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# Watson SS Plugin

## Administrator Guide

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# 1 Overview

This guide describes how to obtain and install binary packages for the IBM Watson Speech Synthesis (SS) 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 Watson SS Plugin 1.0.0 and above

## 1.2 Supported Distributions

UniMRCP binary packages are currently available only for x86\_64 (64-bit) architecture.

Operating System	32-bit	64-bit
Ubuntu 16.04 LTS (xenial)		✓
Ubuntu 18.04 LTS (bionic)		✓

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

The content of a typical configuration file of the APT repository, to be placed in `/etc/apt/sources.list.d/unimrcp.list`, is provided below.

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

The *username* and *password* fields included in the HTTPS URI must be replaced with the corresponding account credentials.

The *distr* field must be replaced with the corresponding distribution code name such as *xenial*, *bionic*, etc.

### 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 Watson SS Plugin Installation

In order to install the Watson SS plugin, including all the dependencies, use the following command.

```
sudo apt-get install unimrcp-watson-ss
```

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 Watson SS plugin.

Package Name	Description
<b>unimrcp-watson-ss</b>	Watson SS plugin to the server.
<b>unilibevent</b>	UniMRCP edition of the libevent library.
<b>umc-addons</b>	Sample en-US data files used with umc. [Optional]
<b>unilicnodegen</b>	Node information retrieval tool, required for license deployment.
<b>unimrcp-server</b>	Shared library and application of the server.
<b>unimrcp-client</b>	Shared libraries and sample applications of the client. [Optional]
<b>unimrcp-demo-plugins</b>	Set of demo plugins to the server. [Optional]
<b>unimrcp-common</b>	Data common for the client and the server.
<b>uniapr</b>	UniMRCP edition of the Apache Portable Runtime (APR) library.

<b>uniapr-util</b>	UniMRCP edition of the Apache Portable Runtime Utility (APR-Util) library.
<b>unisofia-sip</b>	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, a package containing the libevent library.

```
sudo dpkg --install unilibevent_${libeventversion}-${distr}_${arch}.deb
```

Finally, a package containing the Watson SS plugin should follow.

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

# 4 Obtaining License

The Watson SS 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](mailto: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 umswatsonss_*.lic /opt/unimrcp/data
```



# 5 Obtaining Service Credentials



Instructions provided in this section are for the new IAM token based authentication, supported since WSS 1.3.0. The legacy username and password based authentication is no longer supported.

In order to utilize the IBM Watson Speech API, corresponding service credentials need to be retrieved from the IBM Cloud portal and further installed to the UniMRCP server.

## 5.1 Watson Text to Speech API Subscription

Subscribe to the Watson Text to Speech API and obtain the credentials.

1. Navigate to the Text to Speech API portal.  
<https://console.bluemix.net/catalog/services/text-to-speech>
2. Log in and create a service.
3. Select the *Service credentials* tab and create a new credential.
4. View and copy the credentials, which should be available in the following format

```
{
  "apikey": "3df... ..Y7Pc9",
  "iam_apikey_description": "Auto generated apikey during resource-key operation for...",
  "iam_apikey_name": "auto-generated-apikey-31b336bc-2d6a-41c3-a8b2-e05ec6db19b4",
  "iam_role_crn": "crn:v1:bluemix:public:iam::::serviceRole:Manager",
  "iam_serviceid_crn": "crn:v1:bluemix:public:iam-identity::a/57d48380.....:serviceid:...",
  "url": "https://gateway-lon.watsonplatform.net/text-to-speech/api"
}
```

## 5.2 Installation of Credentials

Paste the credentials into a text file *watsonss.credentials*, which needs to be placed to the directory */opt/unimrcp/data*.

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

# 6 Configuring Server and Plugin

## 6.1 Plugin Factory Configuration

In order to load the Watson SS 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 synthesizer 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="false"/>
  <engine id="Demo-Recog-1" name="demorecog" enable="true"/>
  <engine id="Demo-Verifier-1" name="demoverifier" enable="true"/>
  <engine id="Recorder-1" name="mrcpreorder" enable="true"/>
  <engine id="Watson-SS-1" name="umswatsonss" 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=" WATSONSS-PLUGIN" priority="INFO" masking="NONE"/>
```

## 6.3 Watson SS Plugin Configuration

The configuration file of the plugin is located in */opt/unimrcp/conf/umswatsonss.xml*. Default settings should be sufficient for the 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 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 [Watson-SS-1] [/opt/unimrcp/plugin/umswatsonss.so]
```

Next, check for the license information.

```
[NOTICE] UniMRCP WSS License  
  
-product name:  umswatsonss  
-product version: 1.0.0  
-license owner: -  
-license type:  trial  
-issue date:    2018-06-28  
-exp date:     2018-07-28  
-channel count: 2  
-feature set:  0
```

## 7.2 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 synthesis scenario by issuing the command *run bss1* from the console of the *umc* client application.

```
run bss1
```

This command sends a SPEAK request to the server and then records synthesized stream into a PCM file stored in the directory `/opt/unimrcp/var`.

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