



Chatbot and Artificial Intelligence



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Chatbot and Artificial Intelligence

Introduction

Pandora ITSM chatbot is made up of two services: a conversation or chat server (with its WEB client) and a conversational artificial intelligence engine (optional).

The artificial intelligence engine can be used to learn from the information entered into Pandora ITSM knowledge base to provide quick answers to user questions.

- Automatic: It uses machine learning models to automatically provide answers to users based on prior learning.
- Manual: A Pandora ITSM operator responds to users through the chat interface.
- Mixed: Pandora ITSM assists the operator by showing possible answers to users' questions.

The architecture consists of three key elements:

- The chat client, with which the user interacts.
- The chat server, with which the operator interacts.
- The prediction engine, which offers answers based on users' questions.

Both the client and the chat server are part of Pandora ITSM installation.

To add predictive capabilities to Hybrid Helpdesk you will need to install and activate the Prediction Engine as described in the following sections.

Chat server installation

By default it is installed when using the cloud installation method. To activate it, go to the chat Setup → Setup → ChatBot → Enable chat option:

Pandora ITSM Configuration
ChatBot

Chat Global Options

Enable chat

Ws url ⓘ

Ws port

Ws password ⓘ

Ws channel by default

Check chat server

Enable SSL

Update

The web service URL must be configured with the public URL of your Pandora ITSM installation, as configured in the main section of Setup:

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Login hash password

Enable HTTPS access

Access port ⓘ

Public access to server ⓘ

Public IP or name for the server, for example (23.45.67.3 or mydomain.com)

Enable SSL

Private key ⓘ

Certificate ⓘ

CA ⓘ

In case it does not work as expected, reproduce the [Node.js installation steps](#).

If AI is enabled (see "[AI configuration](#)"), the AI options section with the Update KB model and Update conversational model buttons will also appear.

IA Options

Update KB model

Update conversational model

HTTPS configuration for the Chatbot

Activate Enable SSL, by default it has the following values:

Enable SSL



Private key i

/etc/pki/tls/private/localhost.key

Certificate i

/etc/pki/tls/certs/localhost.crt

CA i

/etc/pki/tls/certs/localhost.crt

Replace your own certificates with the ones configured by default. Save by clicking Update and check the green color in Check chat server to know if it works properly.

Node.js installation

```
curl -SsL
http://firefly.artica.es/projects/integria/integria_deploy_enterprise.sh | sh
curl -sL https://rpm.nodesource.com/setup_12.x | sh
yum install -y nodejs
npm i -g pm2
cd /var/www/html/integria/extras/chat_server
npm update
pm2 start server.js
```

Edit the file `/etc/systemd/system/integria-chat.service` so that the service starts automatically every time the operating system boots, adding the following:

```
[Unit]
Description=Integria-Chat-Server
```

```
After=network.target
[Service]
Type=simple
ExecStart=/usr/bin/node server
Restart=always
# Consider creating a dedicated user for Wiki.js here:
User=root
Environment=NODE_ENV=production
WorkingDirectory=/var/www/html/integria/extras/chat_server
[Install]
WantedBy=multi-user.target
```

Save file and run:

```
systemctl daemon-reload
systemctl start integria-chat.service
systemctl enable integria-chat
```

Access to the chat server database must be configured, edit the file `/var/www/html/integria/extras/chat_server/config/config.js` and modify the required database parameters. The one by default must be changed should you have a custom installation:

```
[root@pandoraitsm /]# cat /var/www/html/integria/extras/chat_server/config/config.js
// If this file is modified, check the chat_set_default_values() function.
module.exports = {
  PORT: process.env.PORT || 5000,
  DBPORT: process.env.DBPORT || 3306,
  DBHOST: process.env.DBHOST || "127.0.0.1",
  DBDATABASE: process.env.DATABASE || "pandoraitsm",
  DBUSER: process.env.DBUSER || "pandoraitsm",
  DBPASS: process.env.DBPASS || "P4ndor4.itsm",
  DBLOGGIN: process.env.DBLOGGIN || console.log,
  HASH: process.env.HASH || "ef541cdc541a065d52c9a375223594219e3899343db4ef6d89eb664288528b18"
};

[root@pandoraitsm /]# █
```

Installation of the artificial intelligence engine

Run the following commands as root (super user):

```
yum install python3 python36-Cython
wget http://xxxxxx/prediction_engine-latest.tgz
tar xvzf prediction_engine-latest.tgz
cd prediction_engine
./install.sh
```

```
service prediction_engine.service restart
```

This will start the service on port 6000/tcp.

AI Settings

AI is configured separately on each channel. To that end, go to Support → Chat → Channel Management and edit the settings:



- IA url: URL where the web service listens to the artificial intelligence engine. It must be in the following format:

```
HTTP://DIR_IP
```

- IA Port: Default 6000. Do not change this unless you have to do port forwarding somewhere in between.
- Initial response time: Seconds in which the AI will answer the first user request.
- Response time between conversations: Response time between questions once the conversation has started.
- Progress bar timeout: Time that the system will allow the operator to choose an answer from those provided before automatically answering the best option.
- Certainly threshold: Degree of uncertainty supported by the AI when choosing an option from those offered, the value must be between 0 and 1, an initially recommended value is 0.5 (50 %) and should be adjusted as necessary.

Backup of custom learning models

- Before carrying out any customization, it is recommended to back up the current models:

```
cp -r /opt/prediction_engine/models /opt/prediction_engine/models.bak
```

- To restore models from the backup, run:

```
cp -f /opt/prediction_engine/models.bak/* /opt/prediction_engine/models/
```

Questions and Answers (Knowledge Base)

This type of modification is advanced, by default the Update KB Model and Update Conversational Model **buttons must be used** from PITSM Web Console.

The question and answer template is generated from a CSV file with the following format:

Language code;Question;Answer

Example:

"en";"question 1";"answer 1"

"en";"question 2";"answer 2"

...

It can be obtained automatically from Pandora ITSM database with the following commands:

```
rm -f /opt/prediction_engine/data/integria_kb.zip 2>/dev/null
echo "SELECT id_language AS lang, title as question, data as answer FROM
integria.tkb_data INTO OUTFILE '/opt/prediction_engine/data/integria_kb.csv'
FIELDS TERMINATED BY ';' ENCLOSED BY '\"' LINES TERMINATED BY '\n';" | mysql -u
integria -p integria && zip -j /opt/prediction_engine/data/integria_kb.zip
/opt/prediction_engine/data/integria_kb.csv
```

To update the models:

```
cd /opt/prediction_engine/src
python kb_train.pyc
```

Dialogues (conversational)

Menu Support → Chat → Browse → Data management.

In Pandora ITSM Web Console you will be able to add conversational items classified by categories and languages.

To search for a specific conversational item, enter a keyword found in the title and/or answer and select the category and language it belongs to.

Advanced configuration

This type of modification is advanced, by default the Update KB Model and Update Conversational Model **buttons must be used** from PITSM Web Console.

The conversational model from YAML files with the following structure:

```
categories:
```



```
- category 1
- category 2
- ...
conversations:
- - text 1
- text 2
- ...
- - text 1
- text 2
- text 3
- ...
...
```

The `.yaml` files (the file name is not important) should be entered in the directory:

```
/opt/prediction_engine/data/chat_xx
```

Being `xx` the ISO code of the language to be updated (es for the Spanish language, en for English language).

To update the models run:

```
cd /opt/prediction_engine/src
python chat_train.pyc
```

How to use the chat

Pandora ITSM chatbot uses channels to define different places to have conversations between operators (Pandora ITSM users with special permissions to manage conversations) and normal users (normal Pandora ITSM users or simple anonymous visitors, if the chat is used from outside of Pandora ITSM).

Manage a channel

Menu Support → Chat → Manage Channel:



Channel

1 channels found

Search

Search



| Name | Description | Users Channel | Actions |
|----------|-------------------------------|---------------|----------------------------------------------------------------------------------------------------------|
| Integria | Canal por defecto de integria | -- | Generate Bundle Edit Users Update Delete |

Add operators to the channel

The channel must have at least one operator, who will answer the users' chat requests. You will be able to add any user with chat operator permissions and assign them a description, an avatar (different from the one in their user file) and the languages in which they can answer chats.

Click Edit users of the [corresponding channel](#) to add a user and then click Add User:

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Chat
Users Channels

Search Users

Search

No data to show



Add User +

Use the screen to define an operator, example:


Pandora ITSM
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Chat
Users Channels

User  admin 

Languages
Deutch
English
Español
Français

Icon
girl3 

Description
New user for default operator.

Add user +

Once added other users will be able to start chat.



Channel operators

In order for operators to receive audible notifications when users open a chat, they must be on the chat control screen. It is accessed through the menu Support → Chat → View chat.



The operator will enter one of those chats and interact with the other party:



In the event that the chat is opened by an internal user, it will indicate which user it is.

Using the chat outside of Pandora ITSM

To use the chat outside Pandora ITSM interface, for example on a web page or in another application, click the star icon to show the snippet of JavaScript code to be embedded into the application:



Note that the URL ncluded in the code is the URL that is defined as the public URL in chat server options. Said URL must be accessible from where users access it. In most cases, this means that it must be a public Internet URL.

Example:



The conversation starts by clicking on the icon at the bottom right, Help button:



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