

SmartLightHub

A OPENSOURCE SMART DMX-LIGHTCONTROL

CONTENT

- ▶ ABOUT THIS PROJECT
- ▶ SETUP EXAMPLES
- ▶ HARDWARE
- ▶ SOFTWARE
- ▶ WEBINTERFACE
- ▶ LINKS

About this project

- ▶ Desc

Its all open source



open hardware



®

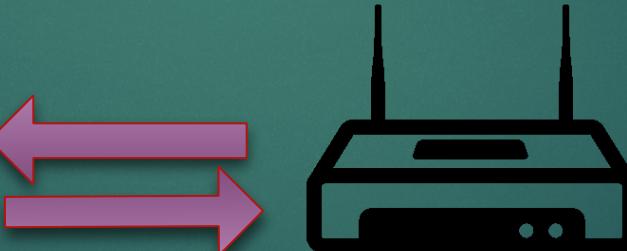
open source
initiative

SETUP EXAMPLES

Basic-Setup with one node



NODE
Database/Webserver



ROUTER



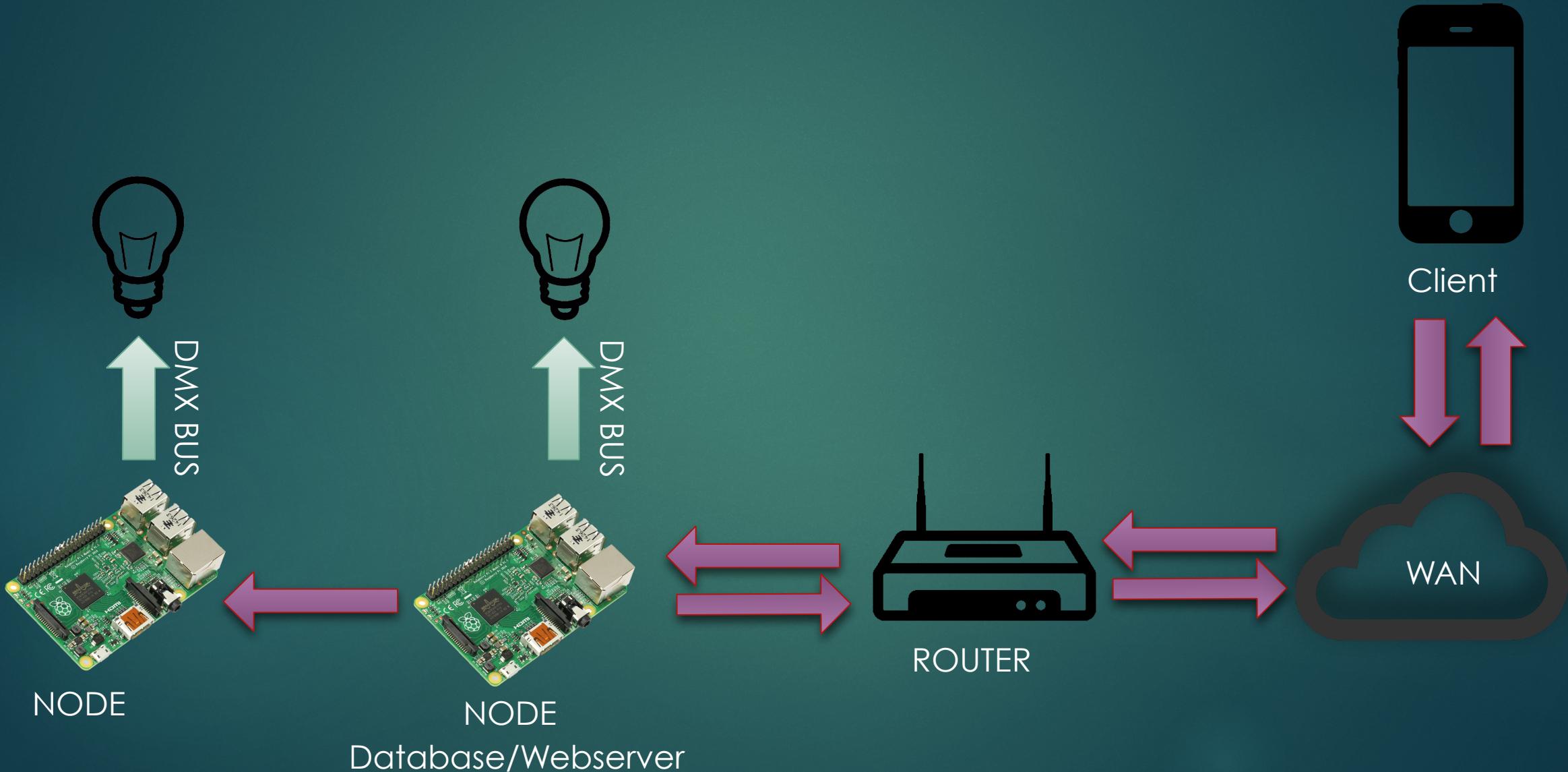
Client



WAN

Setup with 2 Nodes, one location

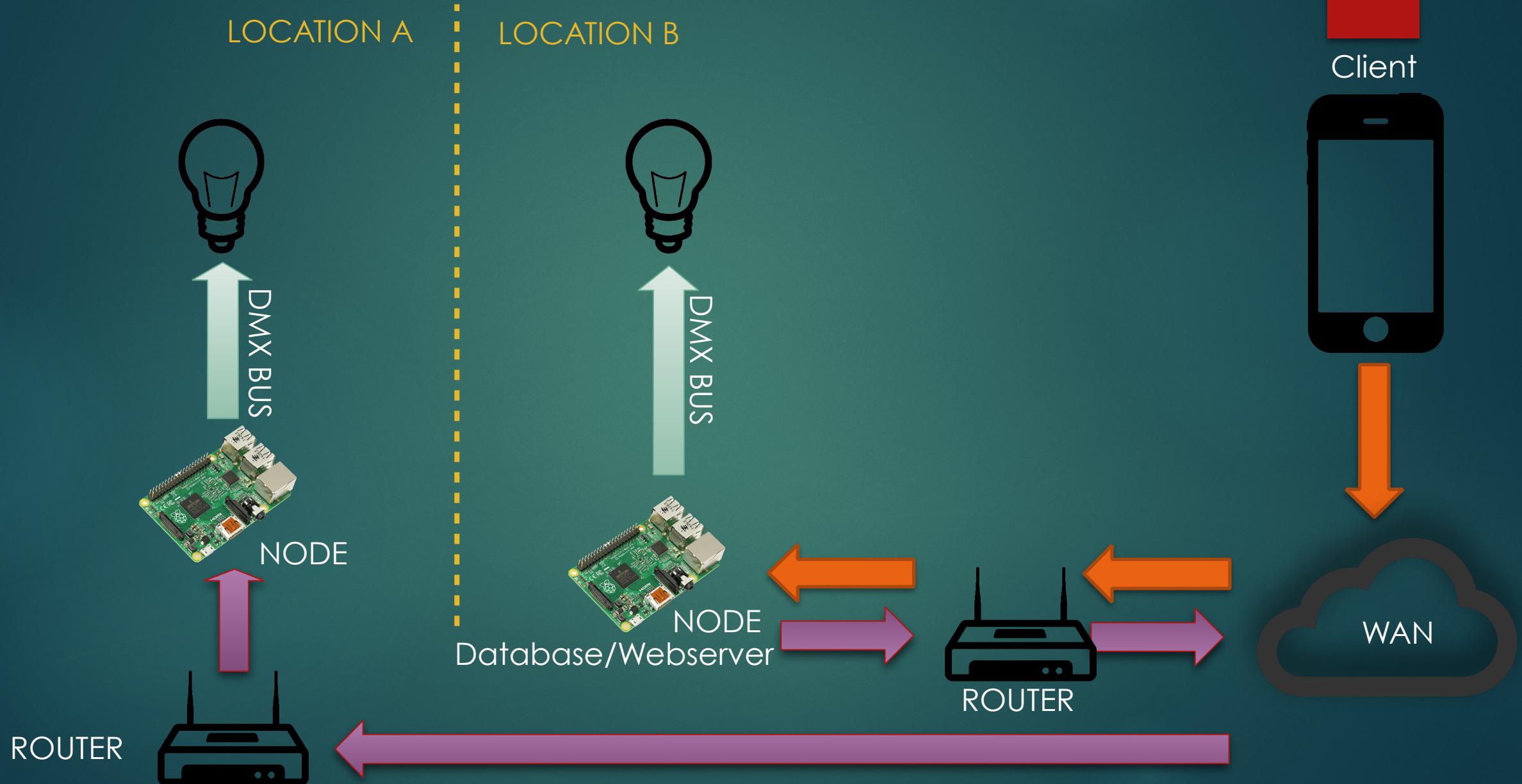
4



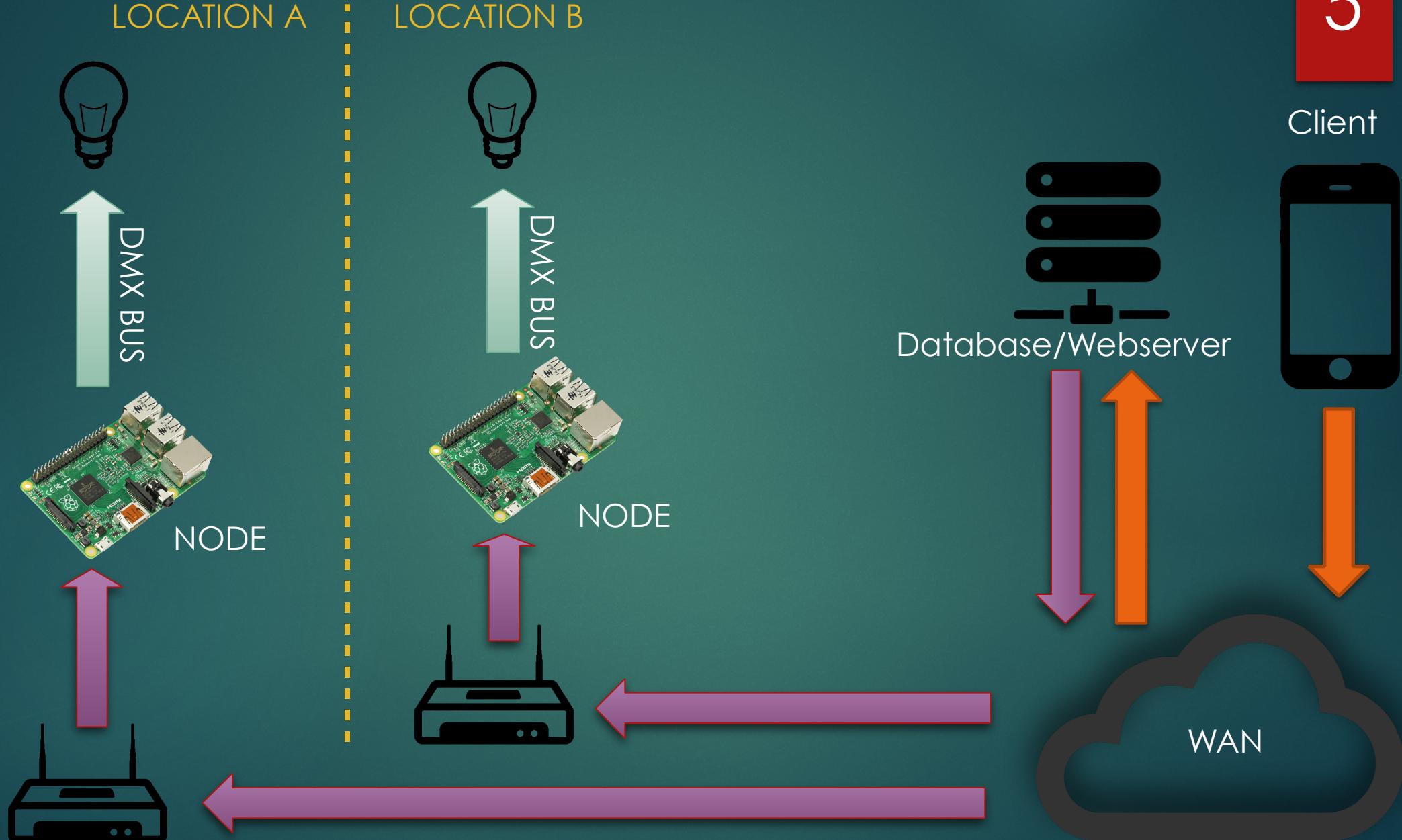
Setup with 2 Nodes, two locations

7

Client



Setup with extern server



Setup with extern server

- ▶ The Raspberry Pis webserver is perfect for a low amount of active nodes.
- ▶ Allow low response time from request to channel change if a large amount of nodes are active

HARDWARE YOU WILL NEED TO RUN

- ▶ To run the SmartLightHub you will need:
 - a) A set of supported light accessories
 - b) One or more SmartLightHubNodes
 - c) LAN/WAN-Network-Wired connection
 - d) Client with a web browser to setup the system

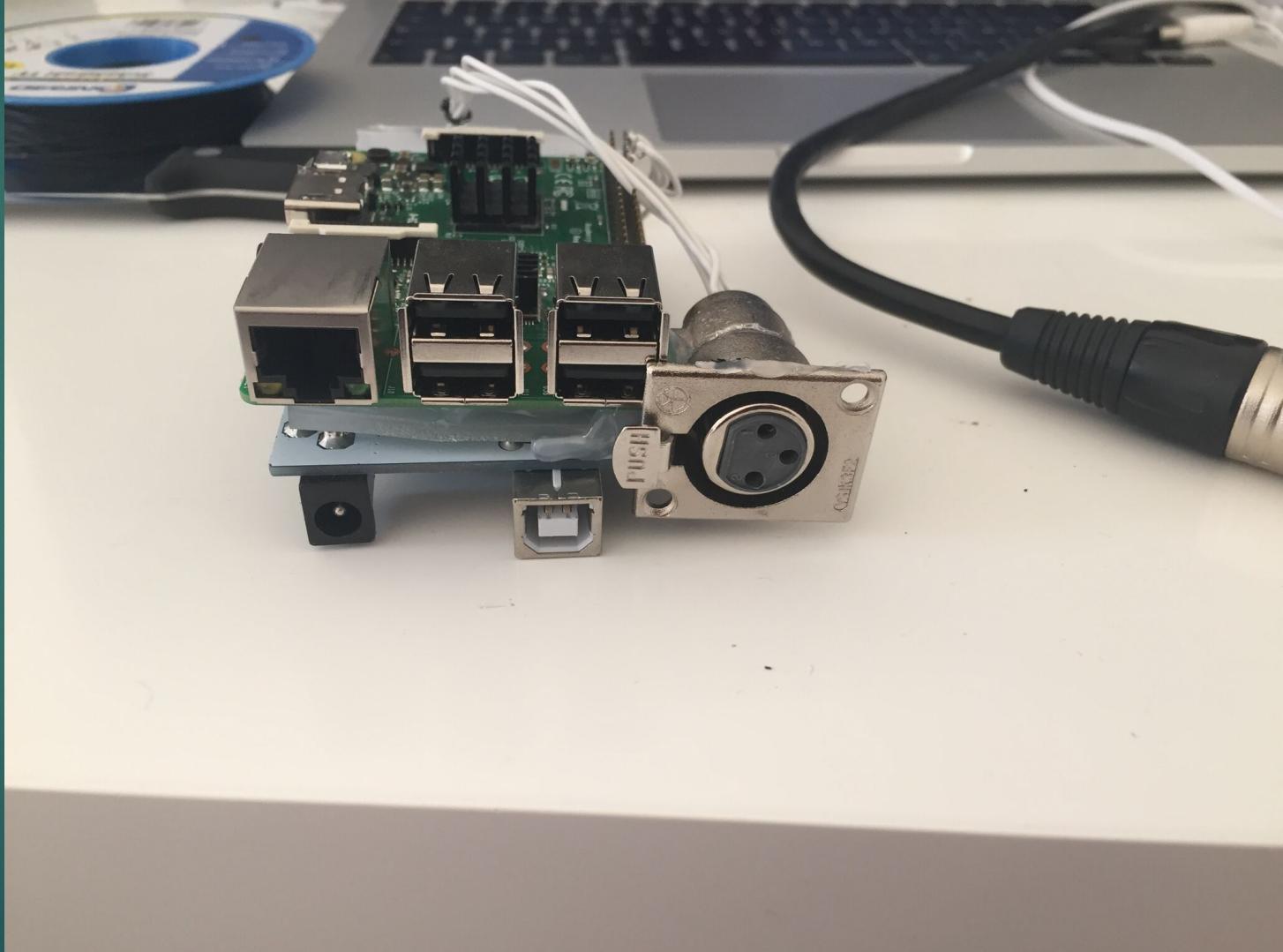
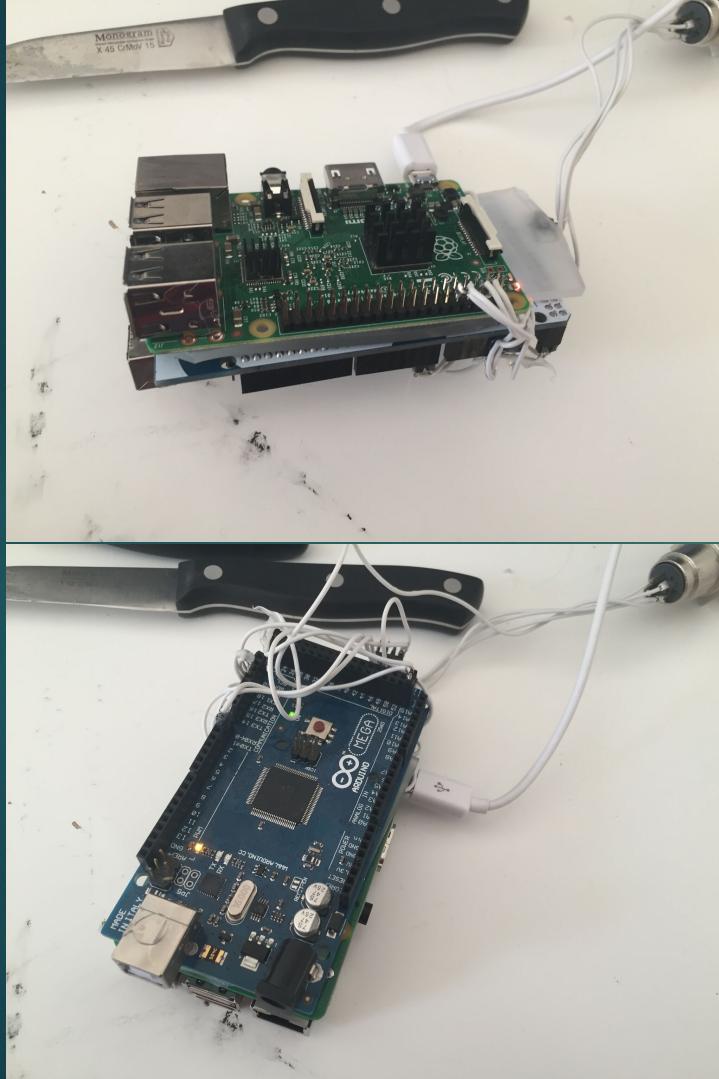
Compatible accessories

- ▶ Default node configuration :
 - ▶ DMX512 (with not more than 32 unit loads on the node output)
 - ▶ Philips Hue (via the Philips Hue-Bridge)
 - ▶ 16x ON/OFF channels to control simple accessories
 - ▶ 10x 0-10V outputs for use with SPS (e.g. Siemens Logo) or to use electric cabinet dim component.
- ▶ on task list:
 - ▶ own XBee receive nodes and protocol
 - ▶ WS2801 / WS2811 / WS2812 outputs

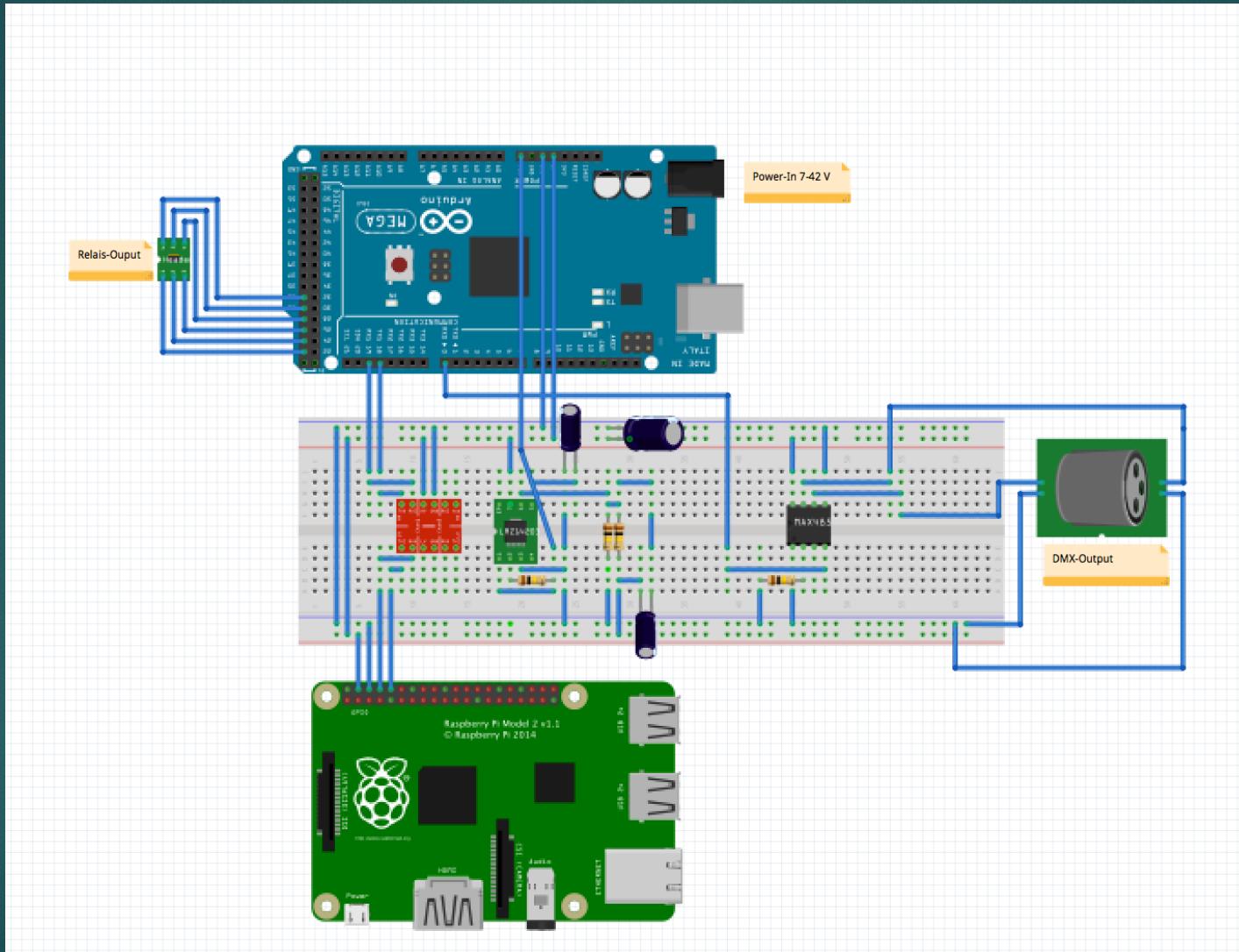


The Hardware-Package

The Hardware-Package [Node V1.0]



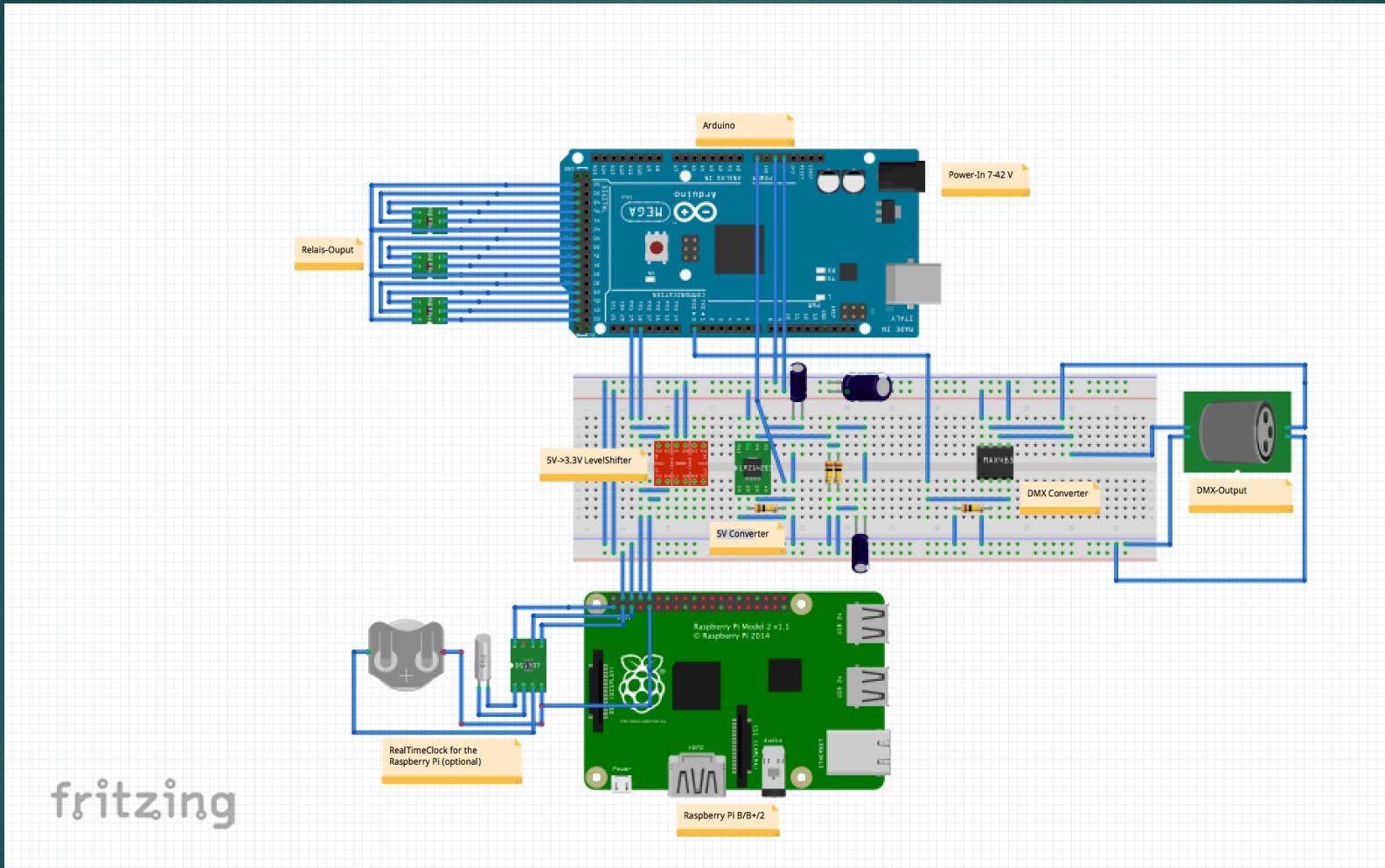
Hardware-Schematic [Node V1.0]



The Hardware-Package [Node V2.0]



Hardware-Schematic [Node V2.0]



The Hardware-Package [Node V2.0]

- ▶ Plug and Play
- ▶ Raspberry Pi v2
- ▶ Arduino Meag 2560 (+ DMX Socket, Transreciever-IC, voltage-regulator, level-regulator, RTC)
- ▶ SD Card with complete and ready to use image
- ▶ Electric cabinet compatible case
- ▶ 8x 230V 16A Relais
- ▶ 12V Power Supply (Electric cabinet compatible)

RaspberryPi (B/B+/2) Image

- ▶ Ready to Use
- ▶ Fast webserver with PHP,FTP, Database, Cronjob
- ▶ MySQL-Database with preloaded tables
- ▶ Complete pre-configured webinterface
- ▶ Installed pythonscripts to recieve the control requests

The App

iOS SmartLightHub-App (SLH)

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- ▶ Switch between scenes
- ▶ Add tasks

WEBINTERFACE

- ▶ OVERVIEW
- ▶ ZONES
- ▶ DEVICES
- ▶ CHANNELS
- ▶ SCENES
- ▶ TASKS

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

Node Management

Scene Management

Schedule Management

Activity Log

SETUP

SCENES

[Alle aus](#)

[Alle an](#)

[Tageslicht](#)

[Nachtlicht](#)

[YELLOW](#)

ZONES



[Schlafzimmer](#)

RBNetworks

SMART

LIGHT V2

- Backend -

Start

Dashboard

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Schedule Management

Activity Log

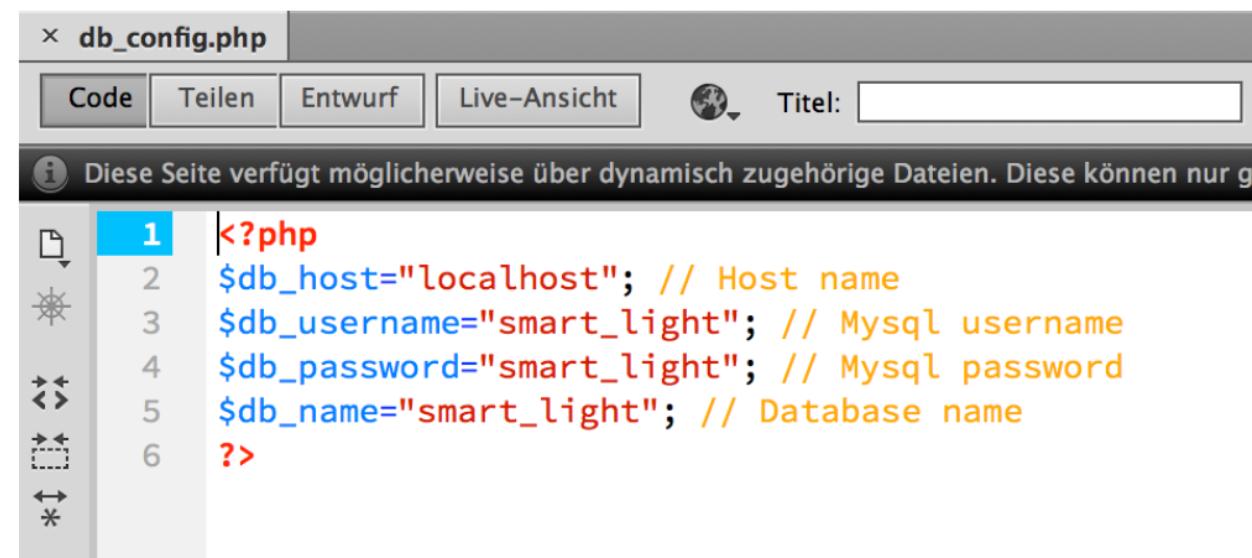
SETUP Cronjob

The file **(root_dir)/remote/cron.php** must be called every minute.

Exaple-Config for the linux crontab : * * * * * /var/www/smarthome_v2/remote/cron.php
But firt make the cron.php exicutable : **chmod +x /var/www/smarthome_v2/remote/cron.php**

ADVANCED CONFIG

SETUP Database : setup (the root_dir)/db_config.php first



The screenshot shows a code editor window titled "db_config.php". The interface includes tabs for "Code", "Teilen", "Entwurf", and "Live-Ansicht", along with a title input field. A status bar at the bottom indicates: "Diese Seite verfügt möglicherweise über dynamisch zugehörige Dateien. Diese können nur g". The code area contains the following PHP configuration:

```
<?php
$db_host="localhost"; // Host name
$db_username="smart_light"; // Mysql username
$db_password="smart_light"; // Mysql password
$db_name="smart_light"; // Database name
?>
```

SETUP Database : Load data to Database. Create a table with the name "smarthome" first

Setup Database with SAMPLE DATA

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

Node Management

Scene Management

Schedule Management

Activity Log

SETUP

| SCHEDULE NAME | TOGGLE TIME | SCENE TO TOGGLE | ACTIVE DAYS | DELETE | EN. |
|---------------|-------------|-----------------|--|----------------------------------|------|
| AUS | 02:00 | Alle aus | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| AUS | 07:00 | Alle aus | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Nachtlicht | 00:00 | Nachtlicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 23:30 | Tageslicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 23:00 | Tageslicht 1 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 22:30 | Tageslicht 2 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 22:00 | Tageslicht 3 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 21:30 | Tageslicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 21:00 | Tageslicht 1 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 20:30 | Tageslicht 2 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 20:00 | Tageslicht 3 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 19:30 | Tageslicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| Tageslicht | 19:00 | Tageslicht 1 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | <button>DELETE SCHEDULE</button> | DIS. |
| SUN | 06:00 | YELLOW | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, | <button>DELETE SCHEDULE</button> | DIS. |

Channel-Name

Scene to Toggle

TIME SETTINGS

Toggle Time [FORMAT : HH:MM eg. 09:00 24Hr]

MONDAY

TUESDAY



SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

Node Management

Scene Management

Schedule Management

Activity Log

SETUP

| Scene Name | INFO | DELETE | CAPTURE | TOGGLE SCENE |
|--------------|-------------------------|--------------|-------------------------|--------------|
| Alle aus | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| Alle an | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| Tageslicht | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| Nachtlicht | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| Tageslicht 1 | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| Tageslicht 2 | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| Tageslicht 3 | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |
| YELLOW | IS A HOMEKIT DEVICE : 1 | DELETE SCENE | CAPTURE VALUES TO SCENE | TOGGLE SCENE |

Add Scene

| | |
|-----------------------|---|
| Scene-Name | <input type="text" value="SCENE NAME"/> |
| Show in Sidebar | <input checked="" type="checkbox"/> |
| ADVANCED SETTINGS | |
| Add as HomeKit-Device | <input checked="" type="checkbox"/> |
| ADD SCENE | |

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

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Scene Management

Schedule Management

Activity Log

SETUP

| Node-Name | IP | Set State | Delete |
|------------|-----------------------------------|---------------------|--------------------|
| RPI | rbnetworks.dyndns.ws:5000 PW:0000 | DISABLE NODE | DELETE NODE |
| local node | 127.0.0.1:5000 PW:0000 | ENABLE NODE | DELETE NODE |

| | |
|---|---|
| Node-Name | <input type="text" value="NODE NAME"/> |
| IP (IPv4) | <input type="text" value="NODE IP"/> |
| Port | <input type="text" value="5000"/> <input type="button" value=""/> |
| NODE PASSWORD | <input type="text" value="PASSWORD"/> |
| <input type="button" value="ADD NODE"/> | |

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

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Schedule Management

Activity Log

SETUP

DELETE LOG

- 1) Time : 2015-07-22 00:09:19 -> Toggle Scene: 6 BY USER
- 2) Time : 2015-07-22 00:09:24 -> Toggle Scene: 6 BY USER
- 3) Time : 2015-07-22 00:09:28 -> Toggle Scene: 2 BY USER
- 4) Time : 2015-07-22 00:09:31 -> Toggle Scene: 5 BY USER
- 5) Time : 2015-07-22 00:09:34 -> Toggle Scene: 5 BY USER
- 6) Time : 2015-07-22 00:09:36 -> Toggle Scene: 13 BY USER
- 7) Time : 2015-07-22 00:09:46 -> Toggle Scene: 8 BY USER
- 8) Time : 2015-07-22 00:31:29 -> Toggle Scene: 2 BY USER
- 9) Time : 2015-07-22 00:31:36 -> Toggle Scene: 5 BY USER
- 10) Time : 2015-07-22 00:31:38 -> Toggle Scene: 2 BY USER
- 11) Time : 2015-07-22 00:34:10 -> Toggle Scene: 9 BY USER
- 12) Time : 2015-07-22 01:03:05 -> Toggle Scene: 2 BY USER
- 13) Time : 2015-07-22 01:03:10 -> Toggle Scene: 7 BY USER
- 14) Time : 2015-07-24 00:00:21 -> Toggle Scene: 2 BY USER
- 15) Time : 2015-07-24 00:00:26 -> Toggle Scene: 5 BY USER
- 16) Time : 2015-07-24 00:15:28 -> Toggle Scene: 8 BY USER
- 17) Time : 2015-07-24 00:15:39 -> Toggle Scene: 8 BY USER
- 18) Time : 2015-07-24 00:15:42 -> Toggle Scene: 8 BY USER
- 19) Time : 2015-07-24 00:15:53 -> Toggle Scene: 6 BY USER
- 20) Time : 2015-07-24 00:16:04 -> Toggle Scene: 6 BY USER
- 21) Time : 2015-07-24 00:40:35 -> Toggle Scene: 7 BY USER
- 22) Time : 2015-07-25 00:00:20 -> Toggle Scene: 13 BY USER
- 23) Time : 2015-07-25 00:53:39 -> Toggle Scene: 7 BY USER
- 24) Time : 2015-07-25 22:43:54 -> Toggle Scene: 5 BY USER

SmartLightHub

- Backend -

Zurueck / Dashboard

Add Device

Edit Device

Delete Device

Edit Device

DEVICE TO EDIT

NEW DEVICE NAME

NEW ZONE

NEW ICON

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

Node Management

Scene Management

Schedule Management

Activity Log

SETUP

 Bettbeleuchtung
(unten)

RED

GREEN

BLUE

FADE SPEED

 Bettbeleuchtung
(hinten)

RED

GREEN

BLUE

FADE SPEED

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

Node Management

Scene Management

Schedule Management

Activity Log

SETUP

Add Channel

SELECT DEVICE **Schlafzimmer -> Bettbeleuchtung (unten)**

| Channel-Name | Channel | INFO | DELETE |
|--------------|---------|---------------------------------------|-----------------------|
| RED | 1 | Value:0 Min:0 Max: 255 Is switch: 0 | DELETE CHANNEL |
| GREEN | 2 | Value:255 Min:0 Max: 255 Is switch: 0 | DELETE CHANNEL |
| BLUE | 3 | Value:255 Min:0 Max: 255 Is switch: 0 | DELETE CHANNEL |
| FADE SPEED | 4 | Value:255 Min:1 Max: 255 Is switch: 0 | DELETE CHANNEL |

Channel-Name

Channel (DMX CHANNEL)

Channel-Icon

Is a switch ?

ADVANCED SETTINGS

Channel-Min-Value

Channel-Max-Value

ADD CHANNEL

SmartLightHub

- Backend -

Zurueck / Dashboard

Add Device

Edit Device

Delete Device

Add Device

DEVICE NAME

ZONE

ICON

Senden

OVERVIEW

| | |
|----------------------------|--|
| Start | Quick selection of Scenes and Zones |
| Dashboard | Select Zones and Devices |
| Channel Management | Add/Edit/Delete DMX Channels |
| Device Management | Add/Edit/Delete Devices |
| Zone Management | Add/Edit/Delete Zones |
| Node Management | Add/Delte data recieving devices |
| Scene Management | Setup Scenes |
| Schedule Management | Manage Tasks |
| Activity Log | Show System Log |
| SETUP | Setup/Restore Settings |

SmartLightHub
- Backend -

- Start
- Dashboard
- Channel Management
- Device Management
- Zone Management
- Node Management
- Scene Management
- Schedule Management
- Activity Log
- SETUP

SCENES

- [Alle aus](#)
- [Alle an](#)
- [Tageslicht](#)
- [Nachtlicht](#)
- [YELLOW](#)

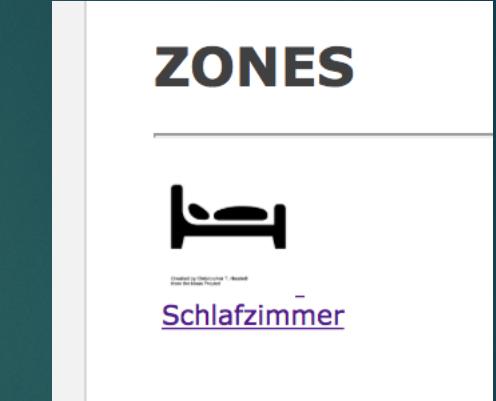
ZONES



- [Schlafzimmer](#)

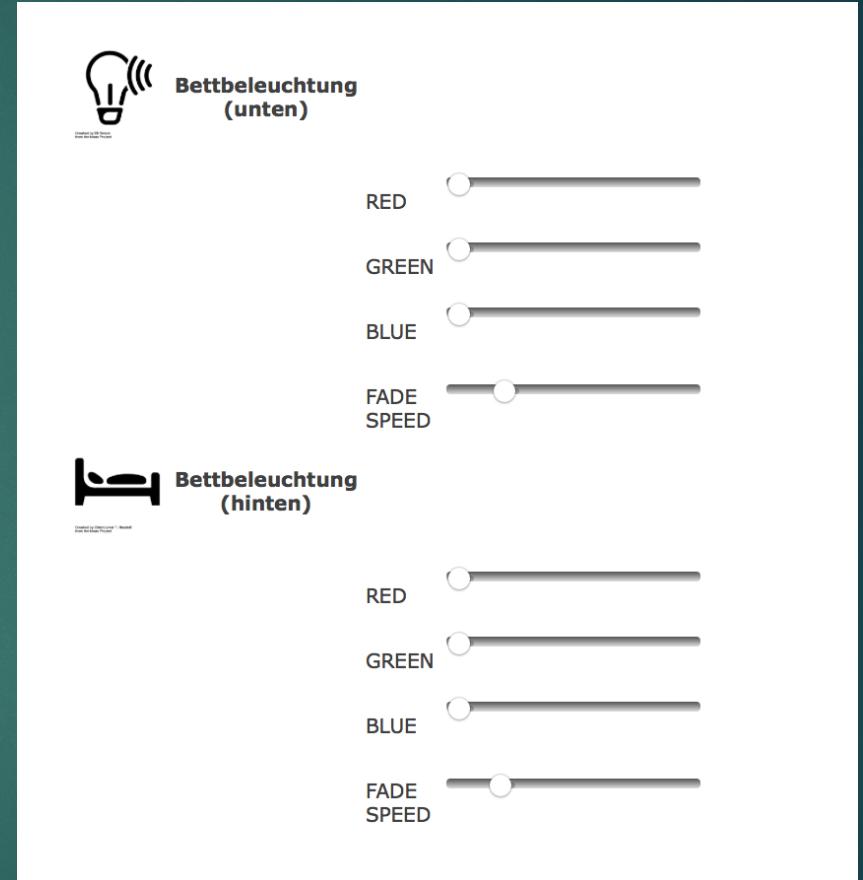
ZONES

- ▶ A collection of devices
- ▶ Individual Icon



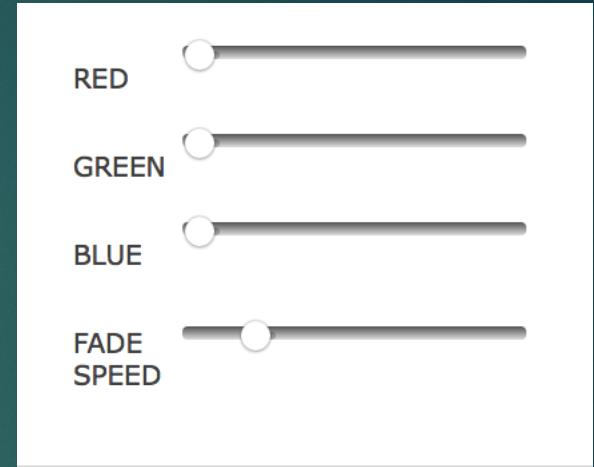
DEVICES

- Groups a collection of channels
- Can hold up to 255 channels
- Individual icon



CHANNELS

- A channel equals one DMX-Channel of one real device
- 3 different types : Slider, ON/OFF, Toggle
- Custom value range of every channel



SCENES

- A scene is a image of all channels in the system
- By switch to the scene all saved channel states will be restored

| Scene Name | INFO | DELETE | CAPTURE | TOGGLE SCENE |
|--------------|-------------------------|-------------------------------|--|-------------------------------|
| Alle aus | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| Alle an | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| Tageslicht | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| Nachtlicht | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| Tageslicht 1 | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| Tageslicht 2 | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| Tageslicht 3 | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |
| YELLOW | IS A HOMEKIT DEVICE : 1 | <button>DELETE SCENE</button> | <button>CAPTURE VALUES TO SCENE</button> | <button>TOGGLE SCENE</button> |

Add Scene

Scene-Name

Show in Sidebar

ADVANCED SETTINGS

Add as HomeKit-Device

ADD SCENE

TASKS

| Schedules | | | | | |
|---------------|-------------|-----------------|--|---------------------------------|---------------------------------|
| Schedule Name | TOGGLE TIME | SCENE TO TOGGLE | ACTIVE DAYS | DELETE | ENABLE / DISABLE |
| AUS | 02:00 | Alle aus | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| SUN | 05:00 | YELLOW | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| AUS | 07:00 | Alle aus | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Nachtlicht | 00:00 | Nachtlicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 23:30 | Tageslicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 23:00 | Tageslicht 1 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 22:30 | Tageslicht 2 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 22:00 | Tageslicht 3 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 21:30 | Tageslicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 21:00 | Tageslicht 1 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 20:30 | Tageslicht 2 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 20:00 | Tageslicht 3 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 19:30 | Tageslicht | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |
| Tageslicht | 19:00 | Tageslicht 1 | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday | DELETE SCHEDULE | ENABLE SCHEDULE |

| | |
|---|--|
| Channel-Name | <input type="text" value="SCHEDULE NAME"/> |
| Scene to Toggle | <input type="text" value="Alle aus"/> <input type="button" value="▼"/> |
| TIME SETTINGS | |
| Toggle Time [FORMAT : HH:MM eg. 09:00 24Hr] | <input type="text" value="00:00"/> |
| MONDAY | <input checked="" type="checkbox"/> |
| TUESDAY | <input checked="" type="checkbox"/> |

TASKS

- ▶ Switch to specific scenes at a defined Time and Day
- ▶ Minimum switch time is once a minute
- ▶ Enable/disable tasks

LINKS

- ▶ <https://github.com/RBEGamer/SmartLightHub>
- ▶ Contains all the software and documentation you need to run your own SmartLightHub
- ▶ Contact: marcel.ochsendorf@gmail.com

- ▶ <http://images.techhive.com/images/article/2015/04/philipshue-100577371-large.jpg>