MetaLib Installation Kit

Version 4.5

CONFIDENTIAL INFORMATION

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Introduction

Ex Libris provides an automated MetaLib Installation Kit (MIK) for customer self-installation. The installation should be performed by a local System Administrator and can take up to a few hours, depending on the server.

NOTE:
Ex Libris offers installation services at a cost to interested customers. Please contact your local office to obtain a quote. You can access the Request for MetaLib Installation in the MetaLib Installation and Implementation Information folder on the Customer Center.

IMPORTANT:
MIK version 4.5 should be used only by local offices for new customers. It should not be used for upgrade purposes.

MIK version 4.2 should be used to upgrade MetaLib version 3 to MetaLib version 4 for new and existing servers.

This document provides instructions for the automatic installation of MetaLib version 4.5 using the MetaLib Installation Kit (MIK). The package facilitates installation of MetaLib version 4.5, Oracle 11.2, and the creation of an Oracle database.

The MIK includes the following components:

- Installation package – scripts and init files
- MetaLib software – MetaLib application and pre-generated third-party products (Cobol, GCC for Sun Solaris, Java, Perl, Apache, and so on)
- Oracle 11.2 Enterprise edition
- Oracle database for Oracle 11.2

The MetaLib installation using MIK involves the following steps:

- Download software from FTP server
- Pre-installation tasks
- Oracle database installation and configuration

- Installation of third-party products
- MetaLib software installation and configuration
- Post-installation tasks

Before you begin your installation, ensure that you have received the following:

- A MetaLib license from your local support office
- COBOL installation keys (serial number) for MetaLib installation on the Linux operating system

NOTE:
During the MetaLib installation, two reboots of the server are required, one for new values of the system parameters to take effect, the other to test startup scripts. Other Ex Libris applications on the server that use Oracle will experience a short downtime as well when the new Oracle 11.2 listener is configured. The downtimes will occur during Step 3 of the Oracle installation and configuration. For more information, see **Start Up Oracle Listener** on page **20**).

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Pre-Installation Information

This section includes:

- **Overview** on page **7**
- **Preparing for Installation** on page **8**
- **Downloading the MIK from the FTP Server** on page **9**

Overview

The MIK can be downloaded from the Ex Libris FTP server or, in special circumstances, supplied as a DVD package for customers with strict security policies.

Customers should contact their local support office for the user name and password for accessing the Ex Libris FTP server.

The MetaLib installation is performed in the following standard directories:

- MetaLib software in the `/exlibris/metalib/m4_<slot>` directory
- Oracle software in the `/exlibris/app/oracle/product/11r2` directory

NOTES:
- MetaLib version 4.5 should be installed on a different slot from your current MetaLib version 4 slot (if applicable).

- If you have a previous installation of Oracle 11.2 installed by Ex Libris, it can also be used in MetaLib version 4.5. Contact your local office for further details.

A single log file containing confirmation and feedback on the installation, the status of each step and reporting errors will be created. This log file is placed under the following log file:

```
/exlibris/ftp_from_exlibris/mik/log/metalib_installation_kit.log
```

Preparing for Installation

Before the MIK can be installed, the server must meet specific requirements and contain a download directory for the installation files.

Creating the ftp_from_exlibris Directory

If you are installing a fresh copy of MetaLib version 4.5 on a server that does not have an earlier version of MetaLib, perform the following steps to create the ftp_from_exlibris directory:

1   Log on to the server as root.

2   Enter the following commands to create the ftp directory:

```
>> cd /exlibris
>> mkdir ftp_from_exlibris
```

If you are upgrading from MetaLib version 3.13 or 4 to version 4.5 and are installing version 4.5 on the same server:

1   Check that the ftp_from_exlibris directory exists in the /exlibris directory.

2   If the directory does not exist, create it using the above instructions.

Checking System Requirements

Before installing MetaLib, verify that all operating system components comply with the MetaLib/SFX requirements, as outlined in the *Requirements for MetaLib Version 4 and SFX Version 4 Installation* document.

Check and update the /etc/hosts file as follows, if required:

```
>> vi /etc/hosts
```

Figure 1 shows an example of a /etc/hosts file. When configuring the file:

■   The first active line should be configured exactly as shown.

■   The second line should contain the internal IP address followed by the fully qualified name (host name + domain name), and then the short name and possible aliases.

```
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1     localhost.localdomain        localhost
10.1.222.22  ml-inst.corp.metalib.com    ml-inst
```

Figure 1: Example of /etc/hosts File

The internal IP address can be found using the following commands.

■ For SunOS:

```
/usr/sbin/ifconfig -a | grep inet | grep -v 127.0.0.1 | awk
'{print $2}'
```

■ For Linux:

```
/sbin/ifconfig -a | grep addr: | grep -v 127.0.0.1 | awk
'{print $2}'
```

NOTE:

Any changes in the /etc/hosts file should be performed by a qualified system administrator only.

Downloading the MIK from the FTP Server

To download the installation package from the Ex Libris FTP server, execute the following commands from your server:

```
cd /exlibris/ftp_from_exlibris
ftp ftp.exlibrisgroup.com  [<username>:mik44 ; <password>]
ftp prompt> bin
ftp prompt> get mik.4.5.0.tar
ftp prompt> quit
```

Enter the following command to extract the MIK package:

```
>> tar -xvf mik.4.5.0.tar
```

3

MetaLib Installation

This section includes:

Introduction

Perform all MIK steps in the order displayed on the menu, that is, first complete the functions under Step 1 in the order listed. When those functions are completed, proceed to Step 2, and so forth.

NOTE:

Steps that should be performed by the `root` or `oracle` user have a corresponding note. All other steps should be performed as the `metalib` user.

To start the process, enter the following commands:

```
cd /exlibris/ftp_from_exlibris/mik
./mik_menu
```

You can exit the MIK at any stage of the installation. To restart the process, enter the above commands.

A single log file, containing confirmation and feedback on the installation, the status of each step and reporting errors can be found under:

```
/exlibris/ftp_from_exlibris/mik/log/metalib_installation_kit.log
```

The MIK Main Menu

The MIK main menu (see **Figure 2**) is used throughout the MetaLib installation, outlining the main steps of the installation. The main menu has a header that includes the current date and operating system used. The MetaLib directory and the Oracle database fields are populated once the relevant components are installed.

```
                MetaLib Installation Kit
--------------------------------------------------------------------

Date: Wed Oct 22 19:10:24 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory:
Oracle database:
Server: il-inst10.corp.exlibrisgroup.com


--------------------------------------------------------------------


-  1. Download software from FTP server
-  2. Pre-installation tasks
-  3. Oracle database installation and configuration
-  4. Third-party products installation
-  5. MetaLib software installation and configuration
-  6. Post-installation tasks

Enter key (q to quit)[q]:
```

Figure 2: The Main MIK Menu

Step 1: Download Software from FTP Server

The first step on the main menu is to download the software from the FTP site:

Enter **1** to display the Download software from FTP server menu (see **Figure 3**).

```
                    MetaLib Installation Kit
----------------------------------------------------------------------


Date: Wed Oct 22 19:10:24 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory:
Oracle database:
Server: il-inst10.corp.exlibrisgroup.com


----------------------------------------------------------------------


######################################################################
#######################      Warning      ###########################
## This MetaLib version is for new installations only.  ##############
# For upgrade from MetaLib 3 please contact your local support office #
######################################################################


1. Download software from FTP server

- 1. Download MetaLib software
- 2. Download Oracle software and third party products
- 3. Check if the MetaLib software was downloaded correctly
- 4. Check if Oracle software was downloaded correctly

Enter key (q to quit)[q]:
```

Figure 3: The Download Software from FTP Server Menu

Download MetaLib Software

This utility uses the `wget` client for downloading MetaLib software from the Ex Libris FTP server.

An e-mail message is sent to the address you specify when the FTP download completes.

Enter **1** to download the MetaLib software. The system prompts for the following:

- Target download directory name — The default is `/exlibris/ftp_from_exlibris`.

- E-mail address for the download confirmation message — Enter your e-mail address.

- Confirmation for the FTP server address — Press **ENTER** to confirm.

> **NOTE:**
> Ex Libris recommends using the suggested defaults wherever possible to avoid the changes.

Download Oracle Software

This utility uses the wget client for downloading the Oracle software from the Ex Libris FTP server.

An e-mail will be sent to the specified address when the FTP download is complete.

Enter **2** to download the Oracle software. The system prompts for the following:

- target download directory name — The default is `/exlibris/ftp_from_exlibris`.
- e-mail address for the download confirmation message — Enter your e-mail address.
- Confirmation for the FTP server address — Press **ENTER** to confirm.

Check Whether the MetaLib Software was Downloaded Correctly

This utility checks to see whether the MetaLib software was downloaded correctly. When complete, an e-mail is sent to the specified address.

This step prompts for the following information:

- target download directory name. The default directory is `/exlibris/ftp_from_exlibris`.
- e-mail address for the download confirmation message. The default is the e-mail address entered previously (see **Download MetaLib Software** on page **13**).

Check Whether the Oracle Software was Downloaded Correctly

This utility checks to see whether the Oracle software was downloaded correctly. When complete, an e-mail is sent to the specified address.

This step prompts for:

- target download directory name. The default directory is `/exlibris/ftp_from_exlibris`.
- e-mail address for the download confirmation message. The default is the e-mail address entered previously (see **Download MetaLib Software** on page **13**).

If you encounter any problem with the download and cannot resolve it, contact your local support office.

Step 2: Pre-Installation Tasks

This menu (see **Figure 4**) contains the tasks that must be entered before installation.

> **NOTE:**
> Root access is required to perform the pre-installation tasks.

```
                   MetaLib Installation Kit
-----------------------------------------------------------------

Date: Thu Oct 16 13:02:15 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory:
Oracle database:
Server: il-inst10.corp.exlibrisgroup.com


-----------------------------------------------------------------
2. Pre-installation tasks


-  1. Pre-installation checks
-  2. Inserting listener definition to the /etc/services file as root
user
-  3. Change system parameters as root user
-  4. Create oracle user and dba group as root user
-  5. Create metalib user and exlibris group as root user
-  6. Create directories in the disk /exlibris as root user
-  7. Install COBOL software as root user
-  8. Create system auto startup/shutdown script and links as root user


Enter key (q to quit)[q]:
```

Figure 4: Pre-Installation Tasks Menu

Pre-Installation Checks

This step checks whether the server meets the specifications required for MetaLib version 4.5 installation.

Inserting Listener Definition to the /etc/services file as Root User

This step inserts the following string into the /etc/services file, if required:

```
listener          1521/tcp                      # Oracle listener
```

Change System Parameters as Root User

This step checks the system parameters in the system configuration file.

Open a new session on your server as the root user and check that the system variables in the configuration file include the parameters below:

- Linux Servers — the following system parameters should be present in the `/etc/rc.d/rc.local` file:

```
echo "32767" > /proc/sys/fs/file-max
echo "4294967295" > /proc/sys/kernel/shmmax
```

- Sun Servers — the following system parameters should be present in the `/etc/system` file:

```
set shmsys:shminfo_shmmax = 4294967295
set shmsys:shminfo_shmmin = 1
set shmsys:shminfo_shmseg = 10
set shmsys:shminfo_shmmni = 100
set semsys:seminfo_semmns = 1530
set semsys:seminfo_semmsl = 400
set semsys:seminfo_semopm = 100
set semsys:seminfo_semvmx = 32767
set semsys:seminfo_semmni = 140
set rlim_fd_max = 4096
set rlim_fd_cur = 1024
```

Create Oracle User and DBA Group as Root User

This step creates the `dba` group and Oracle 11.2 `oracle` user with the user home set to `/exlibris/app/oracle/product/11r2` and user shell set to `/bin/csh`.

The new `oracle` user must contain only alphanumeric characters, and use only lower-case alphabetic characters. When creating the new user for Oracle 11.2, the utility prompts for a new UNIX password.

If the Oracle 10g `oracle` user already exits in the system, the utility prompts for the name of the Oracle 11.2 user. Give the new Oracle 11.2 user a different name than the Oracle 10g user (such as `oracle11`).

NOTE:
The new Oracle11.2 user is created with the same UID as the existing Oracle 10g user.

Create metalib User and exlibris Group as Root User

This step creates the `exlibris` group and the `metalib` user with the user home set to `/exlibris/metalib` and the user shell set to `/bin/csh`.

If the `metalib` user already exists, make sure its home directory is set to `/exlibris/metalib` by running the following command:

```
echo ~metalib
```

If the home directory for this user is not `/exlibris/metalib`, delete the user and then re-run this step to recreate it with the correct definitions.

Create Directories in the Disk /exlibris as Root User

This step prompts you for installation type, which can be one of the following:

- **ALL** — used for standard installations when the MetaLib software and database is installed on the same server.

- **SW_ONLY** — used to install only the MetaLib software when the MetaLib database is installed on the remote server (TWO_TASK).

- **DB_ONLY** — used to install only the MetaLib database when the MetaLib software is installed on the remote server (TWO_TASK).

For installation types of **ALL** or **DB_ONLY**, the system also prompts for the location of the Oracle database files (default is `/exlibris`), and then creates the following directories:

- `/exlibris/metalib` — (`metalib:exlibris` permissions)

- `/exlibris/app/oracle/product` — (`oracle:dba` permissions)

- `/exlibris/tmp` — (`metalib:exlibris` permissions)

- `/exlibris/startup` — (`metalib:exlibris` permissions)

- `/exlibris/product` — (`metalib:exlibris` permissions)

- `/exlibris/metalib/ora_metalib` — (`metalib:exlibris` permissions)

- `/exlibris/metalib/backup_temp` — (`metalib:exlibris` permissions)

- `/exlibris/oradata` — (`oracle:dba` permissions)

Install COBOL Software as Root User

This step prompts you to enter the location for the third-party products distribution package (default is `/exlibris/ftp_from_exlibris`)

NOTES:
- Linux Servers — COBOL Server Express 5 will be installed.

- SUN Servers — COBOL Server Express 2.2 will be installed.

- If `cobol_4.0.0` exists on the server, you will be asked to confirm an upgrade to `cobol5`. An upgrade is highly recommended, but this change requires a re-link of each product to `cobol5` and then a restart. For more

information, see **Linking Ex Libris Products to a New Version of Cobol** on page **43**.

Create System Auto Startup/Shutdown Script and Links as Root User

This step creates the main startup/shutdown script in `/etc/init.d/exlibris`, if required.

Required links for automatic startup and shutdown of MetaLib and the database (when rebooting) are also created.

NOTE:

If the startup mechanism already exists, MIK only updates files in the `/exlibris/startup` directory and checks whether relevant files/links in the system directories exist.

Step 3: Oracle Database Installation and Configuration

For TWO_TASK mode installations (the database is installed on a different server), steps 3.1, 3.3, and 3.5 required.

NOTE:
You must run step 3.1 as the root user. Steps 3.2 through 3.6 can use either the `oracle11` user or the root user.

```
                   MetaLib Installation Kit
----------------------------------------------------------------------

Date: Wed Oct 22 13:10:42 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory:
Oracle database:
Server: il-inst10.corp.exlibrisgroup.com


----------------------------------------------------------------------
3. Oracle database installation and configuration

-  1. Extract Oracle software
-  2. Install database
-  3. Create listener.ora and tnsnames.ora file
-  4. Startup Oracle listener
-  5. Check connection to the database via listener
*  6. Create Oracle start/stop scripts(only on Dedicated Oracle Server)

Enter key (q to quit)[q]:
```

Figure 5: Oracle Database Installation and Configuration Menu

Extract Oracle Software as Root User

This step prompts you to enter the location of the Oracle 11.2 software distribution package files (default is `/exlibris/ftp_from_exlibris`).

This step extracts the Oracle software to the following directory:

    /exlibris/app/oracle/product/11r2

Install Database

This step installs the Oracle database at the location previously defined (see **Create Directories in the Disk /exlibris as Root User** on page **17**) and updates

database definitions in the `oratab` file for automatic startup/shutdown during the reboot.

This step prompts you to enter the following parameters:

- location of the database installation script files — The default is `/exlibris/ftp_from_exlibris`.

- location of the database media files — The default is `/exlibris/ftp_from_exlibris`.

- name of the database you want to install —The default is `meta4`.

- size of the database you want to install — The valid values are `DEMO` and `REGULAR`. The default value is `REGULAR`.

- location of the database disk — The default value is `/exlibris`.

Create listener.ora and tnsnames.ora Files

This step adds the created database definitions to the `listener.ora` and `tnsnames.ora` files.

> **NOTE:**
> For TWO_TASK installations, you will be prompted to insert the ORACLE database server name.

Start Up Oracle Listener

This step starts up the Oracle 11.2 listener.

If Oracle 10g listener is already running (for example, if other Ex Libris applications are running on this server), instructions for shutting down the running listener are provided.

> **NOTES:**
> - Shutting down the Oracle 10g listener in order to start up the Oracle 11.2 listener will result in a short downtime for all applications on this server that are running Oracle.
> - This step is not required when the database is installed on a remote machine.

The standard expected procedure is the following one:

1 Log on to the MetaLib 4 instance and confirm the active Oracle 11 listener.

   The MIK menu will take you through the next steps:

2 Do not close the existing window. Open a new terminal window. In the second window, perform a shutdown of the other Ex Libris applications on

the server that are using currently running listener (using a standard shutdown procedure for each application).

3   In this additional terminal window, shut down the currently running Oracle listener using UTIL O/2.

4   In the first terminal window, re-run this procedure.

5   In the additional terminal window, start up the other Ex Libris applications on this server that were shut down (using the standard startup procedure for each application).

> **NOTE:**
> Once Oracle 11.2 is started, all applications running Oracle on this server will operate on the new Oracle 11.2 listener.

Check Connection to the Database Via Listener

This step checks the connection to the created database via the listener.

Create Oracle Start/Stop Scripts

For TWO TASK mode installations only, execute this option on the dedicated Oracle server to create the startup scripts for the Oracle database.

Configuring Oracle SGA DB sizes

To increase the performance of the Oracle database, adjust the Oracle SGA size for the created database. For more information, see **Oracle SGA Sizing** on page **39**.

Step 4: Third-Party Product Installation

```
                  MetaLib Installation Kit
----------------------------------------------------------------------

Date: Thu Oct 16 13:43:04 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory:
Oracle database:
Server: il-inst10.corp.exlibrisgroup.com


----------------------------------------------------------------------
4. Third-party product installation

-  1. Extract binary product package

Enter key (q to quit)[q]:
```

Figure 6: Third-Party Product Installation

Extract Binary Product Package

The utility installs all relevant third-party products in the `/exlibris/product` directory.

It first prompts you to enter the location of the third-party product distribution package files. The default location is `/exlibris/ftp_from_exlibris`.

Step 5: MetaLib Software Installation and Configuration

```
                   MetaLib Installation Kit
---------------------------------------------------------------------


Date: Thu Oct 16 14:20:10 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory:
Oracle database:
Server: il-inst10.corp.exlibrisgroup.com


---------------------------------------------------------------------
5. MetaLib software installation and configuration

-  1. Extract MetaLib software
-  2. MetaLib software configuration
-  3. Install Service Pack
-  4. Initialize database
-  5. Update license
-  6. Update auto startup/shutdown script

Enter key (q to quit)[q]:
```

Figure 7: MetaLib Software Installation and Configuration

Extract MetaLib Software

The utility installs the MetaLib software in the following directory:

    /exlibris/metalib/*<slot>*

NOTES:
- For completely new installations of MetaLib, you must run this step (Extract MetaLib software) as a `root` user.

- If a MetaLib version 4.x installation already exists on this server, this step can be performed as the `metalib` user.

This step prompts you to enter:

- The location of the MetaLib software distribution package files — The default value is `/exlibris/ftp_from_exlibris`.

- MetaLib copy number *<slot>*— Enter the slot you want to use for MetaLib installation.

NOTE:

Ensure that the slot intended for the new MetaLib version 4.5 installation is not already used for another MetaLib installation.

For example:

If MetaLib version 4 production is currently installed on slot m4_1 and MetaLib version 4 development is currently installed on slot m4_2, install:

- MetaLib version 4.5 production on slot m4_3
- MetaLib version 4.5 development on slot m4_4

MetaLib Software Configuration

The utility configures MetaLib software installed previously (see **Step 5: MetaLib Software Installation and Configuration** on page **23**) and defines the ORACLE_SID parameter (database name) according to the value defined previously (see **Install Database** on page **19**).

NOTE:

This step can be performed as either the metalib user or the root user.

This step prompts you to enter the hostname details:

- Hostname to be used for Web server configuration — The default is the hostname.
- Hostname to be used for Oracle server configuration — The default is the short hostname.

Install Service Pack

This step installs the MetaLib service pack (if applicable). It prompts you to enter the location of the MetaLib service pack distribution package files. The default is /exlibris/ftp_from_exlibris.

NOTE:

This step can be performed as either the metalib user or the root user.

Initialize Database

This step creates the MetaLib administrative users and imports the MetaLib DEMO data to the database created previously (see **Install Database** on page **19**).

NOTE:

This step can be performed as either the metalib user or the root user.

Update License

This step asks the installer to update the MetaLib license file using the UNIX `vi` text editor.

The location of the license file is `/exlibris/metalib/<slot>/metalib_conf/license`.

> **NOTE:**
> This step can be performed as either the `metalib` user or the `root` user.

Update Auto Startup/Shutdown Script

This step modifies the `/exlibris/startup/init.dat` file to include the Oracle 11.2 database, Apache, and MetaLib definitions to the auto startup/shutdown mechanism.

> **NOTE:**
> This step can be performed as either the `metalib` user or the `root` user.

After this step is completed, open a new session on your server as a `metalib` user and check that the definitions in the `/exlibris/startup/init.dat` file include the following definitions:

```
# oracle
Y:oracle:oracle10:/exlibris/app/oracle/product/11r2

# apache
Y:apache:metalib:httpd:/exlibris/metalib/m4_<slot>:../m4_<slot>:
apachectl_auto:apachectl

# metalib
Y:metalib:metalib:/exlibris/metalib/m4_<slot>:metalib_startup:
metalib_shutdown
```

Replace `oracle10` in the example above with the user name of the Oracle 11.2 user created previously (see **Create Oracle User and DBA Group as Root User** on page **16**)

If Oracle 11.2 has been newly installed, you will need to comment out or delete the following Oracle 10g line:

```
#Y:oracle:oracle:/exlibris/app/oracle/product/102
```

Step 6: Post-Installation Tasks

This menu contains the post-installation tasks (see **Figure 8**).

```
                        MetaLib Installation Kit
--------------------------------------------------------------------

Date: Thu Oct 16 19:21:59 IDT 2010
OS: Linux
MetaLib version: 4.5.0
MetaLib directory: /exlibris/metalib/m4_1
Oracle database: meta4
Server : il-inst10.corp.exlibrisgroup.com


--------------------------------------------------------------------
6. Post-installation tasks

- 1. Update metalib user login menu
- 2. Run test compilation
- 3. Extract and configure Backup Package
- 4. Startup MetaLib software
- 5. Application status verification

Enter key (q to quit)[q]:
```

Figure 8: Post-Installation Tasks

Update metalib User Logon Menu

This step updates the /exlibris/metalib/def_metalib.dat and
/exlibris/metalib/def_version files to add the newly installed MetaLib
software to the metalib user logon menu.

To modify the MetaLib prompt menu file:

1   Enter the following command to connect as the metalib user:

```
su - metalib
```

2   Enter the following command to edit the file (see **Figure 9**):

```
vi /exlibris/metalib/def_metalib.dat
```

```
set def=1
set list="1"
setenv TERM vt220
## ----- ---- ------- -------- ---- ------------------------------  #
##   #    #       #       #     #                                    #
#   1   m3_1        3      10    8331                                #
set login1="/exlibris/metalib/m3_1"
```

Figure 9: The def_metalib.dat File

3   In the example shown in **Figure 10**, version 4.5 is added to the prompt menu by adding the directory path `/exlibris/metalib/m4_2` and the port `8332`, updating the variable list to add the description line to the menu, and adding a `login2` variable. All changes are marked in bold type:

```
set def=1
set list="1 2"
setenv TERM vt220
## ----- ---- ------- -------- ---- -----------------------------  #
##  #   #       #       #     #                                     #
#   1   m3_1    3       10    8331                                  #
#   2   m4_2    4       15    8332                                  #
set login1="/exlibris/metalib/m3_1"
set login2="/exlibris/metalib/m4_2"
```

Figure 10: Updated def_metalib.dat File

4   Save the file and log on again as `metalib`.

Run Test Compilation

This step checks if the installed MetaLib software is configured correctly and is ready for future MetaLib service pack installations.

Extract and Configure Backup Package

This step extracts the backup package under `/exlibris/backup` and configures the backup scripts according to the current installation.

Startup MetaLib Software

This step starts Apache and the MetaLib software.

Application Status Verification

This step verifies whether the following MetaLib components are up and running (see **Figure 11**):

- oracle listener
- oracle database (as defined in current version environment)
- Apache and MetaLib Web servers

```
This script will check whether the processes mandatory for MetaLib 4
are up and running:
------------------------------------------------

Metalib version: 4

Checks results:
--------------

Listener is up and running

meta4 database is up and running

The servers are up and running
```

Figure 11: Application Status Verification Output

Appendixes

This guide contains the following appendixes:

- **Appendix A: Configuration of listener.ora and tnsnames.ora Files** on page **31**

- **Appendix B: Startup Definitions** on page **33**

- **Appendix C: Changes to System Files (OS Parameters, Users and Groups)** on page **35**

- **Appendix D: Database Size Verification** on page **37**

- **Appendix E: Oracle SGA Sizing** on page **39**

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A

Configuration of listener.ora and tnsnames.ora Files

To configure the listener.ora and tnsnames.ora files:

1   Log on to the newly-installed Oracle 11.2 software as the `oracle11` software user:

```
su - oracle11
cd /exlibris/app/oracle/product/11r2/network/admin
```

2   If the `listener.ora` file does not exist, enter the following command:

```
cp /exlibris/app/oracle/product/102/network/admin/listener.ora.
```

3   Enter the following command to add the contents of the `tnsnames.ora.meta4` file at the end of the `tnsnames.ora` file:

```
cat tnsnames.ora.meta4 >> tnsnames.ora
```

4   Enter the following command to edit the `listener.ora` file:

```
vi listener.ora
```

5   Add relevant definitions from the `listener.ora.meta4` file. In the example shown in **Figure 12**, all changes are marked in bold type:

```
listener=(description=
               (address_list=
                       (address=
                               (protocol=ipc)
                               (key=meta3))
                       (address=
                               (protocol=ipc)
                               (key=meta4))
                       (address=
                               (protocol=tcp)
                               (host=www)
                               (port=1521))
               )
          )

sid_list_listener=(sid_list=
                       (sid_desc=
                               (global_dbname=meta3)
                               (sid_name=meta3)
                               (oracle_home=/exlibris/app/oracle/
product/920)
                               (envs='epc_disabled=true')
                       )
                       (sid_desc=
                               (global_name=meta4)
                               (sid_name=meta4)
                               (oracle_home=/exlibris/app/oracle/
product/11r2)
                       )
                   )

startup_wait_time_listener=0
connect_timeout_listener=20
trace_level_listener=off
```

Figure 12: The listener.ora File

B

Startup Definitions

In order to change the startup definitions (the products and versions started whenever the server is brought up), connect as the `metalib` user and perform the following steps:

1 Confirm that the UNIX user is `metalib` (and not `root` as was required in the other MIK steps):

```
su - metalib
```

2 Save the current `/exlibris/startup/init.dat` file:

```
cp -p /exlibris/startup/init.dat /exlibris/startup/init.dat.<date>
```

3 Edit the `/exlibris/startup/init.dat` file.

a If Oracle 11.2 has been newly-installed, add the new Oracle version listener to replace the Oracle 10g listener (as only one listener can be configured):

```
Y:oracle:oracle11:/exlibris/app/oracle/product/11r2
```

b Add the MetaLib and Apache startup definition lines for MetaLib version 4.5:

```
# apache
Y:apache:metalib:httpd:/exlibris/metalib/m4_<slot>:../m4_<slot>:
apachectl_auto:apachectl

# metalib
Y:metalib:metalib:/exlibris/metalib/m4_<slot>:metalib_startup:
metalib_shutdown
```

For example, if MetaLib 4.5 is installed in slot 4_2, all relevant changes are marked in bold (see **Figure 13**):

```
# oracle
Y:oracle:oracle11:/exlibris/app/oracle/product/11r2

# apache
Y:apache:metalib:httpd:/exlibris/metalib/m3_1:../m3_1:apachectl_auto:
apachectl
Y:apache:metalib:httpd:/exlibris/metalib/m4_2:../m4_2:apachectl_auto:
apachectl

# metalib
Y:metalib:metalib:/exlibris/metalib/m3_1:metalib_startup:metalib_
shutdown
Y:metalib:metalib:/exlibris/metalib/m4_2:metalib_startup:metalib_
shutdown
```

Figure 13: The init.dat File

C

Changes to System Files (OS Parameters, Users and Groups)

Oracle Listener Functionality

For Oracle listener functionality, the dedicated port must be defined in the `/etc/services` file:

```
listener         1521/tcp                        # Oracle listener
```

Sun Solaris Changes

For Sun Solaris servers, it is a requirement to install the following system parameters in the `/etc/system` file:

```
set shmsys:shminfo_shmmax = 4294967295
set shmsys:shminfo_shmmin = 1
set shmsys:shminfo_shmseg = 10
set shmsys:shminfo_shmmni = 100
set semsys:seminfo_semmns = 1530
set semsys:seminfo_semmsl = 400
set semsys:seminfo_semopm = 100
set semsys:seminfo_semvmx = 32767
set semsys:seminfo_semmni = 140
set rlim_fd_max = 4096
set rlim_fd_cur = 1024
```

Linux OS Changes

On Linux servers, it is a requirement to install the following system parameters in the `/etc/rc.d/rc.local` file:

```
echo "32767" > /proc/sys/fs/file-max
echo "4294967295" > /proc/sys/kernel/shmmax
```

In addition, check and change the `/etc/security/limits.conf` file, if necessary. Add the following lines (or change the values if the lines already exist):

```
* soft nofile 32767
* hard nofile 32767
* soft nproc 16384
* hard nproc 16384
```

NOTE:
The asterisk (*) in the first column is mandatory.

Users and Groups

The following groups are created during the Oracle and MetaLib installation:

- `dba` — for Oracle installation
- `exlibris` — for MetaLib installation

The following users are created by the Oracle and MetaLib installation:

Table 1. MetaLib and Oracle Users

User Name	Group	Home Directory	Shell
oracle	dba	`/exlibris/app/oracle/product/11r2`	csh
metalib	exlibris	`/exlibris/metalib`	csh

D

Database Size Verification

The Database Size Verification Routine is a special routine that can be activated to ensure that the size of the newly created database is sufficient for further upgrade from the existing MetaLib version 4 to MetaLib version 4.5. Activating this routine is an optional step.

The routine checks the size of the used tablespace in MetaLib 4 database and compares it with the size of the free tablespace available in the newly created MetaLib 4.5 database. If the checks reveal that the size of the free tablespace in the MetaLib 4.5 database is insufficient, the routine supplies sizing recommendations for increasing the tablespace to the necessary size.

NOTES:
- Both databases—MetaLib 4 and MetaLib 4.5—must be up and running.
- Only the MetaLib 4.5 database that was created using the MIK can be checked by this routine.

To verify the database size, enter the following commands:

```
cd /exlibris/ftp_from_exlibris/mik
./execute_db_check.bash
```

E

Oracle SGA Sizing

Introduction

By default, the database is created with an SGA size of 700MB (the memory in Oracle Shared Global Area for this database).

In order to increase Oracle performance, you should increase this value.

According to Oracle directives, the cumulative amount of SGA sizes for all running databases on the server should be less than (server RAM) / 3.

So, according to SGA sizes defined for all the present databases, as well as the server RAM, you can increase the DB SGA.

CAUTION:

On Redhat 3 and Redhat 4 systems, the SGA size for each DB should not be greater than 2 GB.

Checking the SGA Size

To check the SGA size:

1   Log on as the `oracle` user:

2   Enter the following commands to check the SGA size for database
    <DB_NAME>:

```
> setenv ORACLE_SID <DB_NAME>
> sqlplus /nolog
idle> connect /as sysdba
idle> show parameter SGA
idle> exit
```

In the following example, you can see that the SGA size for the connected
database is 700 MB (see **Figure 14**):

```
idle> show parameter sga
**** Hit return to continue ****

NAME                             TYPE          VALUE
-------------------------------  ------------  ----------------------
sga_max_size                     big integer   700M
sga_target                       big integer   700M
```

Figure 14: Displaying SGA Size

Increasing the SGA Size

CAUTION:

Oracle SGA resizing should be performed by an Oracle expert only.

For Oracle 11, as the `oracle` user, for example, to increase SGA size to 2000 MB
for database *<DB_NAME>*:

```
> setenv ORACLE_SID  <DB_NAME>

> sqlplus /nolog

idle> connect /as sysdba

idle> alter system set SGA_MAX_SIZE=2000M SCOPE=spfile;

idle> alter system set SGA_TARGET=2000M   SCOPE=spfile;
```

Then restart the database. For example, by enter the following commands:

```
idle> shutdown immediate

idle> startup
```

Caution for Solaris 10 Systems

On Solaris 10, since a classic system parameter change in the `/etc/system` file has no effect, you may encounter problems while increasing the SGA size—for example, after DB restart:

```
ORA-27102: out of memory
SVR4 Error: 22: Invalid argument
```

In this case, you should change the relevant SGA parameter as the `root` user.

For example, you can run:

```
#  projmod -s -K "project.max-shm-memory=(privileged,6GB,deny)"
group.dba
```

If a problem occurs while setting this SGA parameter, you may define the adequate Solaris project for Oracle by running the following commands as the `root` user:

```
# projadd group.dba
# projmod -s -K "project.max-shm-memory=(privileged,6GB,deny)"
group.dba
```

When this has been completed, restart the database.

F

Linking Ex Libris Products to a New Version of Cobol

When MetaLib 4.5 is installed in parallel with a previous version of MetaLib or other Ex Libris products, you should log on to each product and re-link the Ex Libris products to the new version of Cobol (if updated).

To re-link the products/copies to Cobol:

1   Log on to all Ex Libris products and MetaLib copies.

2   Enter the following command to move to the <`product`>/`local` directory for the current product:

```
cd $<product>/local
```

3   Enter the following command to remove the link to the old version of Cobol:

```
rm cobol
```

4   Enter the following command to link to the new version of Cobol:

```
ln -s /exlibris/<product>/cobol5 cobol
```

5   Restart the Ex Libris product.

6   Repeat this procedure for the remaining Ex Libris products and MetaLib copies.