

Chapter 4 Running Standard Services

E-Speak includes three standard services.

Table 31 Standard Services

Service	Description
Advertising Service	Locates services that are not present in a local logical machine
Management Services	A suite of services used to manage an e-Speak application Note: The <i>E-Speak System Management User Guide</i> provides detailed information on the four management services and how to use the Programming Interface to make an e-Speak component manageable.
Process Manger	Remotely manages processes running on an e-Speak-enabled machine

NOTE: The examples in this section use the Windows NT[®] notation for path names. On Unix platforms, use forward slashes (/) instead of back slashes (\).

The standard services are included in the file
<installation_directory>/lib/es.jar.

Running the Advertising Service

The Advertising Service locates services that are not on a local machine. The Advertising Services communicate with one another, find services that satisfy a client's requirements, and return them to the client.

NOTE: For more details, please refer to the *e-Speak Programmers Guide*.

Depending on how services are stored in backend service directories, an Advertising Service may run in one of three modes.

Table 32 Advertising Service Modes

Mode	Description
Online, without an external lookup directory	In this mode, also known as SLP mode, Advertising Services use multicast to find and establish connections with one another. Multicast is usually limited by subnet (LAN segment) boundary. Also, online-mode Advertising Services keep service advertisements in memory, which means they are not persistent and less scalable.
Offline, with an external lookup directory	You can use any lookup directory to implement the offline mode. The Advertising Service in this release uses a Lightweight Directory Access Protocol (LDAP) server as its external lookup directory. Offline mode provides persistence and better scalability.
Using a proxy service to access the actual backend directory service	This mode, with a proxy backend service, allows access control to the actual service directory (for example, the advertising proxy of HP-sponsored global service directory (ESV)).

Working in Offline Mode

The Advertising Service runs in offline mode using an LDAP server as its external lookup directory. For more information about LDAP, refer to the LDAP World web site at <http://www.critical-angle.com/ldapworld/index.html>.

NOTE: The e-Speak platform has been tested with the Netscape LDAP server.

Installing a Directory Server

To download and configure a directory server to use with the Advertising Service:

- 1 Obtain a directory server program. You can download a trial version from Netscape at http://www.ipplanet.com/downloads/testdrive/detail_8_7.html.
- 2 Ensure that you have the documentation you need, such as an installation guide, to properly install the directory server. If you download the directory server from Netscape, you can download the documentation from:

<http://developer.netscape.com/docs/manuals/index.html>
<http://home.netscape.com/eng/server/directory/4.0>

- 3 Make a note of the following values as they pertain to your installation. You need this information to complete the configuration process:
 - Directory suffix (this is the organization setting)
 - Directory Manager Distinguished Name (DN)
 - Directory Manager password

NOTE: The installation process requires a large amount of configuration data. Except for the values noted in step 3, you can use the default values in most cases.

- 4 Install the LDAP server on your platform. If you are installing on Windows NT®, you must start the system to start the directory server. Refer to the instructions as appropriate for the HP-UX and Linux platforms.
- 5 Create a schema to store information about the connection object. Refer to the *Netscape Directory Server: Administrator's Guide* for instructions on creating object classes and attributes.

Create an Attribute for Connection Objects

In the Directory Server Console:

- 1 Select the **Configuration tab > Database icon > Schema folder > Attributes** tab.
- 2 Click **Create**.
- 3 Enter `cobj` as the Attribute Name.

- 4 Select `binary` as the syntax.
- 5 Click **OK**.

Create an Object Class

In the Directory Server Console:

- 1 Select **Configuration tab > Database icon > Schema** folder.
- 2 Click **Create**.
- 3 Enter `ESCore` as the Name.
- 4 Add the following attributes:
 - `cn`
 - `cobj`
 - `objectclass`
- 5 Click **OK**.

Download the LDAP JDK

An LDAP JDK provides a set of APIs to access an LDAP directory server. You can download a free version of the LDAP JDK from Netscape. The latest version is Netscape Directory SDK 3.1 for Java™, which is downloadable from:

<http://developer.netscape.com/tech/directory/index.html>

Starting the Advertising Service

Before you start `net.espeak.services.advService.server.AdvService`, ensure that the e-Speak core is running. Refer to the *e-Speak Programmers Guide* for information on J-ESI communities and to determine what kind of configuration is right for your choice. Also refer to “Configuring the Advertising Service” for detailed descriptions on the configurable properties.

Once you determine the property values, determine the best method to pass them to the Advertising Service.

TIP: If you are using an earlier version of e-speak, you can start the Advertising Service with the old interface using:
`net.espeak.services.advertise.ypserver.AdvertisingService`
Command line switches like `-group` are still supported in this release, but are not recommended.

How the Advertising Service Reads Configurable Properties

The Advertising Service reads properties from these locations in this order:

- 1 The command line
- 2 The Advertising Service configuration file, if any, specified by the property `net.espeak.services.advService.config` in the command line
- 3 The e-Speak configuration file `espeak.cfg`

If the same property is defined in different places, the value defined in the command line overrides the one defined in the advertising configuration file, which overrides the one defined in `espeak.cfg`.

You may also collect LDAP-related property definitions in an LDAP configuration file and specify the file path for property `net.espeak.services.advService.backend.ldap.config`.

The Advertising Service uses this file if you do not define values in the three places listed above. Similarly, you can have a ESVProxy configuration file for ESV proxy properties. The services uses the static default values presented in “Configuring the Advertising Service” if the property is not defined in the command line, Advertising Service configuration file, or `espeak.cfg`.

Defining Properties in the Command Line

Properties defined in Advertising Service command line take precedence over all other properties. The command line syntax is:

```
<property_name>=<property_value>
```

For example:

```
hostname=localhost portnumber=12345  
net.espeak.services.advService.config=adv.cfg
```

NOTE: 12345 indicates an arbitrary port.

Guidelines for Starting the Advertising Services

When starting the Advertising Service:

- In the command line, always specify host name and port number to which the core connects.
- Unless you are using nearly all of the default values, use an Advertising Service configuration file. Use `espeak.cfg` for other non-Advertising Service-specific settings such as security and web proxy.
- If you are creating multiple groups of Advertising Services that share the same backend settings, specify a group in the command line and share other settings with an Advertising Service configuration file.
- If you are creating multiple groups of Advertising Services with *different* backend settings, create different Advertising Service configuration files for each group. Alternatively, consider using LDAP or ESV Proxy configuration files.

Examples

- Start one Advertising Service using all of the default settings:

— Command line: <empty>

— Advertising Service configuration file: <not used>

NOTE: The Advertising Service is connected to the default core `localhost:2950`.

- Starting two Advertising Services of the same group in online (SLP) mode:

```
Command line for adv 1: hostname=localhost portnumber=12345\  
net.espeak.services.advService.config=adv.cfg
```

```
Command line for adv 2: hostname=host2.hp.com portnumber=2950\  
net.espeak.services.advService.config=adv.cfg
```

```
Common Advertising service configuration file (adv.cfg):
```

```
net.espeak.services.advService.group=myGroup
```

```
net.espeak.services.advService.backend.protocol=slp
```

```
net.espeak.services.advService.mcast.port=1428
```

```
net.espeak.services.advService.mcast.sleepMillis=7000
```

NOTE: 12345 indicates an arbitrary port.

- Starting Advertising Services of the two different groups in using the same LDAP server:

```
Command line for adv 1: hostname=localhost portnumber=12345\  
net.espeak.services.advService.group=myGroup1 \  
net.espeak.services.advService.config=adv.cfg
```

```
Command line for adv 2: hostname=host2.hp.com portnumber=2950\  
net.espeak.services.advService.group=myGroup1\  
net.espeak.services.advService.config=adv.cfg
```

```
Command line for adv 3: hostname=localhost portnumber=12345\  
net.espeak.services.advService.group=myGroup2\  
net.espeak.services.advService.config=adv.cfg
```

```
Command line for adv 4: hostname=host4.hp.com portnumber=2950\  
net.espeak.services.advService.group=myGroup2\  
net.espeak.services.advService.config=adv.cfg
```

Common Advertising service configuration file (adv.cfg):

```
net.espeak.services.advService.backend.protocol=ldap  
net.espeak.services.advService.mcast.sleepMillis=0  
net.espeak.services.advService.backend.ldap.host=myLdap.hp.com  
net.espeak.services.advService.backend.ldap.port=389  
net.espeak.services.advService.backend.ldap.rootDN=myDirMgr  
net.espeak.services.advService.backend.ldap.passwd=myPassword  
net.espeak.services.advService.backend.ldap.organization=hp.com  
net.espeak.services.advService.backend.ldap.proxyHost=myWeb-\  
proxy.hp.com  
net.espeak.services.advService.backend.ldap.proxyPort=8088
```

NOTE: 12345 indicates an arbitrary port. adv 1 and adv 3 are running on different machines; localhost:12345 refers to different cores.

Process Manager

The e-Speak Process Manager service is a management agent that remotely manages processes running on an e-Speak-enabled machine.

NOTE: The Process Manager should be running on each e-Speak-enabled machine.

This service allows the system administrator to remotely start, stop, and monitor the state and output of processes. You can launch processes started in the Process Manager using a command line string. For example, to start the e-Speak core, type:

```
java net.espeak.infra.core.startup.StartESCore
```

The Process Manager does not manage e-Speak services; e-Speak services may be launched in an OS process (for example, a Java™ program that creates an e-Speak service or a shell script that launches several Java™ programs).

Since the Process Manager is the management access point for e-Speak-enabled machines, it is used to collate information about the processes being managed and handles the registration of services running in those processes. Many other e-Speak management applications use these functions.

The e-Speak installation includes an executable Process Manager that launches the service as the machine boots. You do not need to explicitly start the service from the command line.

A core and an Advertising Service are launch when the Process Manager starts. These management-specific components allow the Process Manager to be discovered by remote system administration applications.

The Process Manager provides a uniform method of remotely-managing processes. The Process Manager starts and manages e-services and cores on its local host. The Desktop and Process Manager use the SDK to communicate with each other.

NOTE: A process is a general operating system process such as a running Java Virtual Machine™, an active e-Speak core, or a database server.

Starting the Process Manager

Once the Process Manager is installed, you can delegate authorizations to enable management with remote machines. Management agents such as the XAMService use the core in the Process Manager VM to communicate with clients.

On Windows NT®, the Process Manager runs as a service that does not interact with the Desktop. Because of this, any process that the Process Manager starts can not display a window. You can modify this setting by changing the `ProcessManager Service` property in the Windows NT® Control Panel. Refer to the “Working with the Desktop” in Chapter 10, “Troubleshooting” for details.

The operating system starts the default Process Manager. You can configure the behavior of this Process Manager using the management properties specified in `espeak.cfg`. Refer to “Basic Concepts” for the details on these properties.

To start the Process Manager from the command line, type:

```
java CLASSNAME= -D espeak_home=<espeak home directory>
net.espeak.services.management.processmanager.ProcessManager
```

where `espeak_home` is the e-speak installation directory. This command starts the Process Manager, core, and Advertising Service using the default values.

The process manager command also supports five options.

Table 33 Process Manager Command Line Options

Option	Description
<code>-Config <Config File Name></code>	The configuration file overwrites the default values in <code>espeak.cfg</code>
<code>-outputDir <Directory Name></code>	The specified <code><Directory Name></code> overwrites the default value or the value specified for the <code>net.espeak.services.management.processmanager.OutputDir</code> property in <code>espeak.cfg</code>
<code>-noAdv</code>	The specified value overwrites the default value for the <code>net.espeak.services.management.processmanager.NoAdvertisingService</code> property in <code>espeak.cfg</code>

Table 33 Process Manager Command Line Options

Option	Description
<code>-instanceName <InstanceNameValue></code>	The specified value overwrites the default value for the <code>net.espeak.services.management.processmanager.InstanceName</code> property in <code>espeak.cfg</code>
<code>-persistenceList <Persistence List File></code>	The specified value overwrites the default value for the <code>net.espeak.services.management.processmanager.PersistenceListFile</code> property in <code>espeak.cfg</code>

NOTE: The Process Manager has to be started in interactive mode on the NT platform in order to view the applet and other examples, such as calculator.