Ad Hoc Network Integration For Immersive Performances (ANIFIP)

1ª Avaliação do Projeto

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10/05/2024

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01 Objectives

Ad Hoc Network

- establish an ad hoc network

- communication between multiple nodes

- mesh backbone for transmitting commands

- nodes synchronization (via NTP)

Command Propagation

- receive a commands from the central controller

- propagate commands through the network

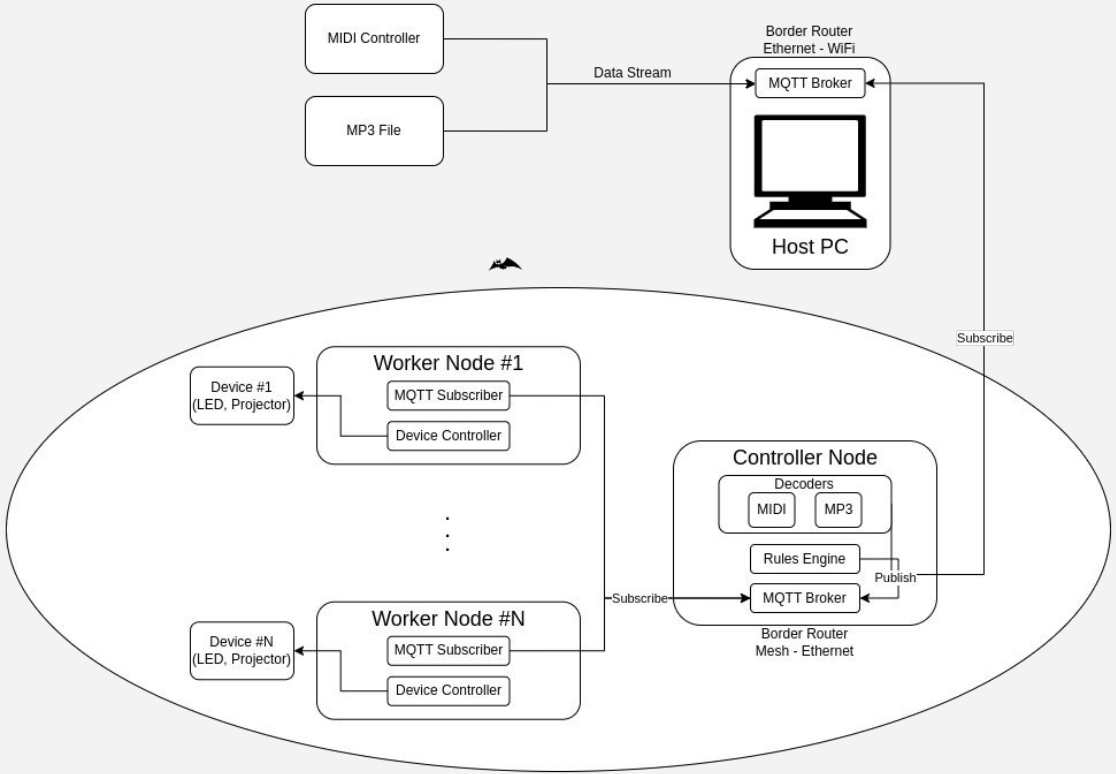
- respond to the instructions

Node Actions

- perform specific tasks based on node's capabilities

(e.g turn on LEDs, change LEDs color, change the displayed image)

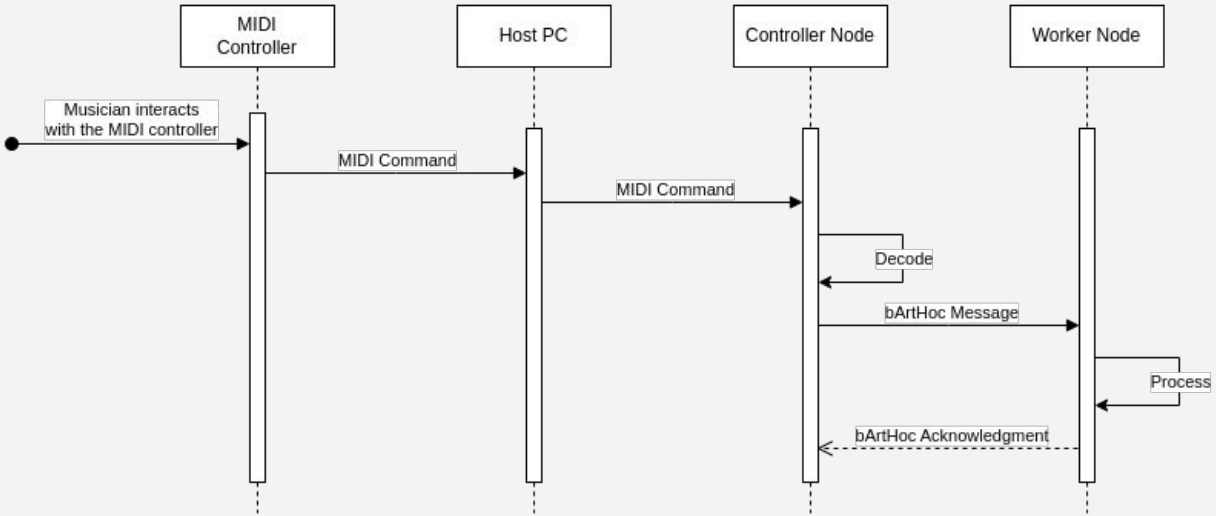
02 Architecture



03 Protocol – Messages

```
{
    "audio": "<base64 encoded audio stream>",
    "metadata": {
        "timestamp": <timestamp>,
        "duration": <int - duration of the audio chunk in seconds>,
        ...
    }
    "rules": {
        "node_1": [
                <list of actions node must perform>
        ],
        ...
    }
}
```

03 Protocol – Sequence Diagram



04 Project Status

- Ad Hoc Network Established - B.A.T.M.A.N

```
nap@raspberrypi-708:~/Desktop $ ping 10.1.1.15
PING 10.1.1.15 (10.1.1.15) 56(84) bytes of data.
64 bytes from 10.1.1.15: icmp_seq=1 ttl=64 time=1.22 ms
64 bytes from 10.1.1.15: icmp_seq=2 ttl=64 time=1.50 ms
64 bytes from 10.1.1.15: icmp_seq=3 ttl=64 time=0.970 ms
64 bytes from 10.1.1.15: icmp_seq=4 ttl=64 time=0.966 ms
64 bytes from 10.1.1.15: icmp_seq=5 ttl=64 time=9.38 ms
```

```
nap@raspberrypi-708:~/Desktop $ sudo batctl ping 10.1.1.15
PING 10.1.1.15 (d8:3a:dd:ed:ee:94) 20(48) bytes of data
20 bytes from 10.1.1.15 icmp_seq=1 ttl=50 time=2.58 ms
20 bytes from 10.1.1.15 icmp_seq=2 ttl=50 time=0.88 ms
20 bytes from 10.1.1.15 icmp_seq=3 ttl=50 time=0.89 ms
20 bytes from 10.1.1.15 icmp_seq=4 ttl=50 time=0.86 ms
20 bytes from 10.1.1.15 icmp_seq=5 ttl=50 time=0.83 ms
```

- Nodes Synchronization - NTP

```
nap@raspberrypi-708:~/Desktop $ ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*10.1.1.15       LOCAL(0)        11 u   11   64    1    0.953   -0.002   0.207
```