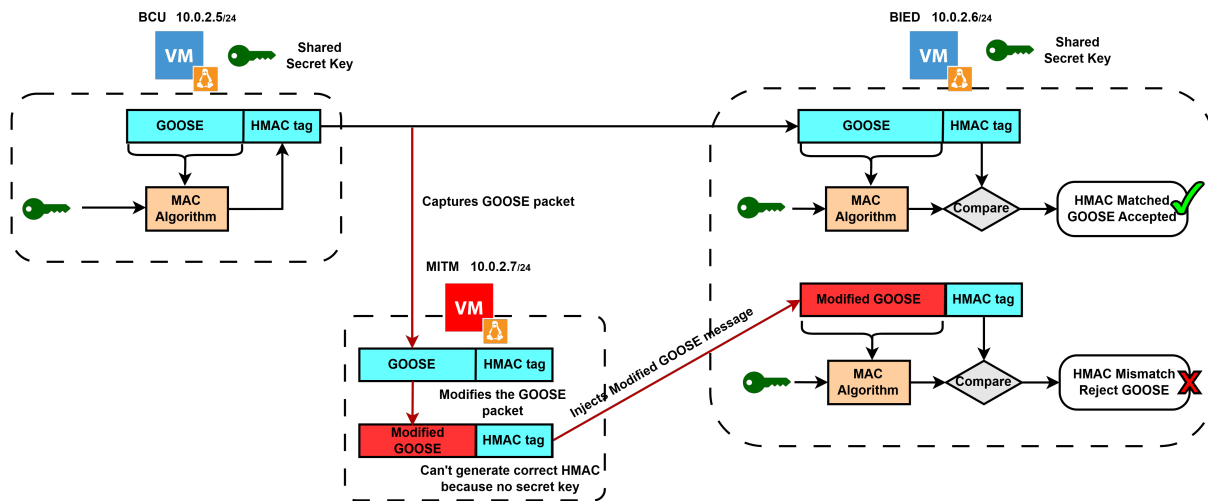# Lab 03: Securing GOOSE Communication Using HMAC

Objective

Step 1: Directory Structure Preparation

Create the required directory in cspg directory.

```
mkdir lab03
cd lab03
```

Step 2: CSPG-Level CMake Configuration

Navigate to the cspg directory and update the CMakeLists.txt file as per the repository instructions.

```
cd cspg
sudo nano CMakeLists.txt
```

Ensure the following line is present:

```
add_subdirectory(lab03)
```

Step 3: Lab03 File Integration

Inside the lab03 directory, add the required publisher and receiver source files obtained from the GitHub repository.

Publisher (lab03):

- CMakeLists.txt

- Makefile

- lab03_goose_publisher_hmac

Receiver (lab03):

- CMakeLists.txt

- Makefile

- lab03_goose_subscriber_hmac

Step 4: GOOSE Source Code Updates

Update the following files in the `libiec61850/src/goose` directory using the modified versions from the repository:

- goose_receiver.c

- goose_receiver.h

- goose_publisher.c

- goose_publisher.h

Step 5: Rebuilding the libiec61850 Library

After all file updates, rebuild the library on both virtual machines.

```
cd libiec61850/build
cmake ..
make
```

Step 6: Receiver Execution (MU Side)

Navigate to the receiver build directory and execute the receiver application:

```
cd cspg/lab03
sudo ./lab03_goose_subscriber_hmac eth0 "mysecret"
```

The GOOSE subscriber will start listening on the specified interface.

Step 7: Publisher Execution (IED Side)

Similarly, on the publisher virtual machine, execute the publisher application:

```
cd cspg/lab03
sudo ./lab03_goose_publisher_hmac eth0 "mysecret"
```