

HP IT Operations Compliance

Software Version: 1.10

-

Installation, Setup, and Upgrade Guide

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Chapter 1: About ITOC

HP IT Operations Compliance (ITOC) allows IT Operations users to track business service compliance against corporate and regulatory policies, making their environment compliant and therefore secure.

With ITOC you can:

- Scan compliance of business services against policies in a repeatable and reliable manner.
- Remediate non-compliance.
- Provide an overall view of compliance status across policies and business services.
- Track exceptions on resources to requirements in the Statement of Applicability (SoA).
- Track the lifecycle and revisions of policies, business services, controls, and SoAs.

For more information about ITOC use, see the [HP IT Operations Compliance User Guide](#).

Chapter 2: Install ITOC In Your Environment

ITOC can be installed as root or non-root user. HP recommends you install ITOC as root user. The benefits of installing as root user include the following:

- The PostgreSQL database is also installed.
- The ITOC service starts automatically on ITOC server startup.

Prerequisites

You must have a root or non-root user with write permission to the install directory.

- To install as non-root, you must configure the database before installing ITOC.

System Requirements

Support and compatibility information for HP IT Operations Compliance 1.10 is located in the [HP IT Operations Compliance Support and Compatibility Reference Guide](#).

Download and Run the ITOC Installer

Download the ITOC installer, then copy and extract the <itoc_installer>.zip to /tmp on the ITOC server.

To run the ITOC installer:

1. Log in as root or non-root user.
2. Unzip <installer>.zip.
For example:

```
$unzip /tmp/H7V16-15900.zip
```
3. Run the ITOC installer:

```
$/tmp/itoc-installer-1.1.0.bin
```

Install ITOC as Root User

This section describes how to install ITOC as root user. If you are installing as non-root user, see [Install ITOC as Non-Root User](#).

1. The installer runs through an interview to capture install parameters. Enter the values specified in the installer interview, or press **Enter** to accept the defaults.

```
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...
Launching installer...
=====
HP IT Operations Compliance (created with InstallAnywhere)
-----
Preparing CONSOLE Mode Installation...
=====
Introduction
-----
This installation wizard will guide you through the installation of HP IT
Operations Compliance 1.1
It is strongly recommended that you quit all programs before continuing with
this installation.
You may cancel the installation at any point by pressing CTRL+C.
PRESS <ENTER> TO CONTINUE:
=====
License Agreement
-----
.
```

2. Enter **Y** to accept the terms of the license agreement.
DO YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT? (Y/N): Y
3. Select **1** to install the PostgreSQL database as well as ITOC. Select **2** if PostgreSQL is already installed and configured on your system (see [Use the PostgreSQL Database on the System](#)):
Install Postgresql Database

```
Install HP ITOC included Postgresql Database?
->1- Yes
2- No
ENTER THE NUMBER FOR YOUR CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT::
```

4. Enter and then reenter the installer user password:
Installation User Password

Password of "root" user performing this installation. It is used by Remote Execution Engine for Scan/Remediate operations. It will be persisted in a file encrypted.
Please Enter the Password:
=====

Installation User Password Re-Prompt

Please Re-Enter the Password:

5. Create your user-defined ITOC Admin User password, which is the password for the new `itocadmin` account within ITOC itself. This password must have 6 or more characters. Then reenter this password when re-prompted:

ITOC Admin User Password

It is a password for seeded admin user. It will also be used to generate certificates and for other application logic. It will be persisted in a file encrypted.

Please Enter the Password:

=====

ITOC Admin User Password Re-Prompt

Please Re-Enter the Password:

6. Select **1** to accept the installation defaults (as shown in the example), or select **2** to customize installation values (see [Customize Installation Values](#)):

Installation Defaults

Following configurable defaults will be used to perform HP IT Operations

Compliance installation:

Install Folder : /opt/hp/itoc

JRE : OpenJRE

Server Hostname : itoc.yoursite.hp.com

Database Hostname : itoc.yoursite.hp.com

Database Port : 5432

Database Name : itoc

Organization Administration Database Name : idmitoc

Database User : itocadmin

->1- Accept

2- Customize

ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:

1

7. Create a database user password, and reenter the password when prompted. If you have already installed the database, enter the database user password you created at that time, and reenter this password when prompted:

ITOC Database User Password

It is a password of database user. It will be persisted in a file encrypted.

Enter the database user password:

=====

ITOC Database User Password Re-Prompt

RE-Enter the database user password:

8. Review the pre-installation summary, and press **Enter** to complete installation:

```
Pre-Installation Summary
-----
Please Review the Following Before Continuing:
Install Folder:
/opt/hp/itoc

Product Name
HP IT Operations Compliance 1.1

ITOC Database
PostgreSQL (itocadmin:itoc@itoc21.qa.opsware.com:5432)

ITOC Organization Administration Database
PostgreSQL (itocadmin:idmitoc@itoc.yoursite.hp.com:5432)

Disk Space Information (for Installation Target):
Required: 806.05 MegaBytes
Available: 41,184.39 MegaBytes

PRESS <ENTER> TO CONTINUE:
=====
Installing...
-----
Congratulations. HP IT Operations Compliance has been successfully installed
to:
/opt/hp/itoc
PRESS <ENTER> TO EXIT THE INSTALLER:
```

Use the PostgreSQL Database on the System

1. Select **2** to use the PostgreSQL database already installed and configured on your system:
Install Postgresql Database

Install HP ITOC included Postgresql Database?
->1- Yes
2- No
ENTER THE NUMBER FOR YOUR CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:: 2
2. Enter and then reenter the installer user password (see step 4 in [Install ITOC as Root User](#)).
3. Create your user-defined ITOC Admin User password, which is the password for the new `itocadmin` account within ITOC itself. This password must have 6 or more characters. Then reenter this password when re-prompted (see step 5 in [Install ITOC as Root User](#)).
4. Select the installation defaults or choose to customize the installation values.

5. Provide information about the PostgreSQL database you want to use:
 Advanced Database Configuration

 Provide detailed information for database setup or enter the database parameters that would point to an existing HP ITOC database. For more information about these fields, refer to the HP IT Operations Compliance Installation Guide.
 Enter the Database Hostname (Default: itoc.yoursite.hp.com):
 Enter the Database Port (Default: 5432):
 Enter the ITOC Database Name (Default: itoc): itoc
 Enter the ITOC Organization Administration Database Name (Default: idmitoc):
 Enter the Database Username (Default: itocadmin):

6. Create a database user password, and reenter the password when prompted. If you have already installed the database, enter the database user password you created at that time, and reenter this password when prompted:
 ITOC Database User Password

 It is a password of database user. It will be persisted in a file encrypted.
 Enter the database user password:
 =====
 ITOC Database User Password Re-Prompt

 RE-Enter the database user password:

7. Review the pre-installation summary, and press **Enter** to complete installation (see step 8 in [Install ITOC as Root User](#)).

Customize Installation Values

If you specified 2 - Customize, you have the opportunity to enter custom installation values at the following prompts:

1. Enter an alternate existing absolute path and press **Y** to confirm your choice, or press **Enter** to accept the default:
 Choose Install Folder

 Please choose a destination folder for this installation.
 Where would you like to install?
 Default Install Folder: /opt/hp/itoc
 ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:

2. Enter the number for the JRE of your choice, or press **Enter** to accept the default:
 Select JRE

 Select one of the following JRE options to be used by HP ITOC
 Open JRE: Use the OpenJDK JRE that is bundled with HP ITOC 00.14.1200
 Oracle JRE: Use the Oracle JRE that is already installed on the system.

->1- Open JRE
2- Oracle JRE
ENTER THE NUMBER FOR YOUR CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:: 1

- 3. Enter a fully qualified domain hostname for this ITOC server, or press **Enter** to accept the default:
Enter the ITOC Server hostname

Enter the fully qualified domain name of this system. This name is used to generate the SSL certificate and configure HP ITOC.

WARNING: If you enter an IP address, after installation completes, you must manually generate a self-signed certificate using the fully-qualified domain name of the system on which you installed HP ITOC. For more information, refer to the "HP IT Operations Compliance Configuration Guide."

Fully Qualified Hostname (Default: itoc.yoursite.hp.com):

- 4. Enter the following parameters for advanced database configuration, or press **Enter** to accept the defaults:

Advanced Database Configuration

Provide detailed information for database setup or enter the database parameters that would point to an existing HP ITOC database.

Enter the Database Hostname (Default: itoc.yoursite.hp.com):

Enter the Database Port (Default: 5432):

Enter the ITOC Database Name (Default: itoc):

Enter the ITOC Organization Administration Database Name (Default: idmitoc):

Enter the Database Username (Default: itocadmin):

- **Database Hostname:** The hostname of the ITOC server on which you are installing ITOC.
- **Database Port:** The port of the ITOC server on which you are installing ITOC.
- **ITOC Database Name:** One of two ITOC databases that are installed, with the same user for both databases. This database contains ITOC application data.
- **ITOC Organization Administration Database Name:** One of two ITOC databases that are installed, with the same user for both databases. This database contains ITOC organization administration data.
- **Database Username:** The ITOC user.

- 5. Enter the database user password, and then reenter the password when re-prompted.
- 6. Review the pre-installation summary, and press **Enter** to complete installation.

ITOC services are started automatically following ITOC installation.

ITOC Licenses

ITOC has the following three licenses:

- **Premium:** Enables only the platform resource types
- **Ultimate:** Enables both the platform and software resource types.
- **InstantOn** (used for evaluation and proof of concept): Out-of-the-box Ultimate license with a 20-instance capacity limit.

Feature Support

- **InstantOn:** Using LDAP and non-seeded organizations with an InstantOn license is restricted.
- **Premium** or **Ultimate:** When a Premium or Ultimate license is applied, it overrides the InstantOn license. If you have both Premium and Ultimate licenses applied and both are valid, both are active at the same time. When Premium or Ultimate applied licenses expire, the InstantOn license again becomes valid.

Apply an ITOC License

1. Obtain an ITOC license from the HP license portal.
2. The license filename must be in the <ITOC*.xml> format; for example, ITOCULT_1.1_50_LTU.xml
3. Copy the license file to <itoc_install_directory>/license.
4. Restart your ITOC service (see [Start, Stop, and Check Service Status](#)).

Typical use case:

1. Customer A installs ITOC with the InstantOn license. With this license in effect, Customer A can add a maximum of 20 platform resources, and manage unlimited software resources through these 20 platform resources.
2. Customer A then buys an Ultimate license with 100-platform capacity. With the Ultimate license, Customer A can add 80 more platform resources and unlimited software resources on all 100 platform resources. Customer A decides to associate software resources to 90 platform resources.
3. Customer A then buys a Premium license with 100-platform capacity, bringing total platform capacity to 200. Customer A can add 100 more platform resources, but new software resources can be added only to the 90 resources that have software resources associated or to any of the 10 platform resources that remain of the total of 110 platform resources. Once Customer A has 100 platform resources with attached software resources, his attempt to add a software resource on the 101st platform resource (with no software attached) will error out.

Install ITOC as Non-Root User

This section describes additional prerequisites and information needed to install ITOC as non-root user.

Configure the Install Directory

1. Create the install directory:
`#mkdir -p <itoc_install_directory>`

For example:

```
#mkdir -p /opt/hp/itoc
```

2. Configure permissions for the user on the install directory to allow access for the user created in step 1.

```
#chown <username> <itoc_install_directory>
```

```
#chgrp <usergroup> <itoc_install_directory>
```

For example:

```
#chown itoc /opt/hp/itoc
```

```
#chgrp itoc /opt/hp/itoc
```

Install and Configure PostgreSQL

You must install and configure PostgreSQL 9.1.3+ on your server before installing ITOC.

Install PostgreSQL

For general PostgreSQL installation instructions, see:

<http://www.postgresql.org/docs/9.3/static/index.html>

For installation instructions for a specific platform, see:

https://wiki.postgresql.org/wiki/YUM_Installation

Configure PostgreSQL

After you have installed PostgreSQL, use PostgreSQL documentation or work with a database administrator to configure a database, user, and password. This section provides an example of typical configuration steps.

1. As root user, set up the database.
2. Configure the database as necessary:
 - a. As required to allow encrypted password access, modify the `pg_hba.conf` file:


```
# TYPE DATABASE USER ADDRESS METHOD
host itoc all 0.0.0.0/0 md5
host idmitoc all 0.0.0.0/0 md5
```
 - b. (Optional) Configure `/var/lib/pgsql/pgsql_version/data/postgresql.conf` with the following recommended parameters, as needed:


```
listen_addresses = '*'
maintenance_work_mem = 64MB
wal_buffers = -1
checkpoint_segments = 64
checkpoint_timeout = 10min
effective_cache_size = 4GB
max_locks_per_transaction = 96
log_min_duration_statement = 1000
max_connections = 275
shared_buffers = 4GB
log_rotation_size = 500MB
log_line_prefix = '%t:%r [%p]: [%1] user=%u,db=%d '
log_filename = 'postgresql-%d.log'
```
3. Restart the PostgreSQL service:


```
#service postgresql-<pgsql_version> restart
```
4. Create the PostgreSQL user role and password. Create the two databases using the example script shown below:
 - One database for ITOC application data, named `itoc`.
 - One database for ITOC organization administration data, named `idmitoc`.

```
#!/bin/sh
```

```
set -e
```

```
tsfolder="hpitospace"
tablespace="hpitocdata"
```

```
[ $# -lt 1 ] && echo "USAGE: `basename $0` <dbpassword> [username] [port]
[dbname] [authdbname]" && exit 1
```

```
db_pswd="$1"
dbuser="$2"
port="$3"
dbname="$4"
idmdbname="$5"
```

```

[ -z "$dbuser" ] && dbuser="itocadmin"
[ -z "$port" ] && port=5432
[ -z "$dbname" ] && dbname="itoc"
[ -z "$idmdbname" ] && idmdbname="idmitoc"

su_cmd="su - postgres"
c_cmd="sudo -u postgres psql -p $port"

echo "mkdir $tsfolder" | $su_cmd
echo "create user $dbuser WITH CREATEROLE CREATEUSER PASSWORD '$db_pswd';" |
$c_cmd
echo "create tablespace $tablespace owner $dbuser location
'/var/lib/pgsql/$tsfolder';" | $c_cmd
echo "create database $dbname OWNER $dbuser template template0 encoding 'UTF8'
lc_collate 'C' tablespace $tablespace;" | $c_cmd
echo "create database $idmdbname OWNER $dbuser template template0 encoding
'UTF8' lc_collate 'C' tablespace $tablespace;" | $c_cmd

exit $?

```

Install ITOC

1. As non-root user, enter the values specified in the install interview, or accept the defaults by pressing **Enter**:

```

Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...
Launching installer...
=====
HP IT Operations Compliance (created with InstallAnywhere)
-----
Preparing CONSOLE Mode Installation...
=====
Introduction
-----
This installation wizard will guide you through the installation of HP IT
Operations Compliance 1.00.000.576
It is strongly recommended that you quit all programs before continuing with
this installation.
You may cancel the installation at any point by pressing CTRL+C.
PRESS <ENTER> TO CONTINUE:
=====
License Agreement
-----
.

```


- .
.
- 2. Press **Y** to accept the terms of the license agreement:
DO YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT? (Y/N): Y
- 3. Enter and then reenter the installer user password:
Installation User Password

Password of user performing this installation. It is used by Remote Execution Engine for Scan/Remediate operations. It will be persisted in a file encrypted.
Please Enter the Password:
=====
- Installation User Password Re-Prompt

Please Re-Enter the Password:
- 4. Create your user-defined ITOC Admin User password, which is the password for the new itocadmin account within ITOC itself. This password must have 6 or more characters. Then reenter this password when re-prompted:
ITOC Admin User Password

It is a password for seeded admin user. It will also be used to generate certificates and for other application logic. It will be persisted in a file encrypted.
Please Enter the Password:
=====
- ITOC Admin User Password Re-Prompt

Please Re-Enter the Password:
- 5. Select **1** to accept the installation defaults (as shown in the example), or select **2** to customize installation values (see [Customize Installation Values](#)):
Installation Defaults

Following configurable defaults will be used to perform HP IT Operations Compliance installation:
Install Folder : /opt/hp/itoc
JRE : OpenJRE
Server Hostname : itoc.yoursite.hp.com
Database Hostname : itoc.yoursite.hp.com
Database Port : 5432
Database Name : itoc
Organization Administration Database Name : idmitoc
Database User : itocadmin
->1- Accept
2- Customize

ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:
1

- 6. Enter the database user password you created when you installed the PostgreSQL database, and reenter this password when prompted:

ITOC Database User Password

It is a password of database user. It will be persisted in a file encrypted.

Enter the database user password:

=====

ITOC Database User Password Re-Prompt

RE-Enter the database user password:

- 7. Review the pre-installation summary, and press **Enter** to complete installation:

Pre-Installation Summary

Please Review the Following Before Continuing:

Install Folder:

/opt/hp/itoc

Product Name

HP IT Operations Compliance 1.00.000.576

ITOC Database

PostgreSQL (itocadmin:itoc@itoc21.qa.opsware.com:5432)

ITOC Organization Administration Database

PostgreSQL (itocadmin:idmitoc@itoc.yoursite.hp.com:5432)

Disk Space Information (for Installation Target):

Required: 806.05 MegaBytes

Available: 41,184.39 MegaBytes

PRESS <ENTER> TO CONTINUE:

=====

Installing...

Congratulations. HP IT Operations Compliance has been successfully installed to:

/opt/hp/itoc

PRESS <ENTER> TO EXIT THE INSTALLER:

Start ITOC Services as Non-Root User

ITOC services are started automatically during ITOC installation. When installing as non-root user, perform the following additional actions using `sudo` or `root` user to make the installation fail-safe against reboot:

On RHEL 6

```
cd /etc/init.d
ln -s <install_dir>/scripts/portal portal
ln -s <install_dir>/scripts/itoc itoc
chkconfig portal on
chkconfig itoc on
```

On RHEL 7

```
cp <install_dir>/scripts/itoc|portal.service /usr/lib/systemd/system/
systemctl daemon-reload
systemctl enable itoc|portal.service
```

Log In to ITOC

The ITOC hostname must be resolvable from your desktop.

1. From your browser, log into ITOC:
`https://<ITOC_hostname>:9000`



IT Operations Compliance

Audit, Remediate, Report

Log In

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[Privacy Statement](#) | [Terms Of Use](#)

2. Press the **Login** button.
3. Accept the certificate that appears in the Security warning.

4. At the ITOC login screen, enter "itocadmin" as the username and the password you set (or created) during the installation. Press **Log In**.



Username

Password

For more information about login permissions and users, see the [HP IT Operations Compliance Administration Guide](#).

Chapter 3: Administration

For information about ITOC administration, including Business and System Configuration, see the [HP IT Operations Compliance Administration Guide](#).

Chapter 4: HPLN Content

This section describes how to download and import HP-provided ITOC content from HP Live Network (HPLN).

IT organizations are increasingly required to cut costs while maintaining a secure and compliant infrastructure. The Security and Compliance Service for HP IT Operations Compliance delivers up-to-date compliance policies to immediately identify security configuration issues in your environment. The policies include built-in remediation wherever applicable, so you can fix compliance issues quickly without expending a lot of resources.

You can access HPLN with your HP Passport credentials and be kept up-to-date on the latest industry compliance standards, based on the needs of your data center. For example, you will have access to regularly updated security best practices, such as the Center for Internet Security (CIS), Payment Card Industry (PCI), and so on.

As part of HP ITOC 1.10, the following content is available to download over HPLN to assist organizations with managing compliance:

- Compliance Control Library
- CIS Compliance Benchmark Policies
- PCI Compliance Benchmark Policies
- FISMA Compliance Benchmark Policies
- HIPAA Compliance Benchmark Policies

Compliance Control Library

The Compliance Control Library includes an array of user-customizable controls to audit and remediate common configurations that pose security and compliance risks on OS platforms and database servers, such as local security settings on Windows or RPMs on Linux.

For example, users can define different audits to ensure that a subset of Windows managed servers has a minimum password length of 8 characters, while a different set of servers has a minimum password length of 10. Where possible, controls have remediation enabled to allow users to bring managed servers into custom-defined compliance.

Controls specific to OS platform, software applications, and other database servers are delivered in separate bundles. The following control libraries are currently available as free non-subscription content for HP IT Operation Compliance Version 1.10:

Name	Description	Applicable ITOC Release
Control Library for Microsoft Windows	Includes an array of user-customizable controls to audit and remediate commonly used objects on Microsoft Windows OS platforms.	All
Control Library for UNIX	Includes an array of user-customizable controls to audit and remediate commonly used objects on Linux OS platforms.	All
Control Library for Oracle 10g/11g	Includes an array of user-customizable controls to audit commonly used objects on Oracle 10g and 11g database servers.	All
Control Library for Software	Includes an array of user-customizable controls to audit and remediate commonly used objects on software applications such as Apache HTTPD, Apache Tomcat, MySQL, and JBoss.	ITOC 1.10
Control Library for DB2 Database Servers	Includes an array of user-customizable controls to audit commonly used objects on DB2 database servers.	ITOC 1.00 and later
Control Library for MS SQL Server	Includes an array of user-customizable controls to audit commonly used objects on MS SQL servers.	ITOC 1.00 and later

The following platform resources are supported as part of the Control Library for Microsoft Windows:

- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2

The following platform resources are supported as part of the Control Library for UNIX:

- RHEL 5
- RHEL 6
- RHEL 7
- CentOS 5
- CentOS 6
- CentOS 7

- OEL 5
- OEL 6
- OEL 7
- SuSE Linux Enterprise Server (SLES) 11
- Ubuntu 12.04 LTS Server

The following software resources are supported as part of Software Control Library for UNIX:

- Apache HTTP Server 2.4
- Apache Tomcat 6
- JBoss Application Server 7
- MySQL Community Server 5.6

Software resources are supported on the following Platform resources:

- RHEL 5
- RHEL 6
- RHEL 7
- CentOS 5
- CentOS 6
- CentOS 7
- OEL 5
- OEL 6
- OEL 7
- SuSE Linux Enterprise Server (SLES) 11
- Ubuntu 12.04 LTS Server
- Ubuntu 14.04 LTS Server

The following software resources are supported as part of Control Library for Oracle 10g/11g:

- Oracle 10g
- Oracle 11g

Note: Oracle10g and Oracle11g are supported only when installed on RHEL 6 and SLES 11.

The following software resources are supported as part of Control Library for DB2:

- DB2 Database Server 10.5

The following software resources are supported as part of Control Library for MS SQL Server:

- MS SQL version 11

Regulatory Policies

The out-of-the-box (OOTB) regulatory policies provide predefined values for audit and remediation according to guidelines such as CIS, PCI, or SOX.

The policies shown in the following table are currently available as free non-subscription content for HP ITOC 1.10.

Name	Description	Prerequisite Control Library	Applicable ITOC Release
CIS CentOS Linux 7 Benchmark v1.1.0	CIS CentOS Linux 7 Benchmark provides prescriptive guidance for establishing a secure configuration posture for CentOS version 7.0 running on x86 and x64 platforms.	Control Library for UNIX	1.00 and later
CIS Red Hat Enterprise Linux 5 Benchmark v2.1.0	CIS Red Hat Enterprise Linux 5 Benchmark provides prescriptive guidance for establishing a secure configuration posture for RHEL versions 5.x running on x86 and x64 platforms.	Control Library for UNIX	All
CIS Red Hat Enterprise Linux 6 Benchmark v1.3.0	CIS Red Hat Enterprise Linux 6 Benchmark provides prescriptive guidance for establishing a secure configuration posture for RHEL versions 6.x running on x86 and x64 platforms.	Control Library for UNIX	All
CIS Red Hat Enterprise Linux 7 Benchmark v1.0.0	CIS Red Hat Enterprise Linux 7 Benchmark provides prescriptive guidance for establishing a secure configuration posture for RHEL versions 7.x running on x86 and x64 platforms.	Control Library for UNIX	1.00 and later

CIS SUSE Linux Enterprise Server 11 Benchmark v 1.0.0	CIS SUSE Linux Enterprise Server 11 Benchmark provides prescriptive guidance for establishing a secure configuration posture for SUSE Linux Enterprise Server (SLES) version 11 running on x86 and x64 platforms.	Control Library for UNIX	All
CIS Ubuntu 12.04 LTS Server Benchmark v1.0.0	This document provides prescriptive guidance for establishing a secure configuration posture for Ubuntu 12.04 LTS Server.	Control Library for UNIX	All
CIS Microsoft Windows Server 2012 v1.0.0	CIS Microsoft Windows Server 2012 Benchmark v1.0.0 provides prescriptive guidance for establishing a secure configuration posture for CIS Microsoft Windows Server 2012.	Control Library for Windows	All
CIS Microsoft Windows Server 2012 R2 v1.1.0	CIS Microsoft Windows Server 2012 R2 Benchmark v1.1.0 provides prescriptive guidance for establishing a secure configuration posture for CIS Microsoft Windows Server 2012 R2.	Control Library for Windows	1.00 and later
CIS Apache HTTP Server 2.4 v1.2.0	This document is intended for system and application administrators, security specialists, auditors, help desk, and platform deployment personnel who plan to develop, deploy, assess, or secure solutions that incorporate Apache HTTP Server 2.4 running on Linux.	Control Library for Software	1.10
CIS Oracle MySQL Community Server 5.6 v1.0.0	This document, CIS Oracle MySQL Community Server 5.6 Benchmark, provides prescriptive guidance for establishing a secure configuration posture for MySQL Community Server 5.6.	Control Library for Software	1.10

<p>CIS Apache Tomcat Server 6.0 Benchmark v1.0.0</p>	<p>This document is intended for system and application administrators, security specialists, auditors, help desk, and platform deployment personnel who plan to develop, deploy, assess, or secure solutions that incorporate Apache Tomcat on a Linux platform.</p>	<p>Control Library for Software</p>	<p>1.10</p>
<p>JBoss Application Server 7 Hardening Guidelines</p>	<p>This policy is intended for organizations or individuals that are using JBoss Application Server 7 (in standalone or domain mode) on secure production systems.</p>	<p>Control Library for Software</p>	<p>1.10</p>
<p>CIS Security Configuration Benchmark for Oracle Database Server 11g, version 1.0.1</p>	<p>CIS Security Configuration Benchmark for Oracle Database Server 11g provides prescriptive guidance to secure Oracle database from conventional OOTB threats.</p>	<p>Control Library for Oracle 10g/11g</p>	<p>All</p>
<p>CIS Benchmark for Oracle 9i/10g, Version 2.01</p>	<p>CIS Security Configuration Benchmark for Oracle Database Server 9i/10g provides prescriptive guidance to secure Oracle database from conventional OOTB threats.</p>	<p>Control Library for Oracle 10g/11g</p>	<p>All</p>
<p>Payment Card Industry (PCI) Data Security Standard version 3.0.0</p>	<p>The Payment Card Industry Data Security Standard (PCI DSS) was developed to encourage and enhance cardholder data security and facilitate the broad adoption of consistent data security measures globally. This policy is applicable only for the following resource types - Platform Resources: Microsoft Windows Server 2008 R2, 2012, Red Hat compatibles and SuSE compatibles, Ubuntu 12.04. Software Resources: Apache HTTP 2.4, Apache Tomcat 6.x, MYSQL Community Server 5.6, JBoss AS 7.x.</p>	<p>Control Library for Windows and Control Library for UNIX</p>	<p>1.00 and later</p>

<p>NIST SP 800-53 Revision 4 (FISMA)</p>	<p>Audit Policy for NIST Special Publication 800-53 Revision 4 - Recommended Security Controls for Federal Information Systems and Organizations. This policy is applicable only for the following resource types - Microsoft Windows Server 2008 R2, 2012, 2012 R2 , Red Hat compatibles and SuSE compatibles, Ubuntu 12.04.</p>	<p>Control Library for Windows and Control Library for UNIX</p>	<p>1.00 and later</p>
<p>NIST SP 800-66 Revision 1 (HIPAA)</p>	<p>Audit Policy for NIST Special Publication 800-66 Revision 1 - Recommended Security Controls for Health Insurance Portability and Accountability Act. This policy is applicable only for the following resource types - Red Hat compatibles and SuSE compatibles.</p>	<p>Control Library for Windows and Control Library for UNIX</p>	<p>1.00 and later</p>
<p>CIS MS SQL 11 Benchmark v1.2.0</p>	<p>This policy, CIS MSSQL Benchmark v1.2.0, provides prescriptive guidance for establishing a secure configuration posture for CIS MS SQL version 11.</p>	<p>Control Library for MS SQL Server</p>	<p>1.00 and later</p>
<p>CIS DB2 Database Server 10.5 Benchmark v1.1.0</p>	<p>This policy, CIS DB2 10.5 Benchmark v1.1.0, provides prescriptive GUIDance for establishing a secure configuration posture for DB2 Database Server 10.5.</p>	<p>Control Library for DB2 Database Server</p>	<p>1.00 and later</p>

The following table shows which platforms and software resources are covered in the PCI, FISMA, or HIPAA policies in the ITOC 1.10 release:

OS Vendor	Resource/Benchmark	Library	CIS	PCI-DSS	FISMA (800-53)	HIPAA (800-66)	JBOSS Hardening	Software Resource/Compatible OS Resource	Apache HTTPD 2.4	Apache Tomcat 6.x	MySQL 5.6	JBoss AS 7.x	Oracle 10g	Oracle 11g	DB2 10.5	MS SQL Server 2005
Operating System Resources																
Microsoft	Windows Server 2008	N	N	N	N	N	NA		N	N	N	N	N	N	N	N
	Windows Server 2008 R2	Y	2.1.0	3	rev 4	rev 1	NA		N	N	N	N	N	N	N	N
	Windows Server 2012	Y	1.0.0	3	rev 4	rev 1	NA		N	N	N	N	N	N	N	Y
	Windows Server 2012 R2	Y	1.1.0	3	rev 4	rev 1	NA		N	N	N	N	N	N	N	N
Redhat	Redhat Enterprise Linux Server 5	Y	2.1.0	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	Redhat Enterprise Linux Server 6	Y	1.3.0	3	rev 4	rev 1	NA		Y	Y	Y	Y	Y	Y	Y	N
	Redhat Enterprise Linux Server 7	Y	1.0.0	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
Novell	SUSE Linux Enterprise Server 11	Y	1.0.0	3	rev 4	rev 1	NA		Y	Y	Y	Y	Y	Y	N	N
Oracle	Oracle Enterprise Linux Server 5	Y	N	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	Oracle Enterprise Linux Server 6	Y	N	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	Oracle Enterprise Linux Server 7	Y	N	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	Oracle Solaris 11.0	Y	N	N	N	N	NA		N	N	N	N	N	N	N	N
	Oracle Solaris 11.1	Y	N	N	N	N	NA		N	N	N	N	N	N	N	N
CentOS	CentOS 5	Y	N	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	CentOS 6	Y	N	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	CentOS 7	Y	1.1.0	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
Ubuntu	Ubuntu 12.04 LTS	Y	Y	3	rev 4	rev 1	NA		Y	Y	Y	Y	N	N	N	N
	Ubuntu 14.04 LTS	N	N	N	N	N	NA		Y	Y	Y	Y	N	N	N	N
Software Resources																
Apache	HTTPD 2.4	Y	1.2.0	3	N	N	NA									
	Tomcat 6.x	Y	1.0.0	3	N	N	NA									
Oracle	Oracle 10g	Y	1.0.1	N	N	N	NA									
	Oracle 11g	Y	1.0.1	N	N	N	NA									
	MySQL Community Server 5.6	Y	1.0.0	3	N	N	NA									
Redhat	JBOSS AS 7.x	Y	1.0.0	3	N	N	Y									
DB2	DB2 10.5	Y	1.1.0	N	N	N	NA									
Microsoft	MS SQL Server 2005	Y	1.2.0	N	N	N	NA									

Table Legend:

- Y - Both Scan and Remediation supported (used mainly for Library).
- 1.2.0 - Both Scan and Remediation supported for the Benchmark version shown.
- Y - Only Scan is supported (used mainly for Library).
- 1.0.1 - Only Scan is supported for the Benchmark version shown.
- N - Not supported.
- NA - Not applicable.

For all benchmark policies, the corresponding compliance control library is a prerequisite. Please import the respective control library before importing any benchmark policy.

All rules in a policy are set with audit, remediation parameter values as recommended by the benchmark document. There are some rules for which the benchmark suggests to set the value that is consistent with the security and operational requirements of an organization.

Such requirements in OOTB policies and the values provided in the audit and remediation parameters are intended as an example only or as a default value set as per the benchmark recommendation. Please edit rules to include the specific values that are consistent with the security and operational requirements of your organization.

Please refer to the regulatory policy documentation for requirements that need specific values to be configured.

Download Content from HPLN

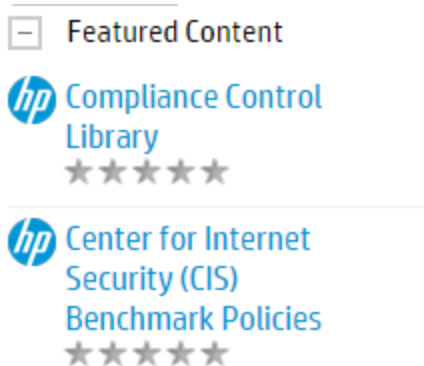
The compliance content delivered for HP IT Operations Compliance is available for download from HPLN. Your HP Passport login credentials are required for viewing HP ITOC product-related information and downloading the required compliance content offerings on HPLN.

HP ITOC product-related information is located at:




<https://hpln.hp.com/group/hp-it-operations-compliance>

To download the compliance content packs offered:

1. Expand the **Featured Content** section in the right hand side of product landing page, and click on the content offering you want.



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 Control Library for Unix Version 20141125 unpublished NEW! <small>Last Update: 9th December 2014 Downloads: 0</small>	Download
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- Compliance Control Library Content Packs can be downloaded from:
<https://hpln.hp.com/contentoffering/compliance-control-library>
- CIS Benchmark Policy Content Packs can be downloaded from:
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- PCI DSS Benchmark Policy Content Packs can be downloaded from:
<https://hpln.hp.com/contentoffering/pci-dss-benchmark-policies>
- FISMA (SP800-53) Benchmark Policy Content Packs can be downloaded from:

<https://hpln.hp.com/contentoffering/fisma-sp800-53-benchmark-policies>

- HIPAA (SP800-66) Benchmark Policy Content Packs can be downloaded from:

<https://hpln.hp.com/contentoffering/hipaa-sp800-66-benchmark-policies>

3. Copy to your ITOC server; for example, to /tmp.

Import Compliance Content

Having the Compliance Control Library is a prerequisite for importing any Compliance Regulatory Policy mentioned.

1. Log into ITOC server as root or non-root user.

2. Import the Control Library:

```
<itoc_install_directory>/importer/ControlImporter <controlBundleFile>  
<itocUser> <itocPassword> <tenant>
```

For example:

```
$/opt/hp/itoc/importer/ControlImporter /tmp/hpitoc-WinControlLibrary.zip  
itocadmin hpitoc public
```

3. Run the controls importer once for each control package desired.

4. Import Policies:

```
<itoc_install_directory>/importer/PolicyImporter <policyZipFile> <itocUser>  
<itocUserPassword> <tenant>
```

For example:

```
$/opt/hp/itoc/importer/PolicyImporter /tmp/hpitoc-cis-win2k12-3449-20141125.zip  
itocadmin hpitoc public
```

5. Run the Policy Importer once for each policy package desired.

Log Files

The Control and Policy Import log files are located here:

```
$<itoc_install_directory>/importer/log
```

- ControlImporter.log - Control Import log file
- PolicyImporter.log – Policy Import log file

Software Resources

Before you run scan and remediation against any of the following software resource types, perform the required configuration listed below for the specified software resource type:

- [Apache HTTPD](#)
- [Apache Tomcat 6](#)
- [JBoss AS 7.1.1](#)
- [MySQL Community Server 5.6](#)

Apache HTTPD

- Type of installation: Package provided by the OS vendor.
- Resource attributes needed at resource creation:
 - **APACHE_PREFIX**: The server root directory value where all of the Apache directories are located. This value can be obtained by running:

```
$ httpd -V | grep <HTTPD_ROOT>
```
 - **DOCR00T**: Path to the Apache web document root from which HTTPD will serve files. Can be obtained from the HTTP configuration file.
 - **HTTPD_ROOT**: The same value as **APACHE_PREFIX**. However, this value might vary in other distributions.

Note: **APACHE_PREFIX** may vary on Ubuntu 12.04 and can be obtained by running `$ apache2 -V`.

Apache Tomcat 6

- Source and type of installation: Download the package from the Apache Tomcat repository:
<http://tomcat.apache.org/download-60.cgi>
- Resource attributes needed at resource creation:
 - **CATALINA_HOME**: This represents root of your Tomcat installation. This is can be obtained by running the `ps` command from command line, as shown in the following example:

```
ps -ef | grep <tomcat>
```
 - **CATALINA_BASE**: The **CATALINA_BASE** value is the same as **CATALINA_HOME**. In case of multiple Tomcat instances, you need to provide different resource attributes for the **CATALINA_BASE** value.

Note: Rules that are applicable to protect Tomcat configurations in the Tomcat benchmark policy involve checking the file and group owners of Tomcat configuration files. We have

updated the default file owner and group owner as “Tomcat” in the policy. Based on customer requirements, these values need to be updated in the policy.

JBoss AS 7.1.1

- Source and type of installation: Download the JBoss AS 7.1.1 Final package from the following link: <http://jbossas.jboss.org/downloads/<JBoss AS 7.1.1 Final>>
- Resource attribute needed at resource creation:
 - **JBOSS_HOME**: Specifies the path to the directory where JBoss is installed. The **JBOSS_HOME** value is displayed when the JBoss standalone service is started.

Note: STANDALONE mode only is supported in ITOC Release 1.10.

MySQL Community Server 5.6

- Type of installation: Package provided by the OS vendor.
- Resource attributes needed at resource creation:
 - **dbUser** - Database user
 - **dbPwd** - Database password
 - **dbName** - Database name

Chapter 5: After ITOC Installation

Once you have installed ITOC in your environment, you are ready to:

- Create or import resources and install agents on platform-type resources.
- Create or import and modify business services.
- Review imported policies and modify rule parameters to match your organization's criteria and environment.
- Create maintenance windows, in which compliance scan and remediation jobs will run.
- Create and modify SoAs for policies and business services.
- Run compliance scan and remediation jobs, and view results.
- Integrate with LDAP, assign roles to groups, and create consumer organizations to integrate with LDAP for production or test environments.

See the [HP IT Operations Compliance User Guide](#) and the [HP IT Operations Compliance Administration Guide](#) for further information.

Chapter 6: ITOC Uninstallation

This section describes how to uninstall the ITOC application and agents from your system.

Uninstall Basics

There are several reasons that you might choose to uninstall ITOC:

- Removing test installations.
- Removing demo installations.

Uninstall the ITOC Application

The ITOC uninstaller is located in your ITOC install directory. ITOC must be uninstalled by the user who performed installation.

1. Run the ITOC uninstaller:

```
/opt/hp/itoc/ITOC_Installation/Uninstall_HPITOC
```

```
=====  
HP IT Operations Compliance (created with InstallAnywhere)  
-----  
Preparing CONSOLE Mode Uninstallation...
```

2. Press **1** or **Enter** when prompted to confirm the uninstallation:

```
Deinstall ITOC  
-----  
Do you really want to deinstall ITOC?  
->1- OK  
2- Cancel  
ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:  
=====  
Uninstalling...  
.  
.  
.  
Uninstall Complete  
-----  
All items were successfully uninstalled.  
Manually delete the files/folders in /opt/hp/itoc incase there are any  
remaining.
```

PRESS <ENTER> TO CONTINUE:

Uninstall an Agent

This section describes how to uninstall an agent from a resource.

Uninstall a Linux Agent

1. Run the following command to uninstall a Linux agent:
`<itoc_install_directory>/uninstall_itoc_minion.sh`
2. [Remove Files from the /tmp Directory.](#)
3. [Delete the Agent Key.](#)
4. [Unregister the Agent](#)

Uninstall a Windows Agent

1. Run the following command to uninstall a Windows agent:
`C:/salt/uninst.exe`
2. [Remove Files from the /tmp Directory.](#)
3. [Delete the Agent Key.](#)
4. [Unregister the Agent.](#)

Remove Files from the /tmp Directory

Remove the following files from the /tmp directory:

- `rm -f /tmp/ITOC*`
- `rm -f /tmp/*minion*`

Delete the Agent Key

1. Delete the agent key using the following command:
`$(itoc_install_directory)/scripts/minion_reg.sh -d <agent_identifier_key_string> -y`
2. The `agent_identifier_key_string` typically is the hostname of the target agent host. To confirm, enter:

```
$<itoc_install_directory>/scripts/minion_reg.sh -L
```

The `agent_identifier_key_string` is in the command output.

Unregister the Agent

From the ITOC server, run the following command to unregister the agent on the SA Slice host:

```
<itoc_install_directory>/scripts/minion_reg.sh -d minion_key
```

Chapter 7: ITOC Upgrade

This section describes the requirements and procedures for upgrading to ITOC 1.10.

Upgrade Paths

You can upgrade to ITOC 1.10 from the following releases:

- ITOC 1.00

How Upgrade Works

When ITOC is installed as root user, the `/var/.com.zerog.registry.xml` registry file is created. For a non-root user, the registry file is located in the non-root user's home directory.

When you start the ITOC application, this file is read to determine an upgrade, which then occurs automatically. All information about the environment is taken automatically from installer files and the `application.properties` file to replay changes once new binaries are in place. The upgrade preserves all settings.

Note: Upgrade must be triggered by the same host user used for ITOC installation.

After an upgrade, be sure to clear your browser cache.

To keep track of each upgrade, a timestamped backup and log folder is created in `<itoc_install_directory>/ITOC_Installation/`.

When an ITOC upgrade is performed, you have the opportunity to stop the upgrade and roll back to an earlier version. The installer runs through an upgrade interview to capture install parameters. Enter the values specified in the interview, or press **Enter** to accept the defaults:

```
=====
Upgrading
-----
[=====|=====|=====
.
.
.
=====
Point of no return Confirmation
-----
```

All packages have been updated at this point. Next, the ITOC services will be started which will start JBOSS and deploy the application. During application

deployment DB Schema and Data migration will also take place. In the event of some unexpected problem, you may rollback from this point.

If you decide to rollback, then everything will be restored to the pre-upgrade state

->1- Continue

2- Rollback

ENTER THE NUMBER FOR YOUR CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:

Upgrade ITOC

1. The installer runs through an interview to capture install parameters. Enter the values specified in the installer interview, or press **Enter** to accept the defaults.

Preparing to install...

Extracting the JRE from the installer archive...

Unpacking the JRE...

Extracting the installation resources from the installer archive...

Configuring the installer for this system's environment...

Launching installer...

=====

HP IT Operations Compliance (created with InstallAnywhere)

Preparing CONSOLE Mode Installation...

=====

Introduction

This installation wizard will guide you through the installation of HP IT Operations Compliance 1.01.000.831

It is strongly recommended that you quit all programs before continuing with this installation.

You may cancel the installation at any point by pressing CTRL+C.

PRESS <ENTER> TO CONTINUE:

=====

License Agreement

.
. .
. .

2. Enter **Y** to accept the terms of the license agreement.
DO YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT? (Y/N): y

=====

3. Make sure all ITOC clients are stopped before pressing **1** to continue.

Stop ITOC

ITOC Services will be unavailable during upgrade. Please quiesce the clients before proceeding.

- >1- Continue
- 2- Exit

ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:
=====

4. Review the pre-upgrade summary, and press **Enter** to continue:

Pre-Upgrade Summary

Please Review the Following Before Continuing:

Install Folder:
/opt/hp/itoc

JRE
/opt/hp/itoc/openjre

Disk Space Information (for Installation Target):
Required: 795.35 MegaBytes
Available: 41,704.15 MegaBytes

PRESS <ENTER> TO CONTINUE:
=====

Installing...

5. When an ITOC upgrade is performed, you have the opportunity to stop the upgrade and roll back to an earlier version. Press **1** to continue the upgrade, or press **2** to roll back to an earlier version of ITOC.

Point of no return Confirmation

All packages have been updated at this point. Next, the ITOC services will be started which will start JBOSS and deploy the application.

During application deployment DB Schema and Data migration will also take place. In the event of some unexpected problem, you may rollback from this point.

If you decide to rollback, then everything will be restored to the pre-upgrade state.

- >1- Continue
- 2- Rollback

ENTER THE NUMBER FOR YOUR CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:: 1

- .
- .
- .

=====

Installation Complete

Congratulations. HP IT Operations Compliance has been successfully installed to:

/opt/hp/itoc

PRESS <ENTER> TO EXIT THE INSTALLER:

Appendix A: Install Agents on Resources Manually

This appendix describes how to install Salt agents on your resources manually. To install agents on resources using the ITOC UI, see the [HP IT Operations Compliance User Guide](#).

ITOC provides Salt agent installer packages for the following target resources:

Platform	Agent Installer Package
Microsoft Windows 7, Microsoft Windows 8, Microsoft Windows 8.1, Microsoft Windows Server 2008 R2, Microsoft Windows Server 2012 R2, Microsoft Windows Server 2012	Win64_minion-2014.7.5.exe
RHEL 5 x64, CentOS 5 x64, OEL 5 x64	RHEL5_minion-2014.7.2.1
RHEL 6 x64, CentOS 6 x64, OEL 6 x64	RHEL6_minion-2014.7.1.1
RHEL 7 x64, CentOS 7 x64, OEL 7 x64	RHEL7_minion-2014.7.1.1
SLES 11 SP2 x64	SLES11_minion-2014.7.4.184.2
Ubuntu 12.04 LTS x64	Ubuntu12045LTS_minion-2014.7.1
Ubuntu 14.04 LTS x64	Ubuntu14041LTS_minion-2014.7.5

Linux Installation

Use this procedure to install agents on Linux platforms.

Copy the Agent Install Package on the ITOC Server

1. Copy the agent install package for the target platform to the target server:

```
$scp <itoc_install_directory>/salt/srv/salt/<install_package>  
user@minion_server:/tmp
```

For example (using Red Hat 7):

```
$scp /opt/hp/itoc/salt/srv/salt/RHEL7_minion-2014.7.1.1 user@minion_server:/tmp
```

Run the Agent Install Package on the Target Server

1. Run the agent install package using the ITOC server FQDN:

```
/tmp/<install_package> -- -f <ITOC_server_FQDN>
```

For example:

```
/tmp/RHEL7_minion-2014.7.1.1 -- -f itocserver.itoc.mysite.com
```

The syntax `-- -f` is correct as shown above.

To view available options for the installer, use the `-- -h` option:

```
/tmp/RHEL7_minion-7.0.3 -- -h
```

Verifying archive integrity... All good.

```
USAGE: install_minion.sh [-d | --dir] <itoc_install_directory> [-f | --fqdn]
<salt_master_fqdn> [-h | --help]
```

- `-f | --fqdn`: Salt Master host FQDN. Corresponding entry should be created in `/etc/hosts` by user to resolve it locally.
- `-d | --dir` (optional): Directory where salt agent will be installed. The default value is `/opt/hp/itoc`.
- `-h | --help` (optional): Installer usage help.

Next step: [Accept the Agent Key on the ITOC Server.](#)

Windows Installation

Prerequisites

1. Install the Python 2.7 64-bit library in on the Windows agent target. In the following example, `%SystemDrive%` is D.
 - a. Modify the `itoc.rex.salt.minion.windows.pythonloc = C:/python27` property in the `<install_dir>/wildfly-8.1.0.Final/standalone/deployments/itoc.war/WEB-INF/classes/application.properties` file to `itoc.rex.salt.minion.windows.pythonloc = D:/python27`
 - b. Restart your service:


```
<itoc_install_directory>/scripts/itoc restart appserver
```
2. Install the PyWin32 64-bit library pointing to Python, installed in step 1.
3. Select an SSH installation for Windows. HP ITOC has been tested with the following two SSH installation options for Windows; however, you can use any other similar solution.

- **COPSSH 64-bit** - <https://www.itefix.net/copssh>

- **BITWISE SSH** - <https://www.bitwise.com/>

All the Windows servers on a system must have either **COPSSH** or **BITWISE SSH** installed. Do not use both. HP ITOC does not support a mix of **COPSSH** and **BITWISE SSH** on servers.

By default, the ITOC application.properties file is configured to support **COPSSH** as follows (default configurations are shown in **bold text**):

```
## itoc.rex.salt.minion.windows.temp : salt minion temp dir for windows
## This is an optional property with default value C:/tmp
itoc.rex.salt.minion.windows.temp = C:/tmp
```

```
## itoc.rex.salt.minion.windows.pythonloc : salt minion python location for windows
## This is an optional property with default value C:/python27
itoc.rex.salt.minion.windows.pythonloc = C:/python27
```

```
## itoc.rex.salt.minion.windows.sshsaltloc : location for salt installation while access from SSH
## This is an optional property with default value /cygdrive/c/salt
itoc.rex.salt.minion.windows.sshsaltloc = /cygdrive/c/salt
```

```
## itoc.rex.salt.minion.windows.sshenvtype : what kind of command set windows ssh uses (POSIX or Windows)
## This is an optional property with default value POSIX
itoc.rex.salt.minion.windows.sshenvtype = POSIX
```

To use **BITWISE** instead of **COPSSH**, the application.properties file must have the following information (shown in **bold text**):

```
## itoc.rex.salt.minion.windows.temp : salt minion temp dir for windows
## This is an optional property with default value C:/tmp
itoc.rex.salt.minion.windows.temp = C:/tmp
```

```
## itoc.rex.salt.minion.windows.pythonloc : salt minion python location for windows
## This is an optional property with default value C:/python27
itoc.rex.salt.minion.windows.pythonloc = C:/python27
```

```
## itoc.rex.salt.minion.windows.sshsaltloc : location for salt installation while access from SSH
## This is an optional property with default value /cygdrive/c/salt
itoc.rex.salt.minion.windows.sshsaltloc = C:/salt
```

```
## itoc.rex.salt.minion.windows.sshenvtype : what kind of command set windows ssh uses (POSIX or Windows)
## This is an optional property with default value POSIX
itoc.rex.salt.minion.windows.sshenvtype = Windows
```

For both **COPSSH** and **BITWISE**, the user must ensure that:

- The Python 2.7 64-bit library is installed in the directory specified by `itoc.rex.salt.minion.windows.pythonloc`, as shown in step 1.
- `itoc.rex.salt.minion.windows.sshsaltloc` must be:
 - `%SystemDrive%/salt` for **BITWISE** use.
 - `/cygdrive/%SystemDrive%/salt` for **COPSSH** use.
- `itoc.rex.salt.minion.windows.temp` and `itoc.rex.salt.minion.windows.sshsaltloc` are pre-created.
 - `itoc.rex.salt.minion.windows.temp` must have read and write permissions for the Administrator and System users.
 - `itoc.rex.salt.minion.windows.sshsaltloc` must have read permissions.
- All directory names specified in the `application.properties` files must use `/` as a separator, not `\`.
- Appropriate firewall settings should be updated to allow the SSH server to communicate.

HP recommends that the user create a template Windows server with this configuration and clone it for easy configuration.

Install the Agent on a Windows Target

Use this procedure to install agents on Windows platforms.

1. Copy the Windows agent install file to the target server.
2. Run the Windows agent install self-extracting executable:
`c:/temp/Win64_minion-2014.7.5.exe`

It will extract the package in same location.

3. Enter the following command to install the agent using the command prompt:
`cd minionpkg`

```
minionpkg\install_minion.bat itocserver.itoc.mysite.com
Install finished successfully!
```

Next step: [Accept the Agent Key on the ITOC Server.](#)

Accept the Agent Key on the ITOC Server

1. List the available keys:

```
$(itoc_install_directory)/salt/usr/bin/minion_reg.sh -L
```

For example:

```
$/opt/hp/itoc/salt/usr/bin/minion_reg.sh -L
```

Accepted Keys:

```
itocserver.itoc.mysite.com
```

Unaccepted Keys:

```
targetserver.itoc.mysite.com
```

Rejected Keys:

2. Accept the agent with your selected key:

```
$(itoc_install_directory)/salt/usr/bin/minion_reg.sh -a <target_FQDN> -y
```

You can accept all agent keys at once. Install the agents on multiple target servers as needed for your environment, then accept all agent keys:

```
$(itoc_install_directory)/salt/usr/bin/minion_reg.sh -A -y
```

To view available options for the `minion_reg.sh` script, use the `-h` option:

```
minion_reg.sh -h
```

Appendix B: Start, Stop, and Check Service Status

You can start, stop, restart, or check ITOC services manually on RHEL 6 or RHEL 7 using the commands in the following sections:

- [Using Optional Commands on RHEL 6 and RHEL 7](#)
- [Using ITOC Scripts on RHEL 6 and RHEL 7](#)

Using Optional Commands on RHEL 6 and RHEL 7

- On RHEL 6, use the `service` command:
`service <itoc | portal> <start | stop | status | restart>`

The following example shows how to start ITOC manually on RHEL 6:

```
service itoc start
```

- On RHEL 7, use the `systemctl` command:
`systemctl <start | stop | status | restart> <itoc | portal>`

The following example shows how to start ITOC manually on RHEL 7:

```
systemctl start itoc
```

After you perform these steps, wait a few minutes for all services to start.

Using ITOC Scripts on RHEL 6 and RHEL 7

ITOC services can be configured manually using ITOC scripts:

```
$<itoc_install_directory>/scripts <itoc | portal> <start | stop | status | restart>
```


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