

SBAC OpenAM Installation Instructions

Prerequisites:

- Linux Operating System
 - Linux (tested with Ubuntu 14.04 LTS (GNU/Linux 3.13.0-24-generic x86_64))
 - 16GB RAM
 - 630GB Disk Space
 - 6 virtual CPUs
 - Virtual Servers (tested as Amazon EC2 instances or as Rackspace virtual servers)
 - Ports 1689, 4444, 8005, 8080, 9999, 50389, and 50889 available
 - Fully qualified hostname(s) of all OpenAM servers listed in either a) DNS or b) the `/etc/hosts` file.
- Software
 - Required Software:
 - `unzip` (`apt-get install unzip`)
 - Java Version
 - java version "1.7.0_76"
 - Java(TM) SE Runtime Environment (build 1.7.0_76-b13)
 - Java HotSpot(TM) 64-Bit Server VM (build 24.76-b04, mixed mode)

If this specific version of java is not installed, install it with these steps:

```
# apt-get install software-properties-common
# add-apt-repository ppa:webupd8team/java
# apt-get update
# apt-get install oracle-java7-installer
```

- Access to OpenAM Installation File (`sbacOpenAM-Installv2.zip`)
- OpenDJ user repository is set up and you have the name or IP address of the load balancer that sits in front of it.
- Load balancer for OpenAM is set up on port 443 on the front end and 8080 on the back end, does SSL termination, has cookie based stickiness enabled, and uses the OpenAM provided `isAlive.jsp` for health monitoring.
- A mail server that does not require SMTP authentication

Installation Steps:

1. Log in to your Linux server as the root user (or `sudo` to root).
2. Download a copy of the `sbacOpenAM-Installv2.zip` and place it in `/tmp`.
3. Unzip the OpenAM into the `/opt` folder.

```
# cd /opt
# unzip /tmp/sbacOpenAM-Installv2.zip
Archive:  sbacOpenAM-Installv2.zip
  creating:  artifacts/
  creating:  artifacts/configfiles/
  creating:  artifacts/templates/
  inflating: artifacts/templates/iPlanetAMAuthService_info.txt
  inflating: artifacts/templates/config.txt
  inflating: artifacts/templates/datastore_info.txt
  inflating: artifacts/templates/authModule_info.txt
  inflating: artifacts/templates/OAuth2Provider_info.txt
  inflating: artifacts/templates/OAuth2Client_info.txt
  extracting: artifacts/templates/pwd.txt
  inflating: artifacts/templates/sb_client_group_info.txt
  inflating: artifacts/templates/IDP_metadata.xml
  inflating: artifacts/templates/iPlanetAMPASSWORDResetService_info.txt
  inflating: artifacts/templates/IDP_extended_metadata.xml
  inflating: artifacts/templates/add_config.txt
  inflating: artifacts/keystore.jks
  extracting: artifacts/openamtools.zip
  extracting: artifacts/tomcat.zip
  inflating: installOpenAM.sh
  inflating: removeOpenAM.sh
```

Execute the installation script.

```
# ./installOpenAM.sh
```

4. The script will guide you through the installation process. You will be prompted for input as necessary. A successful execution of this script creates the following production folders:
 - /opt/tomcat (tomcat installation directory where openam is deployed)
 - /opt/openam (openam configuration directory)
 - /opt/openamtools (openam install and configuration tools directory)
5. Repeat steps 1 – 4 on all servers where you would like to install OpenAM. Note that subsequent installs will be slightly different as subsequent servers will join the configuration of the first instance.

This completes the installation process for the SBAC OpenAM servers.

OpenAM Removal Steps

If you made a mistake during your installation you can completely remove OpenAM and supporting files by performing the following:

1. Run the `removeOpenAM.sh` script

```
# cd /opt
# ./removeOpenAM.sh
```

This script will:

- a. Shutdown tomcat (if tomcat is not running you will see a java stack trace which is normal)
 - b. Remove the `/opt/artifacts`, `/opt/openamtools`, `/opt/tomcat` directories and the `installOpenAM.sh` script. The `/opt/openam` directory will remain but all contents under it will be deleted.
2. Delete the `/opt/removeOpenAM.sh` script
3. You may then repeat the installation process.

Cleanup Steps:

After a successful installation you can remove some files that were used only during installation.

1. Log in to each of the Linux servers where you installed OpenAM.
2. Manually remove the following installation files/folders.

```
# rm -rf /opt/artifacts
# rm /opt/installOpenAM.sh
# rm /opt/removeOpenAM.sh (you may keep this script if you like, but be careful as
there is no confirmation asked when running it. If you run it, OpenAM is removed from the
system as described above)
```

This completes the installation and configuration process

Startup and Shutdown Steps:

After a successful installation tomcat will be running and OpenAM available. The script does not create run control scripts for automatic startup and shutdown of tomcat.

To shutdown tomcat run:

```
# /opt/tomcat/bin/shutdown.sh
```

To start tomcat run:

```
# su - openam -c /opt/tomcat/bin/startup.sh
```

Note: Tomcat must run as the `openam` user in order for OpenAM to run. Running tomcat as any other user will display a “Configuration Options” page.

It is advisable that you create a run control script to automatically start and stop tomcat upon system startup and shutdown. Just make sure you point your run control script uses these commands.

Installation Details (First OpenAM Instance):

The following demonstrates the details contained in the `installOpenAM.sh` script.

```
root@sbacssotest1:/opt# ./installOpenAM.sh
```

The following is the output from the `installOpenAM.sh` script.

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 1: System Verification
*
* In this phase, the script will verify the existing Linux environment.
*
*****
Hit the <ENTER> key to continue

Verifying identity of current user...
CONFIRMED: You are executing this script as: root

Verifying the current working directory...
CONFIRMED: You are executing this script from the /opt folder

Searching for the current version of Java...
/usr/bin/java
CONFIRMED: The java executable was found in the PATH variable
CONFIRMED: You are running java version 1.7.0_76

Checking for the existence of the openam user...
CONFIRMED: The openam user exists.

Checking to see if /opt/tomcat already exists...
/opt/tomcat does not exist

CONFIRMED: This is a new installation.

Hit the <ENTER> key to continue
```

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 2: Gather configuration info
*
* In this phase, the script will collect data from you that will be
* needed to perform the installation and configuration of the system.
*
*****

Choose a password for the amadmin user:
Enter the password for the amadmin user (again):
```

Enter the Fully Qualified Domain Name (FQDN) of this system (Ex. server.co.com): am-new.opentestsystem.org

Is this the first instance of OpenAM you are deploying (yes/no) : yes

Will this instance be deployed behind a load balancer as part of a site configuration? (yes/no) : yes

Enter the load balancer URL (Ex. https://server.co.com:443/auth): https://am-new-secure.opentestsystem.org:443/auth

Enter LDAP load balancer FQDN or IP Address (Ex. ldap.co.com or xx.xx.xx.xx): dj-new.opentestsystem.org

Enter the password for the "cn=SBAC Admin" user:
Enter the password for the "cn=SBAC Admin" user (again):

Enter your mail server FQDN or IP Address (Ex. ldap.co.com or xx.xx.xx.xx): mail-dev.opentestsystem.org

Enter your mail server SMTP port (Ex. 25): 10025

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 3: Extraction of Tomcat and OpenAM Tools
*
* In this phase, the script will extract tomcat and start it up with the
* SBAC-Specific OpenAM war deployed.
*
*****
Hit the <ENTER> key to continue
```

Extracting the tomcat binary w/OpenAM war included...
The binaries have been extracted to the following folder: /opt/tomcat.

```
Starting tomcat...
Using CATALINA_BASE:  /opt/tomcat
Using CATALINA_HOME:  /opt/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/temp
Using JRE_HOME:       /usr/lib/jvm/java-7-oracle/jre
Using CLASSPATH:      /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
Tomcat started.
```

Extracting OpenAM tools...
The OpenAM Tools have been extracted to the following folder: /opt/openamtools.

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 4: Initial Configuration of OpenAM
*
* In this phase, the script will create the initial configuration
* of OpenAM
*
*****
Hit the <ENTER> key to continue

Creating initial configuration for OpenAM (this may take a few moments)...
Checking license acceptance...License terms accepted.
Checking configuration directory /opt/openam...Success.
Installing OpenAM configuration store...Success RSA/ECB/OAEPWithSHA1AndMGF1Padding.
Extracting OpenDJ, please wait...Complete
Running OpenDJ setupSetup command: --cli --adminConnectorPort 4444 --baseDN
dc=openam,dc=forgerock,dc=org --rootUserDN cn=Directory Manager --ldapPort 5389 --skipPortCheck -
--rootUserPassword xxxxxxxx --jmxPort 1689 --no-prompt --doNotStart --hostname am-
new.opentestsysteom.org %0Asee+%2Fopt%2Ftomcat%2Ftemp%2Fopendj-setup-
1514303253822783034.log+for+a+detailed+log+of+this+operation.%0A%0AConfiguring+Directory+Server+.
....+Done.%0A%0Ato+see+basic+server+configuration+status+and+configuration+you+can+launch+%2Fopt%
2Fopenam%2Fopends%2Fbin%2Fstatus%0A...Success.
...Success
Installing OpenAM configuration store in /opt/openam/opends...Success.
Creating OpenAM
suffixImport+task+20150415074627572+scheduled+to+start+immediately%0A%5B15%2FApr%2F2015%3A07%3A46
%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D0+msgID%3D9896349+message%3D%22Import+task+20
150415074627572+started+execution%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%2
2INFORMATION%22+msgCount%3D1+msgID%3D9437595+message%3D%22Local+DB+backend+userRoot+does+not+spec
ify+the+number+of+lock+tables%3A+defaulting+to+97%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%
5D+severity%3D%22INFORMATION%22+msgCount%3D2+msgID%3D9437594+message%3D%22Local+DB+backend+userRo
ot+does+not+specify+the+number+of+cleaner+threads%3A+defaulting+to+24+threads%22%0A%5B15%2FApr%2F
2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D3+msgID%3D9896306+message%3D%22
The+backend+userRoot+is+now+taken+offline%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+sever
ity%3D%22NOTICE%22+msgCount%3D4+msgID%3D20381717+message%3D%22Installation+Directory%3A++++%2Fopt%2
Fopenam%2Fopends%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCou
nt%3D5+msgID%3D20381719+message%3D%22Instance+Directory%3A++++++%2Fopt%2Fopenam%2Fopends%22%0A%5B
15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D6+msgID%3D20381713+m
essage%3D%22JVM+Information%3A+1.7.0_76-b13+by+Oracle+Corporation%2C+64-
bit+architecture%2C+3140747264+bytes+heap+size%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+
severity%3D%22NOTICE%22+msgCount%3D7+msgID%3D20381714+message%3D%22JVM+Host%3A+ip-10-149-64-
70.ec2.internal%2C+running+Linux+3.13.0-24-
generic+amd64%2C+7878238208+bytes+physical+memory+size%2C+number+of+processors+available+4%22%0A%
5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D8+msgID%3D20381715
+message%3D%22JVM+Arguments%3A+%22-
Djava.util.logging.config.file%3D%2Fopt%2Ftomcat%2Fconf%2Flogging.properties%22%2C+%22-
Djava.util.logging.manager%3Dorg.apache.juli.ClassLoaderLogManager%22%2C+%22-
XX%3ANewRatio%3D3%22%2C+%22-Xms3072M%22%2C+%22-Xmx3072M%22%2C+%22-XX%3APermSize%3D256m%22%2C+%22-
XX%3AMaxPermSize%3D256m%22%2C+%22-Dsun.net.client.defaultReadTimeout%3D60000%22%2C+%22-
Dsun.net.client.defaultConnectTimeout%3D30000%22%2C+%22-verbose%3Agc%22%2C+%22-
Xloggc%3A%2Fopt%2Ftomcat%2Flogs%2Fgc.log%22%2C+%22-XX%3A%2BPrintClassHistogram%22%2C+%22-
XX%3A%2BPrintGCTimeStamps%22%2C+%22-XX%3A%2BPrintGCDetails%22%2C+%22-
XX%3A%2BUseParNewGC%22%2C+%22-XX%3A%2BUseConcMarkSweepGC%22%2C+%22-
XX%3A%2BUseCMSCompactAtFullCollection%22%2C+%22-XX%3A%2BCMSClassUnloadingEnabled%22%2C+%22-
XX%3A%2BDisableExplicitGC%22%2C+%22-XX%3A%2BHeapDumpOnOutOfMemoryError%22%2C+%22-
XX%3AHeapDumpPath%3D%2Fopt%2Ftomcat%2Flogs%2Fheapdump.hdprof%22%2C+%22-
Djava.endorsed.dirs%3D%2Fopt%2Ftomcat%2Fendorsed%22%2C+%22-
```

Dcatalina.base%3D%2Fopt%2Ftomcat%22%2C+%22-Dcatalina.home%3D%2Fopt%2Ftomcat%22%2C+%22-Djava.io.tmpdir%3D%2Fopt%2Ftomcat%2Ftemp%22%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D9+msgID%3D8847546+message%3D%22The+amount+of+free+memory+available+to+the+import+task+is+1344641608+bytes.+The+number+of+phase+one+buffers+required+is+320+buffers%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D10+msgID%3D8847568+message%3D%22The+amount+memory+available+to+the+temporary+DN+cache+environment+is+887355326+bytes%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D11+msgID%3D8847545+message%3D%22Setting+DB+cache+size+to+8388608+bytes+and+phase+one+buffer+size+to+to+1121834+bytes%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D12+msgID%3D8847533+message%3D%22OpenDJ+2.6.2+starting+import+%28build+20141008105905Z%2C+R11096%29%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D13+msgID%3D8847449+message%3D%22Import+Thread+Count%3A+8+threads%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D14+msgID%3D8847556+message%3D%22The+available+memory+for+phase+two+processing+is+1344641608+bytes.+The+read+ahead+cache+size+is+1121834+bytes+calculated+using+5+buffers%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D15+msgID%3D8847569+message%3D%22Total+import+time+was+0+seconds.+Phase+one+processing+completed+in+0+seconds%2C+phase+two+processing+completed+in+0+seconds%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A27+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D16+msgID%3D8847454+message%3D%22Processed+3+entries%2C+imported+3%2C+skipped+0%2C+rejected+0+and+migrated+0+in+0+seconds%28average+rate+25.2%2Fsec%29%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A28+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D17+msgID%3D8847536+message%3D%22Import+LDIF+environment+close+took+0+seconds%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A28+%2B0000%5D+severity%3D%22INFORMATION%22+msgCount%3D18+msgID%3D9437595+message%3D%22Local+DB+backend+userRoot+does+not+specify+the+number+of+lock+tables%3A+defaulting+to+97%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A28+%2B0000%5D+severity%3D%22INFORMATION%22+msgCount%3D19+msgID%3D9437594+message%3D%22Local+DB+backend+userRoot+does+not+specify+the+number+of+cleaner+threads%3A+defaulting+to+24+threads%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A28+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D20+msgID%3D8847402+message%3D%22The+database+backend+userRoot+containing+3+entries+has+started%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A28+%2B0000%5D+severity%3D%22INFORMATION%22+msgCount%3D21+msgID%3D12582962+message%3D%22Added+1+Access+Control+Instruction+%28ACI%29+attribute+types+found+in+context+%22dc%3Dopenam%2Cdc%3Dforgerock%2Cdc%3Dorg%22+to+the+access+control+evaluation+engine%22%0A%5B15%2FApr%2F2015%3A07%3A46%3A28+%2B0000%5D+severity%3D%22NOTICE%22+msgCount%3D22+msgID%3D9896350+message%3D%22Import+task+20150415074627572+finished+execution%22%0AImport+task+20150415074627572+has+been+successfully+completed%0A...Success

Tag swapping schema files....Success.

Loading Schema opendj_config_schema.ldif...Success.

Loading Schema opendj_user_schema.ldif...Success.

Loading Schema opendj_embinit.ldif...Success.

Loading Schema opendj_user_index.ldif...Success.

Loading Schema opendj_plugin.ldif...Success.

Loading Schema cts-container.ldif...Success.

Loading Schema cts-add-schema.ldif...Success.

Loading Schema cts-indices.ldif...Success.

Loading Schema opendj_dashboard.ldif...Success.

Loading Schema opendj_deviceprint.ldif...Success.

...Success.

Reinitializing system properties....Done

Registering service dashboardService.xml...Success.

Registering service amEntrySpecific.xml...Success.

Registering service amAuthConfig.xml...Success.

Registering service amAuthHTTPBasic.xml...Success.

Registering service amAdminConsole.xml...Success.

Registering service idRepoService.xml...Success.

Registering service amAuth.xml...Success.

Registering service amAuthAD.xml...Success.

Registering service amAuthAdaptive.xml...Success.

Registering service amAuthAnonymous.xml...Success.

Registering service amAuthCert.xml...Success.

Registering service amAuthDataStore.xml...Success.

Registering service amAuthPersistentCookie.xml...Success.

Registering service amAuthDevicePrintModule.xml...Success.

Registering service amAuthJDBC.xml...Success.

Registering service amAuthLDAP.xml...Success.

Registering service amAuthMSISDN.xml...Success.
Registering service amAuthMembership.xml...Success.
Registering service amAuthNT.xml...Success.
Registering service amAuthOAuth.xml...Success.
Registering service amAuthWindowsDesktopSSO.xml...Success.
Registering service amAuthOpenIdConnect.xml...Success.
Registering service amClientData.xml...Success.
Registering service amClientDetection.xml...Success.
Registering service amDelegation.xml...Success.
Registering service amFilteredRole.xml...Success.
Registering service amGllNSettings.xml...Success.
Registering service amLogging.xml...Success.
Registering service amNaming.xml...Success.
Registering service amPlatform.xml...Success.
Registering service amPolicy.xml...Success.
Registering service amPolicyConfig.xml...Success.
Registering service amRealmService.xml...Success.
Registering service amSession.xml...Success.
Registering service amWebAgent.xml...Success.
Registering service crestPolicyService.xml...Success.
Registering service amUser.xml...Success.
Registering service identityLocaleService.xml...Success.
Registering service amAgent70.xml...Success.
Registering service amPasswordReset.xml...Success.
Registering service amAuthRadius.xml...Success.
Registering service amAuthHOTP.xml...Success.
Registering service amMonitoring.xml...Success.
Registering service AgentService.xml...Success.
Registering service policyIndex.xml...Success.
Registering service entitlement.xml...Success.
Registering service openProvisioning.xml...Success.
Registering service banking.xml...Success.
Registering service CoreTokenConfig.xml...Success.
Registering service CoreTokenStore.xml...Success.
Registering service amAuthOATH.xml...Success.
Registering service fmAuthFederation.xml...Success.
Registering service fmAuthSAE.xml...Success.
Registering service fmAuthnSvc.xml...Success.
Registering service fmDisco.xml...Success.
Registering service fmIDFF.xml...Success.
Registering service fmLibertyPersonalProfile.xml...Success.
Registering service fmCOTConfig.xml...Success.
Registering service fmSAML2.xml...Success.
Registering service fmSAML.xml...Success.
Registering service fmSOAPBinding.xml...Success.
Registering service fmSAML2SOAPBinding.xml...Success.
Registering service fmWSFederation.xml...Success.
Registering service fmMultiProtocol.xml...Success.
Registering service famSTS.xml...Success.
Registering service famFederationCommon.xml...Success.
Registering service famIDFFConfig.xml...Success.
Registering service famSAML2Config.xml...Success.
Registering service famWSSAuthService.xml...Success.
Registering service OAuth2Provider.xml...Success.
Registering service MailServer.xml...Success.
Registering service RestSecurity.xml...Success.
Registering service amAuthScripted.xml...Success.
Registering service amAuthDeviceIdMatch.xml...Success.
Registering service amAuthDeviceIdSave.xml...Success.
Registering service restSTS.xml...Success.
Registering service validationService.xml...Success.
Registering service RestApis.xml...Success.

```
Registering service socialAuthN.xml...Success.
Configuring system....Done
Configuring server instance....Done
Creating demo user....Done
Creating Web Service Security Agents....Done
Setting up monitoring authentication file.
Configuration complete!
```

Stopping tomcat...

```
Using CATALINA_BASE:   /opt/tomcat
Using CATALINA_HOME:   /opt/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/temp
Using JRE_HOME:        /usr/lib/jvm/java-7-oracle/jre
Using CLASSPATH:       /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
```

Starting tomcat...

```
Using CATALINA_BASE:   /opt/tomcat
Using CATALINA_HOME:   /opt/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/temp
Using JRE_HOME:        /usr/lib/jvm/java-7-oracle/jre
Using CLASSPATH:       /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
```

Tomcat restarted.

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 5: Final Configuration of OpenAM
*
* In this phase, the script will perform the SBAC specific configuration
* of OpenAM
*
*****
Hit the <ENTER> key to continue

Final configuration of OpenAM (this may take a few moments)...

Realm was created.

Datastore was deleted.

Datastore was created.

Authentication Instance was updated.

Authentication Configuration was created.

Authentication Configuration's entry was created

iPlanetAMAuthService under /sbac was modified.

Service, iPlanetAMPasswordResetService was added to realm, /sbac.

Service, OAuth2Provider was added to realm, /sbac.

Agent group was created.
```

Agent configuration was created.

Agent configuration was created.

Agent configuration was created.

Agent configuration was created.

Agent configuration was created.

Agents were added to group.

Properties were removed.

Properties were removed.

Properties were removed.

Properties were removed.

Properties were removed.

Circle of trust, sbac was created.

Import file, /opt/artifacts/configfiles/IDP_metadata.xml.

Import file, /opt/artifacts/configfiles/IDP_extended_metadata.xml.

The configuration of default was updated.

The configuration of default was updated.

Schema attribute defaults were set.

Attribute values were set.

Schema attribute defaults were set.

Attribute values were set.

Attribute values were set.

Sub Configuration, sbac1b was modified.

Stopping tomcat...

Using CATALINA_BASE: /opt/tomcat

Using CATALINA_HOME: /opt/tomcat

Using CATALINA_TMPDIR: /opt/tomcat/temp

Using JRE_HOME: /usr/lib/jvm/java-7-oracle/jre

Using CLASSPATH: /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar

Starting tomcat...

Using CATALINA_BASE: /opt/tomcat

Using CATALINA_HOME: /opt/tomcat

Using CATALINA_TMPDIR: /opt/tomcat/temp

Using JRE_HOME: /usr/lib/jvm/java-7-oracle/jre

Using CLASSPATH: /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar

Tomcat restarted.

Install complete. You may now access the system at <https://am-new-secure.opentestsystem.org:443/auth/UI/Login>.
The end user change password URL is <https://am-new-secure.opentestsystem.org:443/auth/idm/EndUser?action=pw>.
The Logout URL is <https://am-new-secure.opentestsystem.org:443/auth/UI/Logout>.

Have a nice day!

Installation Details (Subsequent OpenAM Instances):

The following demonstrates the details contained in the `installOpenAM.sh` script.

```
# ./installOpenAM.sh
```

The following is the output from the `installOpenAM.sh` script.

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 1: System Verification
*
* In this phase, the script will verify the existing Linux environment.
*
*****
Hit the <ENTER> key to continue

Verifying identity of current user...
CONFIRMED: You are executing this script as: root

Verifying the current working directory...
CONFIRMED: You are executing this script from the /opt folder

Searching for the current version of Java...
/usr/bin/java
CONFIRMED: The java executable was found in the PATH variable
CONFIRMED: You are running java version 1.7.0_76

Checking for the existence of the openam user...
CONFIRMED: The openam user exists.

Checking to see if /opt/tomcat already exists...
/opt/tomcat does not exist

CONFIRMED: This is a new installation.

Hit the <ENTER> key to continue
```

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 2: Gather configuration info
*
* In this phase, the script will collect data from you that will be
* needed to perform the installation and configuration of the system.
*
*****

Choose a password for the amadmin user:
Enter the password for the amadmin user (again):
```

Enter the Fully Qualified Domain Name (FQDN) of this system (Ex. server.co.com): am-new2.opentestsystem.org

Is this the first instance of OpenAM you are deploying (yes/no) : no

Enter the Fully Qualified Domain Name of the existing OpenAM server (Ex. server.co.com): am-new.opentestsystem.org

Will this instance be deployed behind a load balancer as part of a site configuration? (yes/no) : yes

Enter the load balancer URL (Ex. https://server.co.com:443/auth): https://am-new-secure.opentestsystem.org:443/auth

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 3: Extraction of Tomcat and OpenAM Tools
*
* In this phase, the script will extract tomcat and start it up with the
* SBAC-Specific OpenAM war deployed.
*
*****
Hit the <ENTER> key to continue
```

Extracting the tomcat binary w/OpenAM war included...
The binaries have been extracted to the following folder: /opt/tomcat.

```
Starting tomcat...
Using CATALINA_BASE:   /opt/tomcat
Using CATALINA_HOME:   /opt/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/temp
Using JRE_HOME:        /usr/lib/jvm/java-7-oracle/jre
Using CLASSPATH:       /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
Tomcat started.
```

Extracting OpenAM tools...
The OpenAM Tools have been extracted to the following folder: /opt/openamtools.

Note: A clear screen operation is performed here. The following appears on a new screen:

```
*****
*
* SBAC Environment OpenAM Installation Script
*
* Phase 4: Add Server to Existing Configuration
*
* In this phase, the script will add this server to the configuration
* of OpenAM on am-new.opentestsystem.org
*
*****
Hit the <ENTER> key to continue

Adding this server to the configuration of OpenAM on am-new.opentestsystem.org (this may take a
few moments)...
Checking license acceptance...License terms accepted.
Checking configuration directory /opt/openam....Success.
Installing OpenAM configuration store...Success RSA/ECB/OAEPWithSHA1AndMGF1Padding.
Extracting OpenDJ, please wait...Complete
Running OpenDJ setupSetup command: --cli --adminConnectorPort 4444 --baseDN
dc=openam,dc=forgerock,dc=org --rootUserDN cn=Directory Manager --ldapPort 50389 --skipPortCheck
--rootUserPassword xxxxxxxx --jmxPort 1689 --no-prompt --doNotStart --hostname am-
new2.opentestsystem.org %0ASee%2Fopt%2Ftomcat%2Ftemp%2Fopendj-setup-
9116850864977870343.log+for+a+detailed+log+of+this+operation.%0A%0AConfiguring+Directory+Server+.
....+Done.%0A%0Ato+see+basic+server+configuration+status+and+configuration+you+can+launch+%2Fopt%
2Fopenam%2Fopends%2Fbin%2Fstatus%0A...Success.
...Success
Installing OpenAM configuration store in /opt/openam/opends...Success.
Tag swapping schema files....Success.
Loading Schema opendj_config_schema.ldif...Success.
Loading Schema opendj_user_schema.ldif...Success.
Loading Schema opendj_embinit.ldif...Success.
Loading Schema opendj_user_index.ldif...Success.
Loading Schema opendj_plugin.ldif...Success.
Loading Schema cts-container.ldif...Success.
Loading Schema cts-add-schema.ldif...Success.
Loading Schema cts-indices.ldif...Success.
Loading Schema opendj_dashboard.ldif...Success.
Loading Schema opendj_deviceprint.ldif...Success.
...Success.
Creating OpenAM configuration store replicaReplication command: enable --no-prompt --host1 am-
new.opentestsystem.org --port1 4444 --bindDN1 cn=Directory Manager --bindPassword1 xxxxxxxx --
replicationPort1 50889 --host2 am-new2.opentestsystem.org --port2 4444 --bindDN2 cn=Directory
Manager --bindPassword2 xxxxxxxx --replicationPort2 58989 --adminUID admin --adminPassword
xxxxxxx --baseDN dc=openam,dc=forgerock,dc=org --trustAll --configFile
/opt/openam/opends/config/config.ldif
%0AEstablishing+connections+....+Done.%0AChecking+registration+information+....+Done.%0AConfigu
ring+Replication+port+on+server+am-
new.opentestsystem.org%3A4444+....+Done.%0AConfiguring+Replication+port+on+server+am-
new2.opentestsystem.org%3A4444+....+Done.%0AUpdating+replication+configuration+for+baseDN+dc%3Do
penam%2Cdc%3Dforgerock%2Cdc%3Dorg+on+server+am-
new.opentestsystem.org%3A4444+....+Done.%0AUpdating+replication+configuration+for+baseDN+dc%3Dop
enam%2Cdc%3Dforgerock%2Cdc%3Dorg+on+server+am-
new2.opentestsystem.org%3A4444+....+Done.%0AUpdating+registration+configuration+on+server+am-
new.opentestsystem.org%3A4444+....+Done.%0AUpdating+registration+configuration+on+server+am-
new2.opentestsystem.org%3A4444+....+Done.%0AUpdating+replication+configuration+for+baseDN+cn%3Ds
chema+on+server+am-
new.opentestsystem.org%3A4444+....+Done.%0AUpdating+replication+configuration+for+baseDN+cn%3Dsc
hema+on+server+am-
```

```
new2.opentestsystem.org%3A4444+....+Done.%0AInitializing+registration+information+on+server+am-
new2.opentestsystem.org%3A4444+with+the+contents+of+server+am-
new.opentestsystem.org%3A4444+....+Done.%0AInitializing+schema+on+server+am-
new2.opentestsystem.org%3A4444+with+the+contents+of+server+am-
new.opentestsystem.org%3A4444+....+Done.%0A%0AReplication+has+been+successfully+enabled.++Note+t
hat+for+replication+to+work+you+must+initialize+the+contents+of+the+base+DNs+that+are+being+repli
cated+%28use+dsreplication+initialize+to+do+so%29.%0A%0ASee+%2Fopt%2Ftomcat%2Ftemp%2Fopendj-
replication-9026975450467631786.log+for+a+detailed%0Alog+of+this+operation.%0A%0A...Success.
Replication command: initialize --no-prompt --baseDN dc=openam,dc=forgerock,dc=org --adminUID
admin --adminPassword xxxxxxxx --hostSource am-new.opentestsystem.org --portSource 4444 --
hostDestination am-new2.opentestsystem.org --portDestination 4444 --trustAll --configFile
/opt/openam/opends/config/config.ldif
%0AInitializing+base+DN+dc%3Dopenam%2Cdc%3Dforgerock%2Cdc%3Dorg+with+the+contents+from+am-
new.opentestsystem.org%3A4444%3A%0A0+entries+processed+%280+%25+complete%29.%0A583+entries+proces
sed+%28100+%25+complete%29.%0ABase+DN+initialized+successfully.%0A%0ASee+%2Fopt%2Ftomcat%2Ftemp%2
Fopendj-replication-
9026975450467631786.log+for+a+detailed%0Alog+of+this+operation.%0A%0A...Success.
...Success.
Reinitializing system properties....Done
Configuring server instance....Done
Setting up monitoring authentication file.
Configuration complete!
```

Stopping tomcat...

```
Using CATALINA_BASE:    /opt/tomcat
Using CATALINA_HOME:    /opt/tomcat
Using CATALINA_TMPDIR:  /opt/tomcat/temp
Using JRE_HOME:         /usr/lib/jvm/java-7-oracle/jre
Using CLASSPATH:        /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
```

Starting tomcat...

```
Using CATALINA_BASE:    /opt/tomcat
Using CATALINA_HOME:    /opt/tomcat
Using CATALINA_TMPDIR:  /opt/tomcat/temp
Using JRE_HOME:         /usr/lib/jvm/java-7-oracle/jre
Using CLASSPATH:        /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
```

Tomcat restarted.

Install complete. You may now access the system at <https://am-new-secure.opentestsystem.org:443/auth/UI/Login>.
The end user change password URL is <https://am-new-secure.opentestsystem.org:443/auth/idm/EndUser?action=pw>.
The Logout URL is <https://am-new-secure.opentestsystem.org:443/auth/UI/Logout>.

Have a nice day!