Chewie

Chewie Developers

May 16, 2024

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USER DOCUMENTATION

1.1 Introduction

1.1.1 What is Chewie?

Chewie is an EAPOL/802.1x implementation in Python. It is designed to work on it's own but primarily as a module for The Faucet Project which is an open-source SDN controller implementation in Python.

Supported Features:

- PEAP
- MD5-SUM
- TLS
- TTLS

1.1.2 Configuration

Setting up credentials with Chewie can be set on the Radius server, if using the default configuration this can be found in the `etc/freeradius/users` file.

The default credentials for the username and password are `user` and `microphone` respectively. Example authentication certificates for TLS / TTLS / PEAP have been provided in the `etc` folder.

NOTE: These are self-signed certificates

1.1.3 Getting Started:

Getting started with Chewie is as easy as starting a docker-compose network. This has been described below. If you would like to learn about the requirements for running Chewie, all of the dependencies for Chewie have been defined in the `Dockerfile.chewie` file, with the `pip` dependencies defined in the `requirements.txt` and `test-requirements.txt` files respectively.

Docker / Docker-Compose:

Setup

If needed, installation instructions for Docker and Docker-Compose can be found on the official Docker website or by following the links provided.

Starting a Docker-Compose

To run Chewie in the Docker-Compose Environment:

```
docker-compose up --build
```

To Stop and Clean Up the Docker Environment

```
docker-compose down
```

1.2 Development

1.2.1 Building the Docker Image

For a developer to build and run the Chewie inside a Docker it is easy to pass through the live source-code to the Docker container, allowing for the developer to restart Chewie and code changes to be active on application restart.

To get started working with `Chewie`, the main image needs to be built before a developer can run it.

```
docker build -t chewie_image -f docker/Dockerfile.chewie .
```

To start the docker image inside a container, mounting the `Chewie` source code to `/chewie/` the instruction below is provided:

```
docker run -it -v $(pwd)/:/chewie/:ro chewie_image /bin/bash
```

To run Chewie once in the Docker environment: `python3 /chewie/run.py`

1.3 Testing

1.3.1 Running unit-tests in Docker

To build and run the Chewie test-suite inside a Docker:

```
docker build -t chewie_test_image -f docker/Dockerfile.test .          docker run -t
chewie_test_image
```
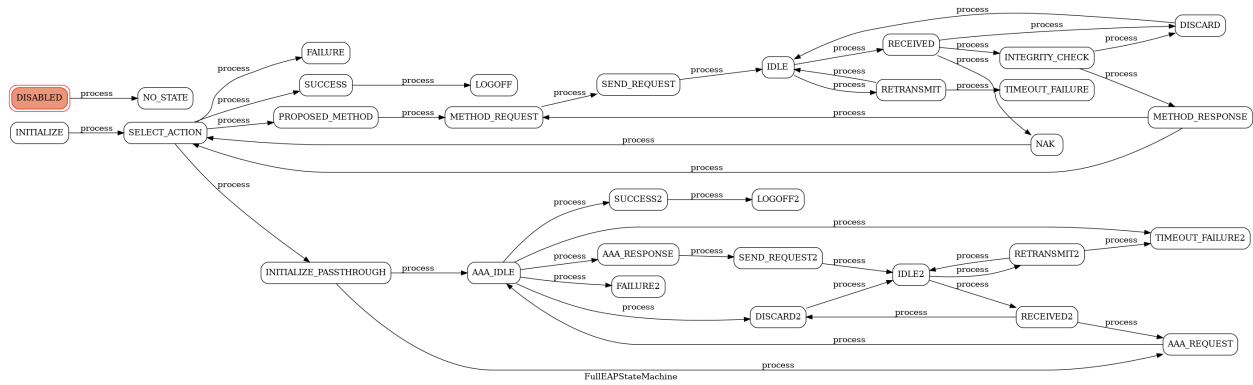
Questions / Bugs

If there are any questions or bugs found please report them to the Chewie project via the issue link. This can be found at https://github.com/faucetsdn/chewie/issues

1.4 Architecture

Chewie contains two state machines that host the state of users as they perform authentication.

1.4.1 EAPOL State Machine

FullEAPStateMachine

1.4.2 Mac Authentication Bypass Machine

MacAuthenticationBypassStateMachine
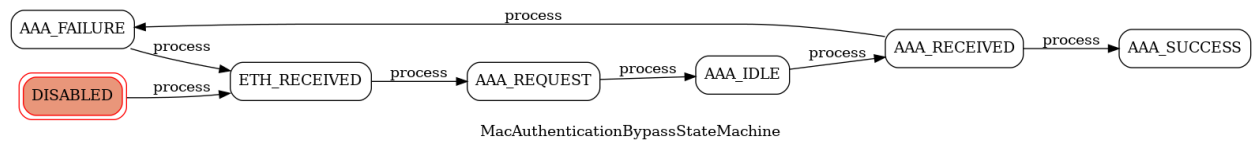
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