Network)
- Client Side End User Actions and Performance
- Business Metrics (Orders, Revenue)
- Business Process Engine
- ...

To get an overview of included performance monitoring dashboards please see the documentation of the Hybris Fastpack.



Agent Groups and Mapping

Every monitored process must belong to an *agent group*. In Dynatrace, an agent group is a group of processes (hosts) that perform the 'same function' i.e. each cluster (Webserver, Hybris, search, third-party, etc...) in your SAP Hybris Commerce eco-system. Dynatrace Server uses this to stitch together PurePaths that cross machine boundaries.

An agent group must have an identifier that you define via the Dynatrace Client. Here are suggested identifiers for common agent groups within the Hybris Commerce eco-system:

Agent Group Identifier	Description

`web`	Webserver process for front end Hybris.
`webbe`	Webserver process for back office Hybris.
app	Hybris process for front-end traffic.
`appbe`	Hybris process for back office traffic.
`search`	Search process

When installing the agent, you will need to specify the agent group identifier suffixed with the process identifier (usually numeric). The process identifier must be unique to the agent group that the monitored process will belong to. The Dynatrace Server then uses this mapping to determine which agent group (tier) the process is classified under

Sizing Guidelines and Considerations

The setup described above is a very basic setup to get started with Dynatrace. For a Production environment, it's necessary to perform a thorough sizing of the Dynatrace environment that takes a few aspects into account.

- Sizing of the Dynatrace Server
- Usage of an enterprise relational Database as Dynatrace Performance Warehouse
- Sizing and separation of Dynatrace Collectors
- Adding additional components to Dynatrace (e.g. monitoring of SOLR servers)

Typically these steps are done in an implementation project for Dynatrace. More Information can be found in the Dynatrace Documentation.

Network Bandwidth Guidelines

Two very important guidelines:

1. The network between agents and Collector needs low latency.
2. The network between the Dynatrace Server and Collector needs high bandwidth.

https://community.dynatrace.com/community/display/DOCDT61/Network+Bandwidth+Guidelines shows the suggested bandwidth requirements between Collector and Dynatrace Server.

Hybris Fast Packs

Once your Dynatrace environment is setup, the preexisting Hybris eCommerce FastPack should be installed. The dynaTrace FastPack for Hybris Commerce contains sensors, a template system profile and dashboards for the Hybris accelerator eCommerce platform. If you are using dynaTrace UEM you will also get the conversion and visitor tagging.

For more information on this please visit: https://community.dynatrace.com/community/display/EVAL/Application+Performance+Management+for+hybris

Code: https://github.com/dynaTrace/Dynatrace-hybris-eCommerce-Fastpack