

Powered by Universal Speech Solutions LLC



AWS Lex Plugin

Administrator Guide

Revision: 4

Distribution: Debian / Ubuntu

Created: September 15, 2018

Last updated: March 15, 2021

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1 Overview

This guide describes how to obtain and install binary packages for the Amazon Web Services (AWS) Lex plugin to the UniMRCP server on Debian-based Linux distributions. The document is intended for system administrators and developers.

1.1 Applicable Versions

Instructions provided in this guide are applicable to the following versions.

 UniMRCP 1.5.0 and above
UniMRCP Lex Plugin 1.0.0 and above

1.2 Supported Distributions


UniMRCP deb packages are currently available for x86_64 (64-bit) architecture only.

Operating System	Released	End of Support
Ubuntu 16.04 LTS (xenial)	September 2018	March 2021
Ubuntu 18.04 LTS (bionic)	May 2019	TBA
Ubuntu 20.04 LTS (focal)	March 2021	TBA

Note: packages for other distributions can be made available upon request. For more information, contact services@unimrcp.org.

1.3 Authentication

UniMRCP binary packages are available to authenticated users only. In order to register a free account with UniMRCP, please visit the following page.

 <https://www.unimrcp.org/profile-registration>

Note: a new account needs to be verified and activated prior further proceeding.

2 Installing Deb Packages Using Apt-Get

Using the APT package handling utility (`apt-get`) is recommended for installation of UniMRCP binary packages.

2.1 Repository Configuration

Supply login information by creating a file `/etc/apt/auth.conf.d/unimrcp.conf` containing the following entry.

```
machine unimrcp.org
login username
password password
```

Note: the *username* and *password* fields must be replaced with the corresponding account credentials.

Configure a repository by creating a file `/etc/apt/sources.list.d/unimrcp.list` containing the following entry.

```
deb [arch=amd64] https://unimrcp.org/repo/apt/ distr main
```

Note: the *distr* field must be replaced with the corresponding distribution code name such as *xenial*, *bionic*, *focal*, etc. To determine the distribution code, use ``lsb_release -cs``.

2.2 GnuPG Key

For verification of binary packages, UniMRCP provides a public GnuPG key, which can be retrieved and installed as follows.

```
wget -O - https://unimrcp.org/keys/unimrcp-gpg-key.public | sudo apt-key add -
```

2.3 Repository Update

In order to check for updates and apply the changes in the APT configuration, use the following command.

```
sudo apt-get update
```

2.4 Lex Plugin Installation

Lex V2

In order to install the plugin for the Lex V2 API, including all the dependencies, use the following command.

```
sudo apt-get install unimrcp-lex
```

Lex V1

In order to install the plugin for the Lex V1 API, including all the dependencies, use the following command.

```
sudo apt-get install unimrcp-lexv1
```

Note: either the plugin for Lex V2 or V1 shall be installed.

As a result, *apt-get* will check and prompt to download all the required packages by installing them in the directory */opt/unimrcp*.

In order to install the additional data files for the sample client application *umc*, the following command can be used.

```
sudo apt-get install umc-addons
```

Note: this package is optional and provides additional data which can be used for validation of basic setup.

3 Installing Deb Packages Manually

UniMRCP deb packages can be installed manually using the *dpkg* utility. Note, however, that the system administrator should take care of package dependencies and install all the packages in appropriate order.

The deb packages have the following naming convention:

```
$packagename_${universion}-${distr}_${arch}.deb
```

where

- *packagename* is the name of a package
- *universion* is the UniMRCP version
- *distr* is the distribution code name (trusty, xenial, ...)
- *arch* is the architecture (amd64, i386, all, ...)

3.1 Package List

The following is a list of UniMRCP deb packages required for the installation of the Lex plugin.

Package Name	Description
unimrcp-lex	AWS Lex plugin to the server supporting Lex V2 API
unimrcp-lexv1	AWS Lex plugin to the server supporting Lex V1 API
uniawssdk	UniMRCP edition of the AWS SDK CPP library.
uniawssdk-deps	UniMRCP edition of the dependencies of AWS SDK CPP library.
umc-addons	Sample en-US data files used with umc. [Optional]
unilicnodegen	Node information retrieval tool, required for license deployment.
unimrcp-server	Shared library and application of the server.
unimrcp-client	Shared libraries and sample applications of the client. [Optional]
unimrcp-demo-plugins	Set of demo plugins to the server. [Optional]

unimrcp-common	Data common for the client and the server.
uniapr	UniMRCP edition of the Apache Portable Runtime (APR) library.
uniapr-util	UniMRCP edition of the Apache Portable Runtime Utility (APR-Util) library.
unisofia-sip	UniMRCP edition of the Sofia SIP library.

3.2 Package Installation Order

Packages for APR, APR-Util and Sofia-SIP libraries must be installed first.

```
sudo dpkg --install uniapr_${aprversion}-${distr}_${arch}.deb
sudo dpkg --install uniapr-util_${apuverson}-${distr}_${arch}.deb
sudo dpkg --install unisofia-sip_${sofiaversion}-${distr}_${arch}.deb
```

Then, a package containing common data for the client and the server, and a package for the server should follow.

```
sudo dpkg --install unimrcp-common_${universion}-${distr}_${arch}.deb
sudo dpkg --install unimrcp-server_${universion}-${distr}_${arch}.deb
```

Next, a package containing the utility tool *unilicnodegen*, required for license deployment.

```
sudo dpkg --install unilicnodegen_${stoolversion}-${distr}_${arch}.deb
```

Next, packages containing the AWS SDK library and the dependencies.

```
sudo dpkg --install uniawssdk_${awssdk-depsversion}-${distr}_${arch}.deb
sudo dpkg --install uniawssdk_${awssdkversion}-${distr}_${arch}.deb
```

Finally, a package containing the Lex plugin should follow.

```
sudo dpkg --install unimrcp-lex_${universion}-${distr}_all.deb
```

4 Obtaining License

The Lex plugin to the UniMRCP server is a commercial product, which requires a license file to be installed.

4.1 License Type

The following license types are available:

- Trial
- Production
- Test and Development

4.2 Node Information

The license files are bound to a node the product is installed on. In order to obtain a license, the corresponding node information needs to be retrieved and submitted for generation of a license file.

Use the installed tool *unilicnodegen* to retrieve the node information.

```
sudo /opt/unimrcp/bin/unilicnodegen
```

As a result, a text file *uninode.info* will be saved in the current directory. Submit the file *uninode.info* for license generation to services@unimrcp.org by mentioning the product name in the subject.

4.3 License Installation

The license file needs to be placed into the directory */opt/unimrcp/data*.

```
sudo cp umslx_*.lic /opt/unimrcp/data
```


5 Obtaining Service Credentials

In order to utilize the AWS Lex API, corresponding service credentials need to be retrieved from the AWS console and further installed to the UniMRCP server.

5.1 Create IAM User

Sign up for an AWS account and create an IAM user.

<https://docs.aws.amazon.com/lex/latest/dg/gs-account.html>

5.2 Installation of Credentials

Create a text file *aws.credentials* in the directory */opt/unimrcp/data*.

```
nano /opt/unimrcp/data/aws.credentials
```

Place your AWS IAM user credentials in the following format.

```
{
  "aws_access_key_id": ".....",
  "aws_secret_access_key": "....."
}
```

6 Configuring Server and Plugin

6.1 Plugin Factory Configuration

In order to load the Polly plugin into the UniMRCP server, open the file *unimrcpserver.xml*, located in the directory */opt/unimrcp/conf*, and add the following entry under the XML element *<plugin-factory>*. Disable other speech recognizer plugins, if available. The remaining demo plugins might also be disabled, if not installed.

```
<!-- Factory of plugins (MRCP engines) -->
<plugin-factory>
  <engine id="Demo-Synth-1" name="demosynth" enable="true"/>
  <engine id="Demo-Recog-1" name="demorecog" enable="false"/>
  <engine id="Demo-Verifier-1" name="demoverifier" enable="true"/>
  <engine id="Recorder-1" name="mrcpreorder" enable="true"/>
  <engine id="Lex-1" name="umslex" enable="true"/>
</plugin-factory>
```

6.2 Logger Configuration

In order to enable log output from the plugin and set filtering rules, open the configuration file *logger.xml*, located in the directory */opt/unimrcp/conf*, and add the following entry under the element *<sources>*.

```
<source name="LEX-PLUGIN" priority="INFO" masking="NONE"/>
```

6.3 Lex Plugin Configuration

The configuration file of the plugin is located in */opt/unimrcp/conf/umslex.xml*. Default settings should be sufficient for general use.

Refer to the *Usage Guide* for more information.

7 Validating Setup

Validate your setup by using the sample UniMRCP client and server applications on the same host. The default configuration and data files should be sufficient for a basic test.

7.1 Setting up Sample Lex Bot

Follow the [instructions](#) to create a sample BookTrip Lex bot.

In order to identify the created Lex bot, the corresponding parameters must be specified in the configuration file of the plugin, located in `/opt/unimrcp/conf/umslex.xml`.

Lex V2

```
<streaming-recognition
  language="en-US"
  region="us-west-2"
  bot-name="Your-Bot-Name-ID"
  alias="Your-Bot-Alias-ID"
/>
```

Lex V1

```
<streaming-recognition
  language="en-US"
  region="us-west-2"
  bot-name="BookTrip"
  alias="Dev"
/>
```

7.2 Launching Server

Launch the UniMRCP server application.

```
cd /opt/unimrcp/bin
sudo ./unimrcpserver
```

In the server log output, check whether the plugin is normally loaded.

```
[INFO] Load Plugin [Lex-1] [/opt/unimrcp/plugin/umslex.so]
```

Next, check for the license information.

```
[NOTICE] UniMRCP Lex License
```

```
-product name:  umslex  
-product version: 1.0.0  
-license owner: -  
-license type:  trial  
-issue date:    2018-09-15  
-exp date:     2018-10-15  
-channel count: 2  
-feature set:  0
```

Next, check that the service account credentials are normally populated.

```
[NOTICE] Read AWS Credentials /opt/unimrcp/data/aws.credentials
```

7.3 Launching Client

Note: the optional package *umc-addons* must be installed for this test to work.

Launch the sample UniMRCP client application *umc*.

```
cd /opt/unimrcp/bin  
./umc
```

Run a typical speech recognition scenario by issuing the command *run lex1* from the console of the *umc* client application.

```
run lex1
```

This command sends a RECOGNIZE request to the server and then starts streaming a sample audio input file *bookroom.pcm* to recognize.

Check for the NLSML results to be returned as expected. Below is a sample result returned by Lex V1.

```
<?xml version="1.0"?>  
<result>
```

```
<interpretation grammar="builtin:speech/transcribe" confidence="1">
  <instance>
    <intent>BookHotel</intent>
    <slots>
      <CheckInDate></CheckInDate>
      <Location></Location>
      <Nights></Nights>
      <RoomType></RoomType>
    </slots>
    <message>What city will you be staying in?</message>
    <dialogstate>ElicitSlot</dialogstate>
    <slottoelicit>Location</slottoelicit>
  </instance>
  <input mode="speech">book a room</input>
</interpretation>
</result>
```

Visually inspect the log output for any possible warnings or errors.

Note that utterances are stored in the *var* directory, if the corresponding parameter is enabled in the configuration file *umslex.xml* and/or requested by the client.