CTI Billing Solutions Limited

Installation Guide

Analysis 7 1.10 Core

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1.0	Published	10/07/2014	Ian Bridge	Documents Analysis 7 v1.10 release

Preface

Document definition

Objectives

The purpose of this guide is to provide step-by-step instructions that enable you to deploy and install an operational version of *Analysis 7*.

You should read it in conjunction with *Analysis 7 v1.10 - Pre-Installation Guide (MMA7PRE)*, which specifies the system requirements and gives instructions on setting up any prerequisites that you may not already have installed. You should also refer to and use *Analysis 7 Installation Record (MMA7REC)* to capture and reference the configuration information entered during this installation process; this will significantly ease the ongoing support of the system.

Audience

The installation of *Analysis 7 (A7)* is necessarily a technical task and as such this document is aimed at systems engineers (for example, Database administrator (DBA) and technical support operatives).

> Further information on the required skill set is given in *Analysis 7 v1.10 - Pre-Installation Guide* (*Prerequisite knowledge and skill set*).

It is assumed therefore that you are proficient in using the concepts and features of:

- The operating system (Linux and/or Microsoft Windows);
- The database (Oracle);
- Web architecture;
- Network server configuration and management.

Things you need before you start

Database

- Satisfied the minimum system requirements.
- Access to an operational Oracle Database environment with sufficient monitored free space for the Analysis 7 data;
- Configured the database listener using, for example, Oracle Net Configuration Assistant (NetCA).

API

- If you intend to use LDAP -based user authentication then you must have a LDAP/V3 compliant directory service installed and know its connectivity details (for example the URL and Port Number).

  > If you are implementing a *Single sign-on option (SSO)* mechanism to manage user access then details of specific installation instructions will be provided in the *CTI Group Release Notes*, which accompany the software components.

- You must copy (or have copied) the distributed Analysis 7 software to an accessible network location, which we will refer to as the <deployPath>.

Web

- Ensure your server hardware conforms with the minimum specification and has an operational Linux operating system installed and updated.
- Ensure that you have sufficient disk space suitable for configuring as described in System disk requirements (on page II).
- You must have an operational configuration of Sun JAVA JRE 1.5 on the server.
- Ensure that you have an operational installation of Apache web server (with mod_proxy).
- Ensure that you have the LDAP configuration details if you are using that mechanism to control user authentication.

Related documents

This document is part of the ***Analysis 7 documentation set***, which comprises:

Document title	Reference
Analysis 7 v1.10 – Admin user guide	MMOTSUGA
Analysis 7 v1.10 – Analysis OTS Deployment Process	MMOTSDPR
Analysis 7 v1.10 – Call, Charge & Currency Import Guide	MMOTSIMPG
Analysis 7 v1.10 – Data Interface Specification	MMOTSDIS
Analysis 7 v1.10 – Data Limits Document	MMOTSDL
Analysis 7 v1.10 – Data Description Document	MMOTSDD
Analysis 7 v1.10 – Deployment Process Document	MMOTSDPD
Analysis 7 v1.10 – Help desk guide	MMOTSHUG
Analysis 7 v1.10 – Operations guide	MMOTSOPS
Analysis 7 v1.10 – Product Specification – Core Back-office	MMOTSBPS
Analysis 7 v1.10 – Product Specification – Core Front-office	MMOTSFPS
Analysis 7 v1.10 – Sandbox user guide	MMOTSSBX
Analysis 7 v1.10 – Subscriber user guide	MMOTSUGS
Analysis 7 v1.10 – Translation Server Guide	MMOTSTSG

Document conventions

This document uses the following typographical conventions.

Special notices

This symbol followed by green text enclosed in horizontal rules	Hints and tips on the process being described.
This symbol followed by red text enclosed in horizontal rules.	A warning about the process being described.
This symbol followed by blue text enclosed in	Important note or supplementary information about the process being described.

horizontal rules.

Contextual indicators

Serif italics	Used to indicate a *cross-reference* to another CTI Group document or to another section of part of this document
Strong serif italics	Used to cite a reference to an ***external document,*** that is a non-CTI Group document
Sans-serif italic emphasis	Used to indicate a reference to an *entity name* within the application being described (that is, the name of a *panel*, a *screen*, or a *data* field). For example: The *Scheduled reports* tab, the *Main Menu*
`<Monospace in angled brackets>`	Used to indicate a `<token>`, for which you should substitute an actual value. For example `<profileName>` should be replaced by your profile name (`acme`) as allocated by CTI Group.
`Monospace text`	Used for the name of computer entities, such as a `filename` or a `/directory/path` name Also used to indicate `text` and `commands to be` entered. For example, 1. Input `My descriptive text` as **Description** 2. Input `sysadmin` as **Username**

`Monospace text on grey`	Used to show portions of code, scripts, or configuration files; and also multiple command line entries.
	For example:
	`cd /usr/`
	`mv myDirectory/ theirDirectory/`

Arial Narrow Italic - Grey	Used for table and figure caption text.
This symbol and bold text	This is used as a procedure header, which introduces a set of numbered instructions.
1. Numbered lists	Numbered lists are used exclusively for sequential instruction sets. They will usually be preceded by a procedure header.
Strong emphasis	Used to indicate one of the following on-screen elements, depending upon the context in which it appears: ▪ A button or option to be selected For example, click the button labelled Next to go to the next dialogue panel is simply: **Next** to continue ▪ Text to be typed For example: Type **This** ▪ A data field Name into which information is to be typed For example Input a **Description**
[Strong emphasis in square brackets]	Used to indicate a physical key (or button) to be pressed; for example the **[Enter]** key.

Standard substitution tokens

The standard tokens are used throughout this document.

Token Name	Description	Example value
<API_hostIP>	Host IP address.	
<API_hostName>	The hosts resolved domain name (including port).	api-acme:80
<API_hostPort>	Host port number.	80
<API_serviceName>	The alias name given to your *IIS* virtual directory.	api-acme
<API_svcUserName>	Login user name for the A7 *Windows* service.	
<API_svcUserPassword>	Login password for the A7 *Windows* service.	
<API_tomcatPath>	The *Apache tomcat* install path on the application server.	
<App_installPath>	The path to the directory in which the application software has been installed (extracted).	d:\acme-analysis-live
<App_poolName>	The name of the application pool created for API use.	AppPool_acme
<App_serviceName>	The name given to your Application server	<profileName>A7
<App_tablespace>	The name of the permanent tablespace created for *A7*.	
<App_tabSpcPath>	The path to the tablespace.	
<DB_GlobalName>	A global name refers to the full name of a database (including its domain) which uniquely identifies it from any other database; created by setting both the DB_NAME and DB_DOMAIN initialisation parameters.	DB-TNS-NAME AS SYSDBA
<DB_HOST>	The database host IP address or server name.	**Localhost**
<DB_installPath>	Database binaries install path.	
<DB_SID>	The *Oracle* system identifier. SID automatically defaults to the database name portion of the global database name (acmeA7 in the example acmeA7.dbDomain.com); up to eight characters.	acmeA7
<DB_SID>	The *Oracle* system identifier. SID automatically defaults to the database name portion of the global database name (acmeA7 in the example acmeA7.dbDomain.com); up to eight characters.	acmeA7
<DBA_userName>	Database administrator (DBA) user name.	dba1
<DBA_userPassword>	DBA password.	dba1pass
<deployPath>	The path to the directory in which the distributed software files have been temporarily stored prior to deployment.	holdingArea
<liferay_tabSpcNm>	The name of the permanent tablespace created for *liferay*.	
<liferay_tmpSpcNm>	The name of the temporary tablespace created for *liferay*.	
<liferay_userName>	Login user name for the *Windows* service.	

Token Name	Description	Example value
<liferay_userPassword>	Login password for the *Windows* service	
<profileName>	Your profile name as allocated by *CTI Group*.	acme
<tomcat_installPath>	The *Apache tomcat* install path on the web server.	<web_installPath>/tomcat-6.0.37
<web_installPath>	The path to the directory in which the web UI software is (to be) installed (extracted).	/usr/local/liferay-portal-demoA7
<Web_serviceName>	The name you give to your *A7* service.	A7acme
<web_serviceUser>	Linux user name for the *Apache tomcat* user.	A7acmeUser

LDAP related tokens [3]

Token Name	Description	Example value
<LDAP_Base_DN>	The top level of the LDAP directory tree is the base, which is referred to as the base DN. Typically this will be set to your <profileName>.	o=acme
<LDAP_GROUPS_DN>	Required LDAP group names	ou=Groups,ou=<profileName>,ou=Profiles,o=<profileName>
<LDAP_HOST_NAME>	Name or IP address of the LDAP host	LDAP://<LDAP_HOST_NAME>
<LDAP_listenerPort>	LDAP listening port	10389
<LDAP_PRINCIPAL_DN>	The User Principal DN (UPN), system user id .	**Uid=analysis-ldap,cn=Administrators,cn=admin data**
<LDAP_USERS_DN>	Required LDAP user names	ou=Users,ou=<profileName>,ou=Profiles,o=<profileName>
<OpenDS_installPath>	*OpenDS* install path	

System variables

Token Name	Description	Example value
JAVA_HOME	Standard variable name giving the path to the Java base directory.	
JRE_HOME	Standard variable name giving the path to the Java run time environment directory.	c:\Program Files\Java\jrel_6.0
ORACLE_HOME	Standard variable name giving the path to the *Oracle* base directory.	
TNS_ADMIN	This variable contains the path to the tnsnames.ora module.	

[3] Required only where a LDAP solution is being implemented.

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Part one

Application server installation

1. Preparing to install A7

The *A7* application is shipped in the deployment file `Analysis-<profileName>-API.zip`.

You can extract this file to any location enabling you to deploy multiple versions and configurations as required.

1.1. Release pack contents

The release pack typically comprises:

- `A7-API.zip`
- `cougar.zip`
- `liferay-demosite.zip`
- `tomcat-demosite.zip`
- `installation guide.`
- `Data\A7Data`
- `Data\UnbilledData`

1.2. Things you need to do

The method of connecting to the Oracle database changes at this release and the *Oracle Database client* used to connect to *Oracle 11G R2* has a dependency upon *Visual C++ 2010* runtime DLLs

If you do not have them, then install the *Microsoft Visual C++ 2010 Redistributable Package* (`vcredist_x64.exe`); downloadable from http://www.microsoft.com

Also ensure that the environment variable TNS_ADMIN is set to the folder path of the module tnsnames.ora

If you intend to use LDAP -based user authentication then you must have a LDAP/V3 compliant directory service installed and know its connectivity details (for example the URL and Port Number).

If you are implementing a *Single sign-on option (SSO)* mechanism to manage user access then details of specific installation instructions will be provided in the *CTI Group Release Notes*, which accompany the software components.

You must copy (or have copied) the distributed A7 software to an accessible network location; the `<deployPath>`.

1.3. Information you need to provide

Token Name	Description	Example value
`<API_hostIP>`	Host IP address.	

Token Name	Description	Example value
<API_hostName>	The hosts resolved domain name (including port).	api-acme:80
<API_hostPort>	Host port number.	80
<API_serviceName>	The alias name given to your *IIS* virtual directory.	api-acme
<API_svcUserName>	Login user name for the A7 *Windows* service.	
<API_svcUserPassword>	Login password for the A7 *Windows* service.	
<API_tomcatPath>	The *Apache tomcat* install path on the application server.	
<App_installPath>	The path to the directory in which the application software has been installed (extracted).	d:\acme-analysis-live
<App_poolName>	The name of the application pool created for API use.	AppPool_acme
<App_serviceName>	The name given to your Application server	<profileName>A7
<App_tablespace>	The name of the permanent tablespace created for *A7*.	
<DB_GlobalName>	A global name refers to the full name of a database (including its domain) which uniquely identifies it from any other database; created by setting both the DB_NAME and DB_DOMAIN initialisation parameters.	DB-TNS-NAME AS SYSDBA
<DB_HOST>	The database host IP address or server name.	**Localhost**
<DB_SID>	The *Oracle* system identifier. SID automatically defaults to the database name portion of the global database name (acmeA7 in the example acmeA7.dbDomain.com); up to eight characters.	acmeA7
<DBA_userName>	Database administrator (DBA) user name.	dba1
<DBA_userPassword>	DBA password.	dba1pass
<deployPath>	The path to the directory in which the distributed software files have been temporarily stored prior to deployment.	holdingArea
<liferay_userName>	Login user name for the *Windows* service.	
<liferay_userPassword>	Login password for the *Windows* service	
<profileName>	Your profile name as allocated by *CTI Group*.	acme

If you are using a *LDAP*-based user authentication mechanism then you will also need to know the following information:

Token Name	Description	Example value
<LDAP_Base_DN>	The top level of the LDAP directory tree is the base, which is referred to as the base DN. Typically this will be set to your <profileName>.	o=acme

Token Name	Description	Example value
<LDAP_GROUPS_DN>	Required LDAP group names	ou=Groups,ou=<profileName>,ou=Profiles,o=<profileName>
<LDAP_HOST_NAME>	Name or IP address of the LDAP host	LDAP://<LDAP_HOST_NAME>
<LDAP_listenerPort>	LDAP listening port	10389
<LDAP_PRINCIPAL_DN>	The User Principal DN (UPN), system user id .	**Uid=analysis-ldap,cn=Administrators,cn=admin data**
<LDAP_USERS_DN>	Required LDAP user names	ou=Users,ou=<profileName>,ou=Profiles,o=<profileName>
<OpenDS_installPath>	*OpenDS* install path	

2. Installing the application

Within this document the installed software location is referred to via the token <App_installPath>.

CTI Group recommend you use a non-system disk for <App_installPath> rather than the c:\ drive.

2.1. Create the application's install path

Steps

Unzip file <deployPath>/Analysis-<profileName>-API.zip into <App_installPath>

Upon completion of the unzip process <App_installPath> will contain the following sub-directory structure:

Sub-directory	Description
bin\	Binaries to support setup and data processing.
setup\	Scripts and resources for setup.
web\	The web service to be served from *IIS*.
work\	A working directory for data processing.

2.2. Edit the application configuration file

Steps

1. Edit the file pi_config.cmd in the directory <App_installPath>\setup\

```
:: Set profile
SET PROFILE="<profileName>"
:: LDAP Settings
SET LDAP_HOST=<LDAP_HOST_NAME>
:: Set IIS version = 6 or 7 for Windows 2003 or 2008 respectively
SET IIS_VERSION=7
:: Set database provider
SET PROVIDER=Oracle11
:: DB admin credentials
SET DBSERVER=<DB_HOST>
SET DBAUSERNAME=<DBA_userName>
SET DBAPASSWORD=<DBA_userPassword>
:: Oracle tablespace name (must already exist)
SET ORACLE_TABLESPACE=<App_tablespace>
:: %PROFILE below will be replaced by the profile name
:: edit this if you do not want db names and usernames
:: based on the profile nam (for example, acme_owner,
:: acme_application)
SET TARGET=%PROFILE%
```

[4] Required only where a LDAP solution is being implemented.

2. Set each of the following tokens to the appropriate value:

Option	Value	Example
PROFILE	<profileName> Your profile name; as allocated by *CTI Group*.	acme
IIS_VERSION	The version number of *IIS* to be used	7
LDAP_HOST [5]	<LDAP_HOST_NAME> The URL/IP of the LDAP server (if non-*SSO*).	LDAP://<LDAP_HOST_NAME>
PROVIDER	**Oracle**	**Oracle11**
DBSERVER	<DB_HOST> The database host IP address or server name.	**Localhost**
DBAUSERNAME	<DBA_userName> The DBA username as set during database creation	dba1
DBAPASSWORD	<DBA_userPassword> The DBA password as set during database creation.	dba1pass
ORACLE_TABLESPACE	<App_tablespace> *A7*'s tablespace name set; as set during the creation of the database.	A7_tabspc
TARGET	A prefix to be used when creating new database users. Up to 18 characters A-Z; a-z; 0-9; # $ or _. Set this If <Profile> does not meet the above validation criteria.	*%PROFILE%* [6]

2.3. Initialise the application database

Steps

1. Invoke the *Windows command prompt* on the Application server:
   Windows > Start Menu > Accessories > Command Prompt
2. Within *Windows command prompt*, type:

```
<App_installPath>\setup\panther-install.cmd [Enter]
```

The installation of *A7* is invoked.

The command `panther-install.cmd` initialises the application database and establishes the base configuration.

This process also creates a file `ldif-<profileName>.ldif`. If you are using *LDAP* as an authentication method then you must upload this file to your *LDAP* server – as described in *Setting-up user authentication* (on page 10).

[5] Required only where a LDAP solution is being implemented.
[6] %PROFILE% is a substitution parameter, which will be replaced by the value of the PROFILE option (that is, by acme in this instance).

3. Check the following file contains your configuration information (as entered into `pi_config.cmd`):

   Filename: `<App_installPath>\<profileName>.conf`

> The installation log file `panther_install.log` in directory `<App_installPath>\setup\` provides diagnostic information that may help resolve installation issues.

2.4. Configure the IIS .NET.API application

Steps

1. Run *Internet Information Services (IIS) Manager* via one of the following methods:
   - **Windows > Control Panel > Administrative Tools > Internet Information Services (*IIS*) Manager**
   - **Windows > Start Menu > Run**, then type the following command:
     Inetmgr **[Enter]**

   The window *Internet Information Services (IIS) Manager* is displayed.

2. Within the window *Connections*, **[right click] Application Pools** and select **Add application pool**.

   The window *Add Application Pool* is displayed.

3. Input the application pool details

Table 1: IIS - input application pool details

Option	Value or Selection
Name	`<App_poolName>` (for example, `AppPool_acme`)
.NET Framework version	**`.NET Framework v4.0`**
Managed pipeline mode	**`Integrated`**
Start application pool immediately	✓

4. **OK** to continue

5. Within the window *Application Pools*, **[right click]** your newly created application pool, `<App_poolName>` and select **Advanced settings**.

   The window *Advanced Settings* is displayed.

6. For the entry *Process Model* > **Identity**, select [...]

   The window *Application Pool Identity* is displayed.

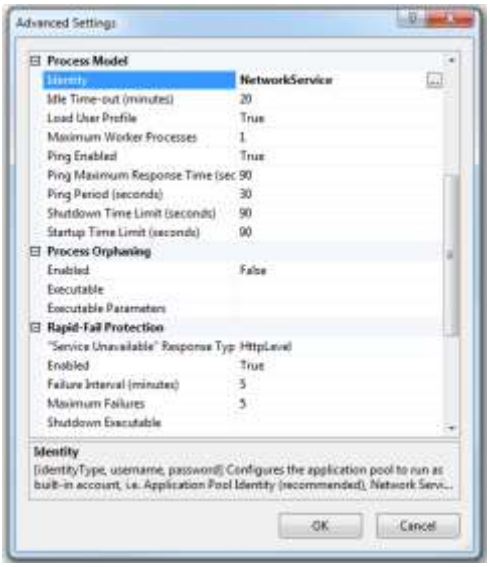

Figure 1: IIS Advanced Settings panel

7. From the *Built-in account* drop-down list, select **Network Service**.
8. **OK** to continue

   The window *Application Pool Identity* is closed.

9. **OK** to continue

   The window *Advanced Settings* is closed.

Figure 2: IIS - Application Pool Identity panel

10. Within the window *Connections*, navigate to **Sites >Default Web Site** then**[right click]** and select **Add Application**.

    The window *Add Application* is displayed.

11. Input application details.

Table 2: IIS - Input application details

Option	Value or Selection
Alias	`<API_serviceName>` (for example, `api-acme`) This is the name you will use as the URL
Application pool	`<App_poolName>`
Physical path	`<App_installPath>\web` (for example, `d:\acme-analysis-live\web`)

Figure 3: IIS - Add application panel

12. **OK** to save and exit.
13. Within the window *Connections*, navigate to **Sites >Default Web Site >** `<API_serviceName>` **> IIS > Error Pages**

    The window *Error Pages* is displayed.
14. Ensure there are no error pages listed.
15. Within the window *Actions,* select **Edit Feature Settings**
16. From list *Error Responses*, select **Detailed Errors**
17. **OK** to continue

3. Setting-up user authentication

By default *A7* controls user access via *LDAP*. The appendix section – *Configure A7 for LDAP server* (on page III) – explains how to set this option up.

However, if you are implementing a custom *SSO* solution you should refer to the *A7 software release notes (MMA7REL)* accompanying this release for specific direction on how to integrate *A7* with your application.

4. Installing the scheduled reports processor

OPTIONAL: Do this step ONLY if you are using *A7*'s scheduled reports feature.

These instructions explain how to install *Apache tomcat* on the Application server.

You will still need to install *Apache tomcat* on the web server.

Apache *tomcat 6.0.29 64-bit* is shipped in the installation zip file `tomcat-<profileName>.zip`.

Steps

1. Unpack tomcat

   Unzip file `tomcat-<profileName>.zip`

   From: `<deployPath>`

   To your chosen install path on the Application server.

   For example `c:\tomcat-<customer>`

   This install path is referred to throughout as `<API_tomcatPath>`.

2. [Optionally] {Do for pre A7 1.09 releases only} If you want to run multiple instances then change the TCP ports the Tomcat server listens on:

   Edit the file `<tomcat_path>/conf/server.xml`

   - <Server port="8005" ... - Server shutdown port
   - <Connector port="8080" ... - HTTP listener
   - <Connector port="8009" ... - AJP listener port

3. Point API.xml at your API instance

   Edit the file `API.xml` in directory `<API_tomcat_installPath>\shared\classes\`

```
<apiProtocol>http</apiProtocol>
<apiHost><API_hostName></apiHost>
<apiPort><API_hostPort></apiPort>
<apiVirtualDirectory><API_serviceName></apiVirtualDirectory>
```

   The TCP port must be unique to each API instance (normally a single instance suffices).

4. Create a *Windows* service to run *Tomcat*.

   i. Open a command prompt with administrator privileges.

   ii. Confirm the correct *JRE* is referenced as `JRE_HOME`.

```
echo %JRE_HOME%  [Enter]
```

   The current setting of %JRE_HOME% is displayed

Alternatively …

To run tomcat manually, from a command prompt window:

`<tomcat_path>\bin\startup.bat` **[Enter]**

No log is created; the server output is directed to console.

Ensure that `JAVA_HOME` is NOT set as that variable expects to be pointing to a *JDK* not a *JRE*.

If `JRE_HOME` path includes a space (for example, `[drv]:\Program Files`) then set `JRE_HOME` to point to the 8.3 directory name instead, for example to `C:\Progra~1`

iii. Switch to *Tomcat's* **\bin** directory.

```
cd <API_tomcatPath>\bin\ [Enter]
```

iv. Generate the service to run the `A7reports` using this command:
service.bat install A7reports **[Enter]**

Set the service name (for example `A7reports`) as required; avoiding conflicts with existing service names.

v. Configure the amount of memory (in MB) allocated to the JVM.

```
tomcat6.exe //US//A7reports --JvmMs=1024 --JvmMx=4096 [Enter]
```

vi. Ensure the service uses the correct *JRE*.

```
tomcat6.exe //US//A7reports --Jvm "%JRE_HOME %\bin\server\jvm.dll
[Enter]
```

vii. Set port numbers:

For A7 post-1.09 only –– for older versions see step 2 (on page 11)

```
tomcat6.exe //US//a7reports ++JvmOptions
-Dhttp.port=8080#-Dajp.port=8009#-Dshutdown.port=8005
```

5. Use *Windows Service Manager* to start and stop `<API_servicename>`

Tomcat records a log file to `<API_tomcatPath>`\logs\catalina.YYYY-MM-DD.log

If you experience problems running in service mode:

- Confirm that the Java tab shows the correct `jvm.dll` path for your chosen JRE.

```
<API_tomcatPath>\bin\tomcat6w.exe //MS//a7reports [Enter]
```

- Check `<tomcat_path>\logs\jakarta_service_YYYYMMDD.log` for additional info.

5. Configuring the Data Loader

A7 Data Loader runs as a standard *Windows* service. It is responsible for processing inbound data delivered to the Application server via, for example, *File Transfer Protocol (FTP)*, *Secure File Transfer Protocol (SFTP)*, or *Common Internet File System (CIFS)*.

Consolidated bill view

Check the file RunAsService.xml to ensure that:

`UsingCustomerConsolidation=True`.

In addition to preparing and loading data into the application database, it is also responsible for queue-managed tasks generated by the application as part of normal operations.

Further information on running Data Loader and other *A7* jobs can be found in *A7 Operations guide (MMA7OPS)*.

Configure a Windows service for the data loader

1. Edit file `pi_config.cmd` in directory `<App_installPath>\setup\` as follows:

```
SET PROFILE=<profileName>
SET SVCUSERNAME=[<API_svcUserName>]
SET SVCPASSWORD=[<API_svcUserPassword>]
```

Username and password may be blank for network services; but must exist if specified.

2. Within a *Windows command prompt* window, initiate the install using the following commands:

```
cd <App_installPath>\setup\ [Enter]
service-install.cmd [Enter]
```

The *Data Loader* service is scheduled to run automatically (as configured in the file: `RunAsService.xml` and described in *A7 Operations guide*).

Part two

Web server installation

6. Preparing to configure the web server

6.1. Things you need to do

- Ensure your server hardware conforms with the minimum specification and has an operational Linux operating system installed and updated.
- Ensure that you have sufficient disk space suitable for configuring as described in System disk requirements (on page II).
- You must have an operational configuration of Sun JAVA JRE 1.5 on the server.
- Ensure that you have an operational installation of Apache web server (with mod_proxy).
- Ensure that you have the LDAP configuration details if you are using that mechanism to control user authentication.

6.2. Information you need to provide

Token Name	Description	Example value
<API_hostIP>	Host IP address.	
<API_hostName>	The hosts resolved domain name (including port).	api-acme:80
<API_hostPort>	Host port number.	80
<API_serviceName>	The alias name given to your *IIS* virtual directory.	api-acme
<App_poolName>	The name of the application pool created for API use.	AppPool_acme
<App_serviceName>	The name given to your Application server	<profileName>A7
<deployPath>	The path to the directory in which the distributed software files have been temporarily stored prior to deployment.	holdingArea
<profileName>	Your profile name as allocated by *CTI Group*.	acme
<tomcat_installPath>	The *Apache tomcat* install path on the web server.	<web_installPath>/tomcat-6.0.37
<web_installPath>	The path to the directory in which the web UI software is (to be) installed (extracted).	/usr/local/liferay-portal-demoA7
<Web_serviceName>	The name you give to your *A7* service.	A7acme
<web_serviceUser>	Linux user name for the *Apache tomcat* user.	A7acmeUser

7. Building the A7 web server

7.1. Create initd script

Steps

1. Create an `init.d` script file `/etc/init.d/<Web_serviceName>.sh` based on the *Example init.d script (Appendix C, on page IV)*.
2. Give execute permissions to the `init.d` script file:

   `chmod 755 <Web_serviceName>.sh` **[Enter]**
3. Create a *Linux* user for *Tomcat*.

   `useradd <web_serviceUser>` **[Enter]**

7.2. Install and configure Liferay Portal

This is a standard *Tomcat* installation, with the *A7* web user interface and *Liferay Portal* pre-deployed into it.

Steps

1. Deploy and uncompress the zipped liferay file

   Name: `liferay-<profileName>.zip`

   Source directory: `<deployPath>`

   Target directory: `<web_installPath>`.

   The following directory structure is created under the `<web_installPath>` (that is, for example, `/usr/local/liferay-portal-demoA7)`.

   - `tomcat-6.0.37`
     - `bin`
     - `common`
     - `conf`
     - `logs`
     - `server`
     - `shared`
     - `temp`
     - `webapps`
     - `work`
2. Make user <web_serviceUser> the owner:

   i. cd /usr/local **[Enter]**

   ii. chown –R <web_serviceUser>:<web_serviceUser> liferay-portal-<profileName> **[Enter]**
3. Set permissions for all executable files:

   i `cd <web_installPath>/tomcat-6.0.37/bin/` **[Enter]**

   ii `chmod 755 *.sh` **[Enter]**

4. Edit the file portal-config.properties in directory <web_installPath>/tomcat-6.0.37/webapps/ROOT/WEB-INF/classes/

   Make the changes indicated in the following table:

Table 3: Edits to the file portal-config.properties

Section	Edit
Hypersonic	Comment out this section by adding **#** in front of each row.
Oracle	Remove the comment characters (#) at the beginning of each line. Check the following, editing as necessary: ▪ Jdbc.default.driverClassName=**oracle.jdbc.driver.OracleDriver** ▪ Jdbc.default.url=jdbc:oracle:thin:@<DB_HOST>:<DBport>:<DB_SID> ▪ Jdbc.default.username=<liferay_userName> ▪ Jdbc.default.password=<liferay_userPassword>
Mail	Verify the IP address and edit if necessary. If *SMTP* server requires authentication, set auth=**true**; then set values for password and user . ▪ Mail.session.mail.smtp.auth=**false** ▪ Mail.session.mail.smtp.host=<SMTPhostIP> ▪ Mail.session.mail.smtp.password=<SMTPpassword> ▪ Mail.session.mail.smtp.port=<SMTPport> ▪ Mail.session.mail.smtp.user=<SMTPuserName>
LDAP [7]	Verify the following and edit if necessary: ▪ Ldap.base.provider.url=<LDAP_HOST_URL> ▪ Ldap.base.dn=<LDAP_Base_DN> ▪ Ldap.security.principal=<LDAP_PRINCIPAL_DN> ▪ Ldap.security.credentials=<LDAP_PASSWORD> ▪ Ldap.users.dn=<LDAP_USERS_DN> ▪ Ldap.groups.dn=<LDAP_GROUPS_DN> ▪ Ldap.use.proxy.auth=**true**
Web server	Remove the comment characters (**#**) at the beginning of the following line(s) and check the settings are correct for this install: ▪ web.server.protocol=https ▪ web.server.http.port=80 ▪ web.server.https.port=443 ▪ web.server.host=somehost.telco.com

Additional .properties files may be required for customers with multiple URLs.

5. Save the changes.

6. Edit the file `API.xml` in directory <web_installPath>/tomcat-6.0.37/shared/classes/ to point to the host IP address and port number.

Table 4: Set host IP address

Section to edit	Items to be verified and changed as needed
API Host	<API_hostIP> Specify the api host's IP address.

[7] Required only where a LDAP solution is being implemented.

Section to edit	Items to be verified and changed as needed
API Port	<API_hostPort> Specify the api host's port number, for example 80.
API Virtual directory	<API_serviceName> As defined in – *Configure the IIS .NET.API application* (on page 7).
API Protocol	http

7.3. Verify the installation

Cookies

Before starting the web service check that HttpOnly is added to the JSESSIONID and cookie_a7 cookies (cookie via BigIP).

Steps

1. Start *Liferay* using the following command to verify that the setup is successful.

   ```
   service <Web_serviceName> start
   && tail -f
   <web_installPath>/tomcat-6.0.3
   7/logs/catalina.out
   ```
   [Enter]

2. Verify the web service by opening a browser and entering the URL:

   ```
   http://<API_hostName>:<API_hostPort>
   ```

   - If you are using a *SSO* service then your designated landing screen is displayed.
   - If you are using *LDAP* for user authentication:
     The Sign in screen displayed:

The web server is operational.

7.4. Set up A7 daemon

Steps

1. Copy and rename the *Liferay* `init.d` script file to a unique name for this instance, dropping the `.sh` extension:

   ```
   mv <web_installPath>/liferay-portal523.sh
   /etc/init.d/<Web_serviceName>
   ```
   [Enter]

2. Edit file `<Web_serviceName>` providing the following values

   ```
   export CATALINA_HOME="<web_installPath>/tomcat-6.0.37"
   export JAVA_HOME=jre1.5
   export SERVICE_USER=<web_serviceUser>
   ```

3. Add the daemon to the service management configuration (that is `/etc/rc.conf/`).

   This can be achieved using for example, `chkconfig, ntsysv` or `update-rc.d` depending upon your *Linux* distribution:

   For example: `chkconfig --add <Web_serviceName>` **[Enter]**

   Check *Configure SM framework (Appendix D, on page VII)* for further information if required.

8. Create the initial technical support user

Before you can begin to populate the *A7* service you must create an initial user with a user type of *Technical Support*.

Further information on Tech Support user functionality:

- *A7 Administration guide (MMA7ADM)*;
- *A7 User guide (MMA7USR)*;
- *A7 Operations guide (MMA7OPS)*.

Set-up the initial user

1. Logon to the Windows API server
2. Make sure Message queuing is installed and active:
   i. Navigate to **Start menu»Programs and features**
   ii. Select **Turn windows features on or off**
   iii. **Within the** *Window features dialog panel***, select Message queuing**
3. Open a *Windows command prompt* dialog panel and navigate to <Appinstallpath>/bin
4. Run the following command:

```
PantherTool -- profile <profilename> -- admin <A7user>
```

5. Verify the user account is active by logging into *A7*.

9. Diagnosing application problems

Use the following log files as the starting point for diagnosing web server errors.

Log	Description	Further reading
Tomcat log	The web components of A7 use the standard *Tomcat* log file:, that is: `<web_installPath>/tomcat-6.0.37/logs/catalina.out`	
Apache Server Access Log	This is where *Apache* records all requests processed by the server.	*Http://httpd.apache.org/docs/2.0/logs.html #accesslog*
Apache Server Error Log	This log is where *Apache* records the errors encounters whilst processing requests. It is a good place to look if you have problems starting or operating the server; it will often contain details of what went wrong and how to fix it.	*Http://httpd.apache.org/docs/2.0/logs.html #errorlog*

Appendices

In This Section

Appendix A System disk requirements

Database server

Table 5:database server disk requirements

Pn	Mount	FS	Size
0	/	UFS	15 GB
1	Swap	Swap	2 x RAM
2	Backup	n/a	n/a
3	/var	UFS	15 GB
4	Unassigned	UFS	
5	/opt	UFS	20 GB
6	/usr	UFS	25 GB
7	/export/home	UFS	25 GB

Application server

Table 6: API server disk storage requirements

Pn	Type	Purpose	Size
0	Primary	System	300 MB
1	Primary	*Windows*	60 GB
2	Extended Logical	Application	40 GB
3	Extended Logical	Data	200 GB (whole disk)

Web server

Table 7: Web server disk storage requirements

Volume	Mount	FS	Size
0	/		10 GB
LogVol01	`/tmp`	Ext3	4 GB / 4,096 MB
LogVol02	`/var`	Ext3	10 GB / 10,240 MB
LogVol03	`/home`		15 GB / 15,360 MB
LogVol04	`/usr`		55 GB / 56,320 MB
LogVol05	`/boot`		250 MB
LogVol06	`swap`	Swap	2 x RAM

Appendix B Configure A7 for LDAP server

A *Lightweight Directory Access Protocol (LDAP)* server can be used to authenticate user credentials where the *Single sign-on option (SSO)* is not implemented.

These instruction apply ONLY if you are implementing *LDAP* on *OpenDS*.
If you are merging the *A7* user data with an existing *LDAP* directory you should import the file `<App_installPath>\setup\ldif-<profileName>.ldif` using your own standard processes.

1. Run the *OpenDS* configuration process using the following command:

   `opends-configure.cmd` **[Enter]**

2. Run the LDIF import using the following command:

   `opends-rebuild.cmd` **[Enter]**

   The `.ldif` file (`ldif-<profileName>.ldif`) produced by *Initialise the application database* (on page 6) is processed, importing *A7* users and policies.

   This must be run ONCE only; otherwise previously loaded users will be dropped.

3. Verify that all the information was loaded by locating the following log entry:

```
[02/Nov/2010:13:20:17 +0000] severity="NOTICE" msgCount=13
msgID=8847454 message="Processed 15 entries, imported 15, skipped 0,
rejected 0 and migrated 0 in 1 seconds (average rate 14.1/sec)"
```

   If the script worked the number of entries rejected will be zero and the number of entries processed will correspond to the number of entries in the file `ldif-<profileName>.ldif`.

Appendix C Example init.d script

Related section(s):
CREATE INITD SCRIPT 17

```
#!/bin/bash
# lportal523
# chkconfig: 345 70 30
# description:     Start up the Liferay Service.
# Source function library.
. /etc/init.d/functions

RETVAL=$?
export CATALINA_HOME=<web_installPath>/liferay-portal/tomcat-6.0.37
export JAVA_HOME=jre1.5

#set this to blank to use root (not recommended)
export SERVICE_USER=<web_serviceUser>
export SERVICE_HOME=${CATALINA_HOME}
export PID_FILE=${CATALINA_HOME}/bin/lportal.pid
export CATALINA_PID=${PID_FILE}

SERVICE_NAME=Analysis Liferay
START_CMD=$SERVICE_HOME/bin/startup.sh
#blank restart cmd = stop, then start
RESTART_CMD=
STOP_CMD=$SERVICE_HOME/bin/shutdown.sh
#blank status cmd will check if pid is an active process
STATUS_CMD=

checkrunning() {
     IS_RUNNING=false
     if [ -f $PID_FILE ]; then
          PID=$(cat $PID_FILE)
          if ps -p $PID > /dev/null; then
               IS_RUNNING=true
          fi
     fi
}

start() {
     if $IS_RUNNING; then
          echo $"$SERVICE_NAME is already running"
     else
          removepidfile
          echo $"Starting $SERVICE_NAME"
          if [ "$SERVICE_USER" = "" ]; then
               $START_CMD
          else
               /bin/su $SERVICE_USER -c "$START_CMD"
          fi
     fi
}

stop() {

     if $IS_RUNNING; then
          echo $"Stopping $SERVICE_NAME"
          if [ "$SERVICE_USER" = "" ]; then
               $STOP_CMD
```

```
          else
               /bin/su $SERVICE_USER -c "$STOP_CMD"
          fi

          counter=0
          while ps -p $PID > /dev/null
          do
               if [ $counter -eq 5 ]; then
                    echo $"Done waiting, killing PID $PID"
                    kill $PID
                    $counter=0
               else
                    echo $"Waiting for $SERVICE_NAME to exit [$counter]"
                    # wait for shutdown
                    let counter=counter+1
               fi
               sleep 10
          done
          removepidfile
     else
          echo $"$SERVICE_NAME not running"
     fi
}

restart() {

     if [ "$RESTART CMD" == "" ]; then
          stop
          checkrunning
          start
     else
          echo $"Restarting $SERVICE_NAME"
          if [ "$SERVICE_USER" = "" ]; then
               "$RESTART_CMD"
          else
               /bin/su $SERVICE_USER  -c "$RESTART_CMD"
          fi
     fi
}

checkstatus() {
     if [ "$STATUS_CMD" == "" ]; then
          echo -n "$SERVICE_NAME"
          status -p $PID_FILE
     else
          if [ "$SERVICE_USER" = "" ]; then
               $STATUS_CMD
          else
               /bin/su $SERVICE_USER  -c "$STATUS_CMD"
          fi
     fi
}

removepidfile() {
     rm -f $PID_FILE
}


checkrunning
```

```
     case "$1" in
      start)
           start
           ;;
      stop)
           stop
           ;;
      restart)
           restart
           ;;
      status)
           checkstatus
           ;;
      *)
           echo $"Usage: $0 {start|stop|restart|status}"
           exit 1
           ;;
     esac
exit $RETVAL
```

Appendix D Configure SM framework

1. To add the service `<Web_serviceName>` script to the service management framework:

   `chkconfig -- add <Web_serviceName>`

2. To check the service has been added correctly, run the command:

   `chkconfig --list <Web_serviceName>`

   The system should respond with:

   <Web_serviceName> 0:off 1:off 2:off 3:off 4:off 5:off 6:off

   This indicates the `<Web_serviceName>` script has been added to the service framework.

   > Note that the script is not currently set to run in any run level; as indicated by the `off` settings.

3. To enable the service for run level 5, use the command:

   `chkconfig --levels 5 <Web_serviceName> on`

4. To check the service `<Web_serviceName>` script has been enabled for run level 5:

   `chkconfig -- list <Web_serviceName>`

   The system will respond with:

   <Web_serviceName> 0:off 1:off 2:off 3:off 4:off 5:on 6:off

   > This shows the service `<Web_serviceName>` is enabled for run level 5, but the service is not yet actually running.

5. To start the service use:

   `service <Web_serviceName> start`

   The application will be started under the control of the service management framework.

6. To check the service has started without error(s), check the `catalina.log` file located in:

   `<web_installPath>/tomcat-6.0.37/logs/catalina.out`

   If there are any error(s), correct them before trying to start the service again.

7. A started service can be stopped using the command:

   `service <Web_serviceName> stop`

8. To run in a shell console (for testing only)

   `<web_installPath>/liferay-portal/tomcat-6.0.37/bin/startup.sh`

   If *Tomcat* and the *Liferay Portal* start without error(s), shutdown the application using the script:

   `shutdown.sh`

   This is located in the directory
   `<web_installPath>/liferay-portal/tomcat-6.0.37/bin/`

> Give `<Web_serviceName>` a name meaningful to the service instance which it runs.

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