

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

Expect the raspberry pi but you can use an other linux running board

C 2015 Marcel Ochsendorf – SmartLightHub V2.0

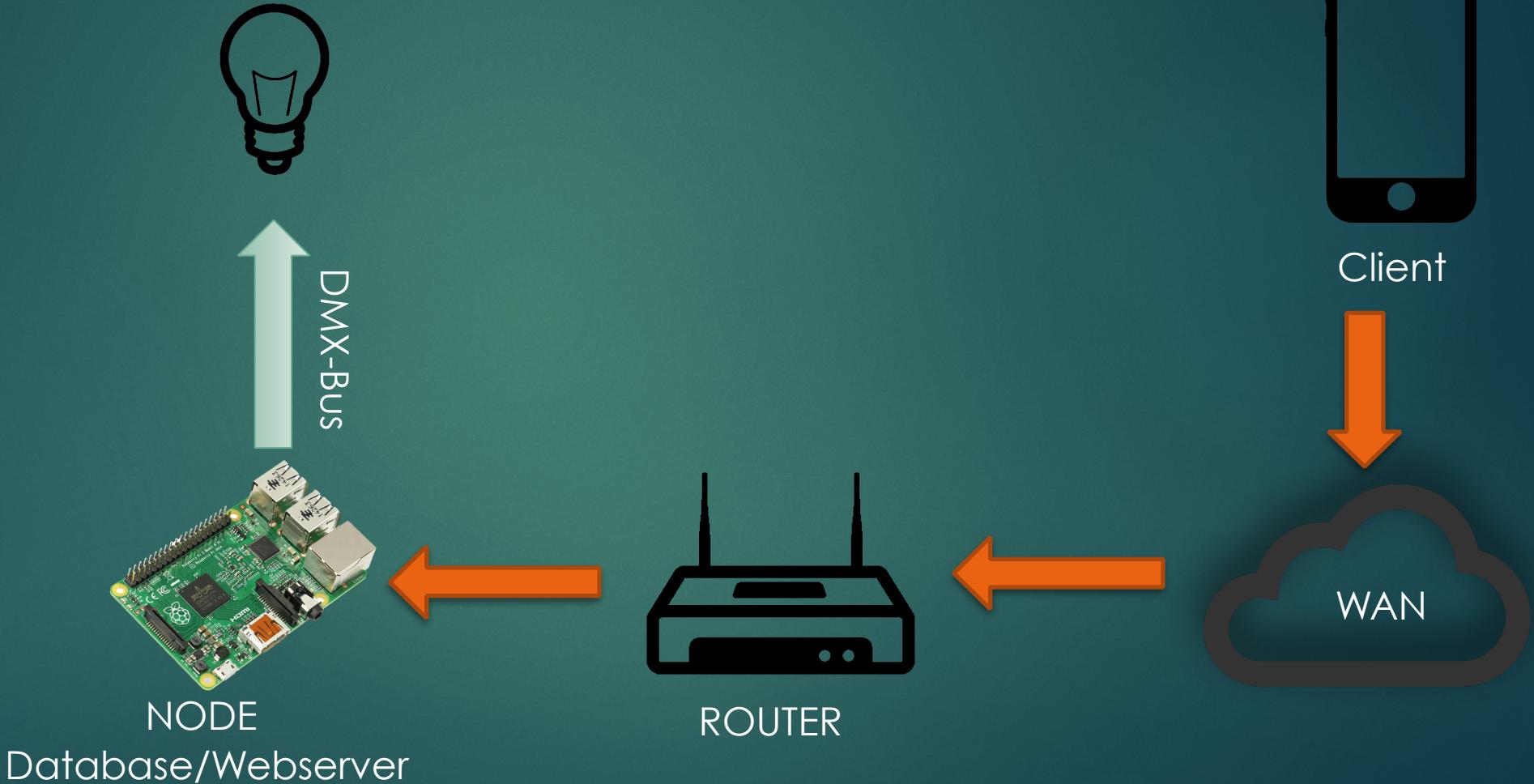


open source initiative

<https://github.com/RBEGamer/SmartLightHub>

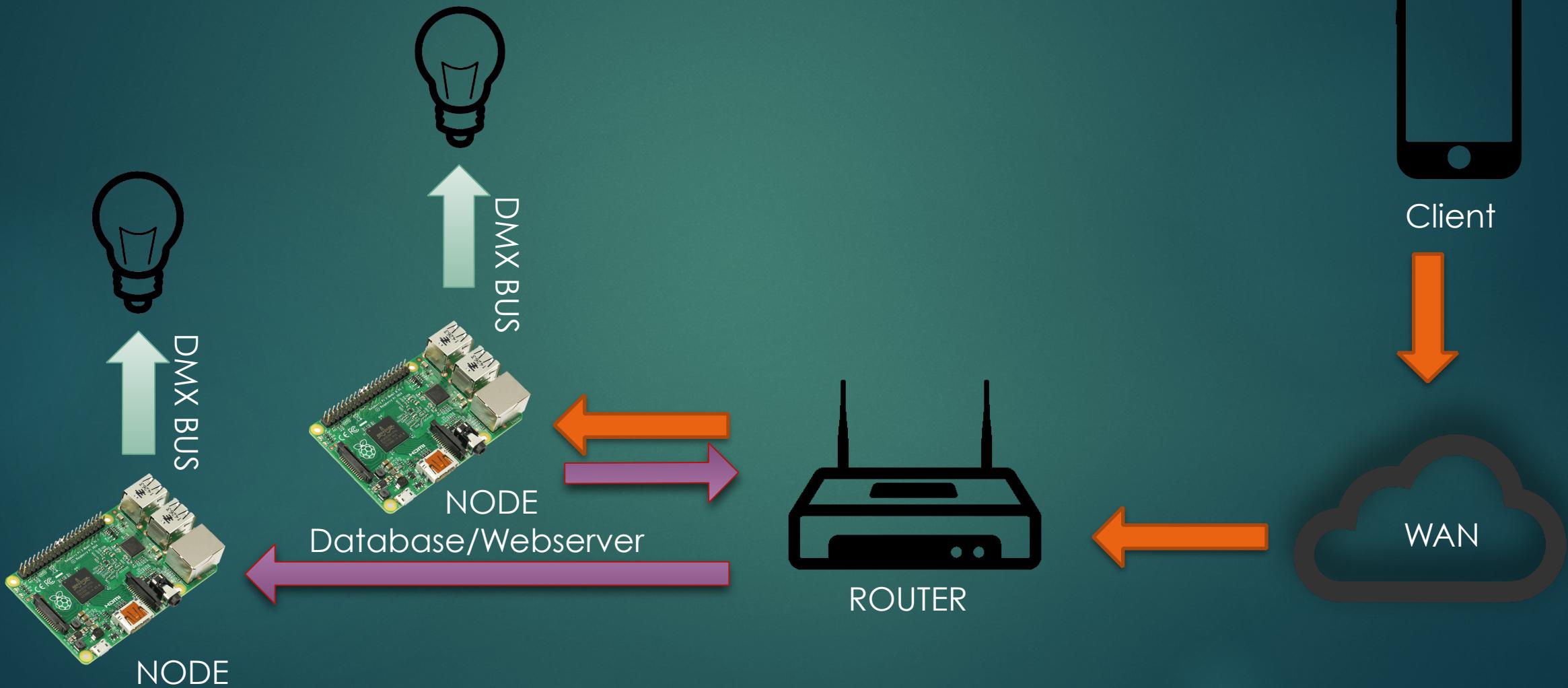
SETUP EXAMPLES

Basic-Setup with one node



Setup with 2 Nodes, one location

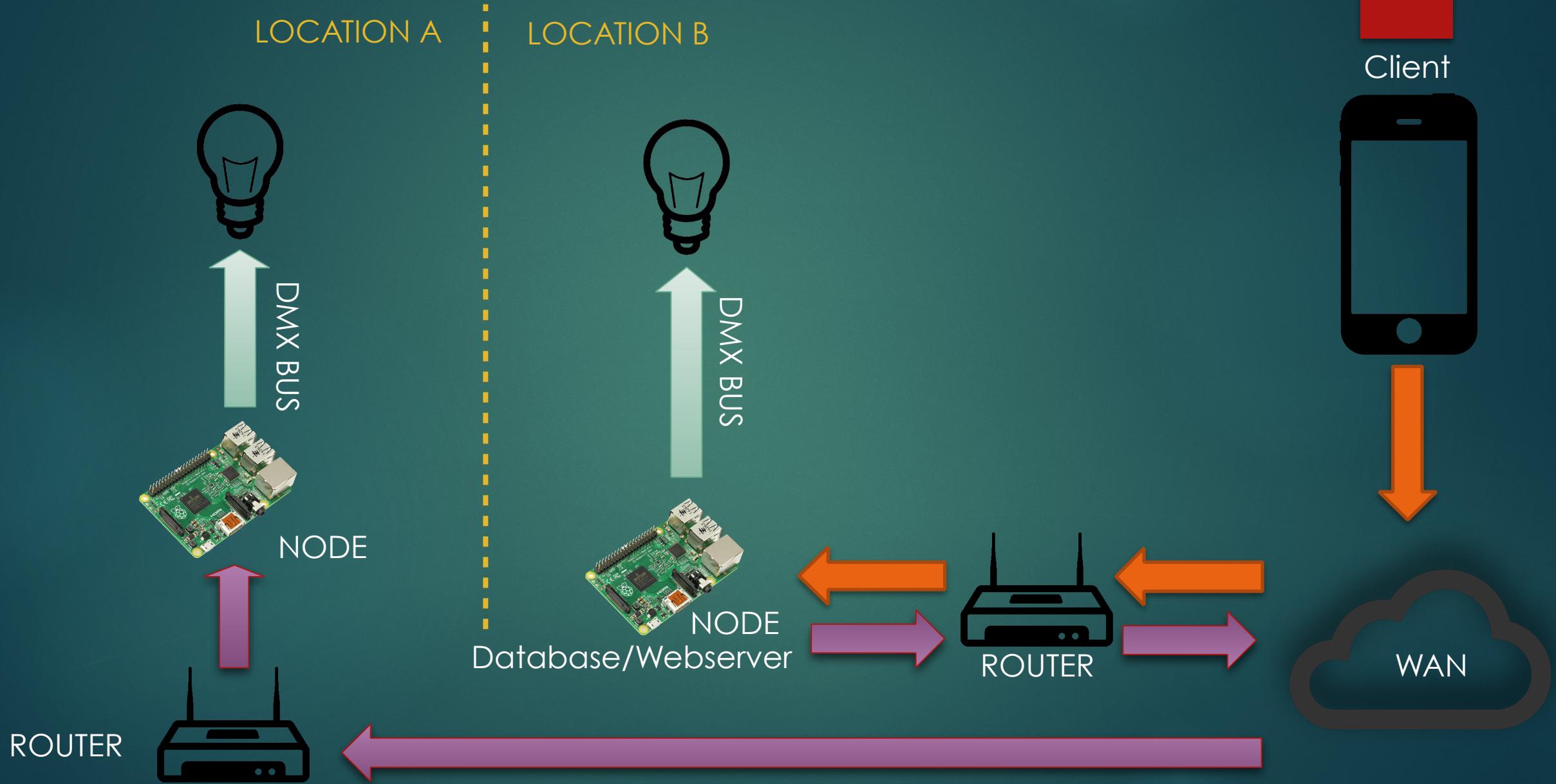
4



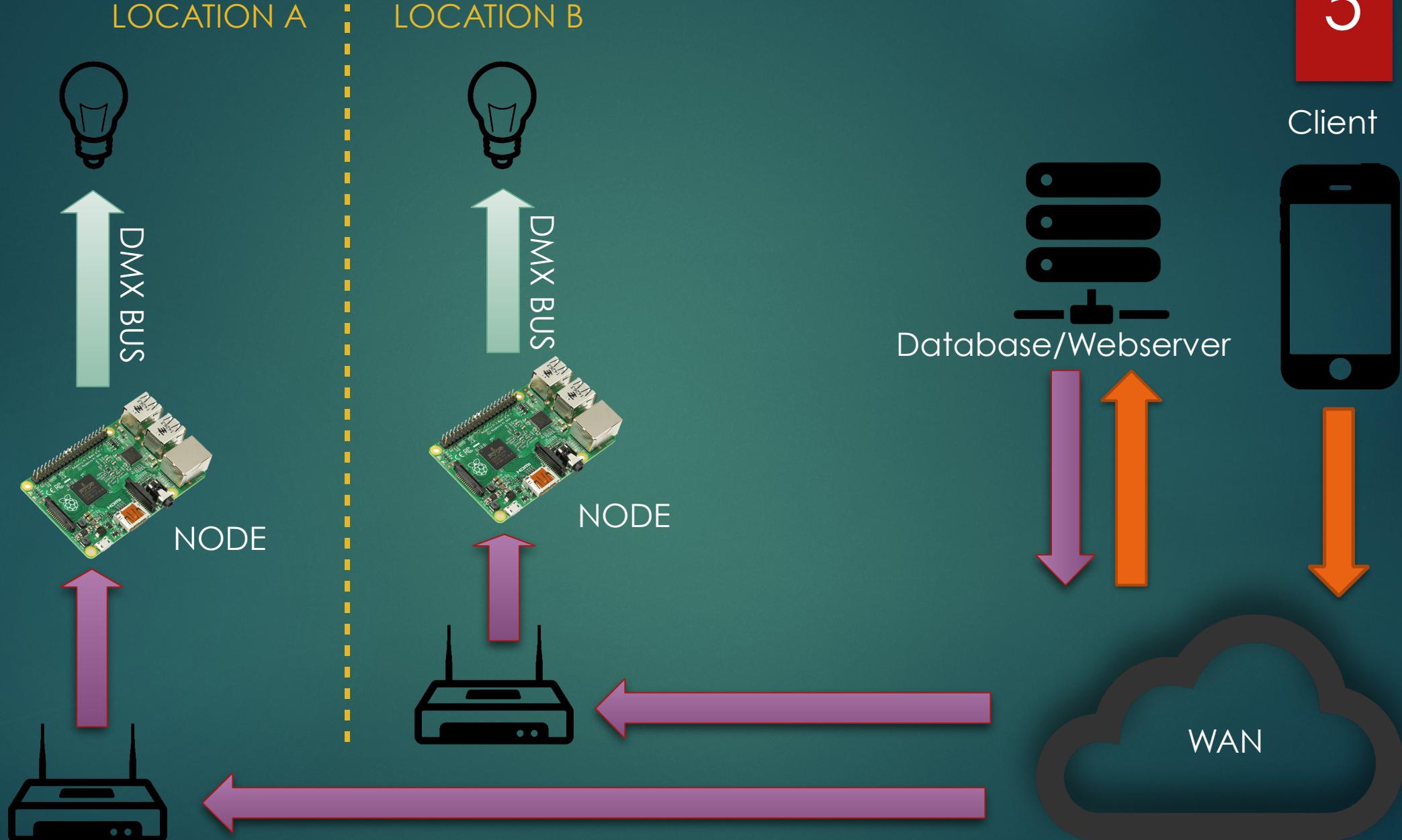
Setup with 2 Nodes, two locations

7

Client

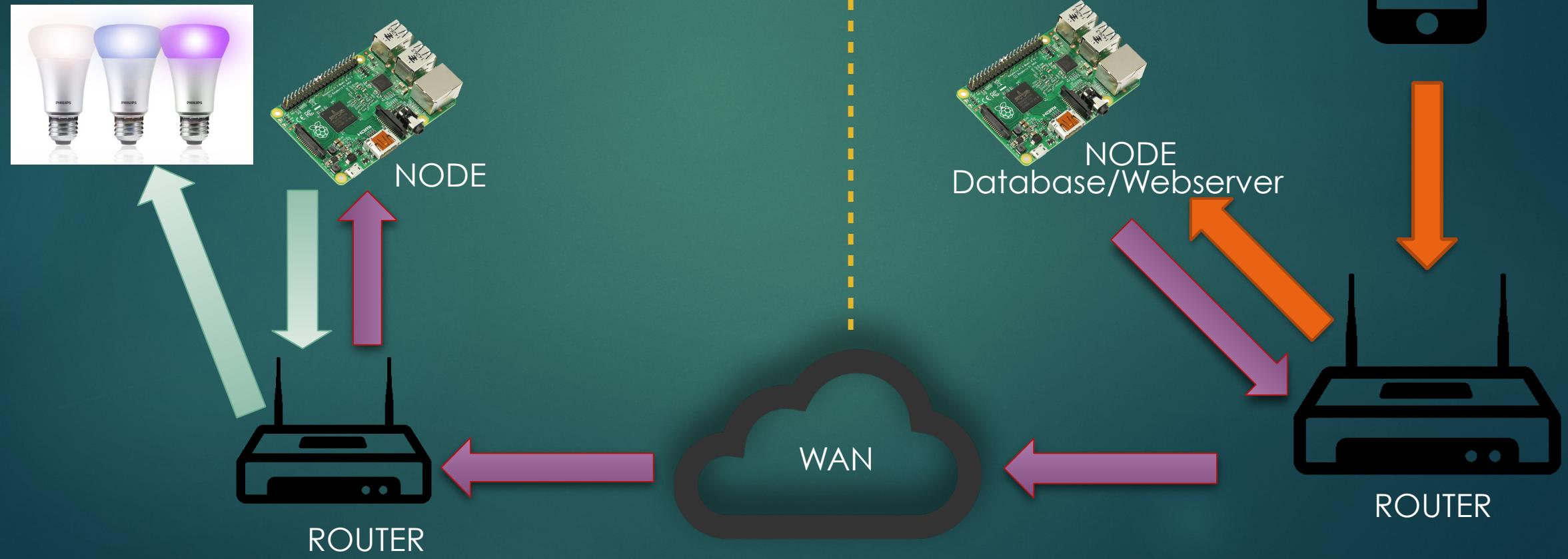


Setup with extern server



Setup with Philips Hue Bridge

5



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 in usage

HARDWARE YOU WILL NEED TO RUN

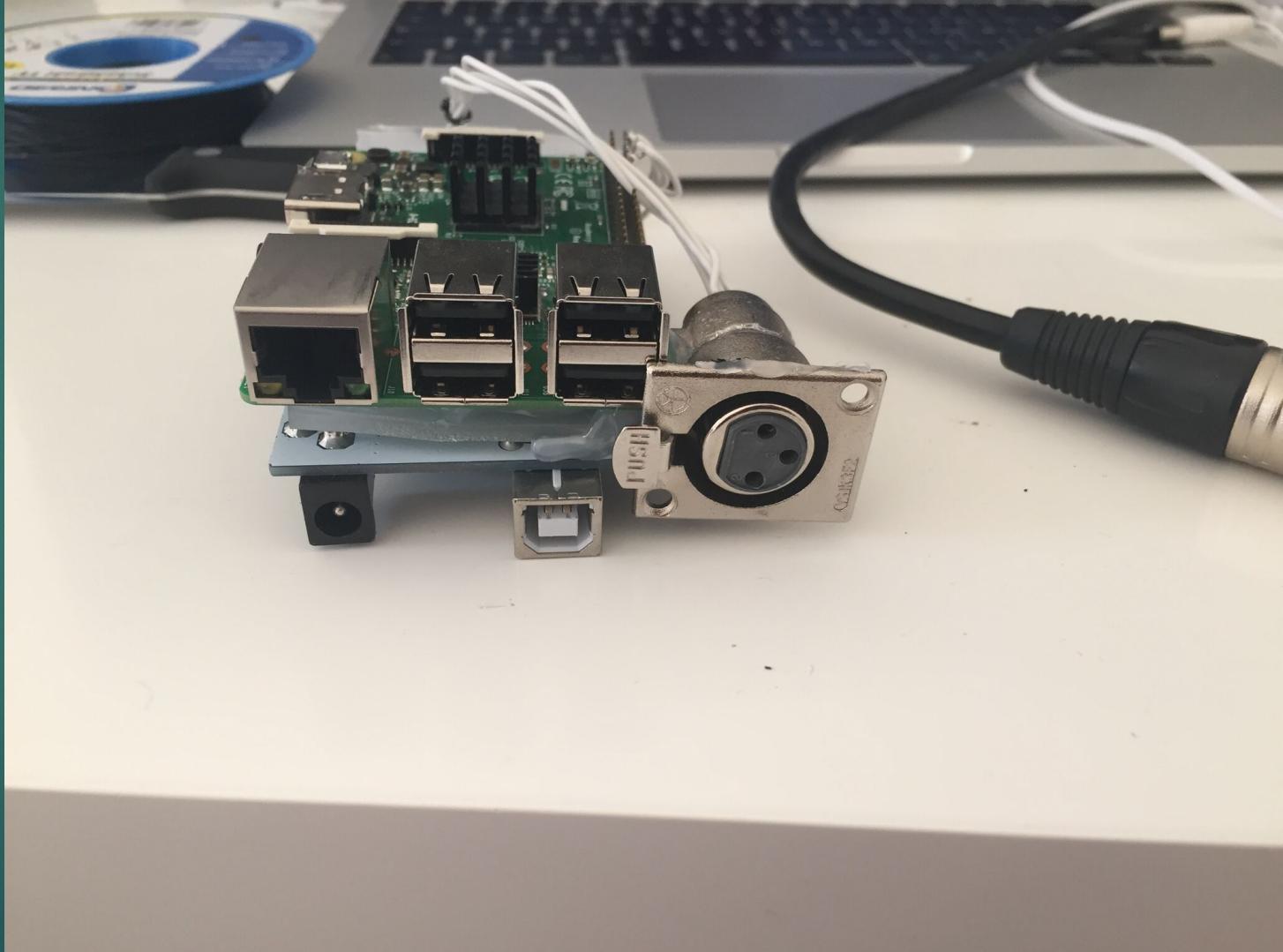
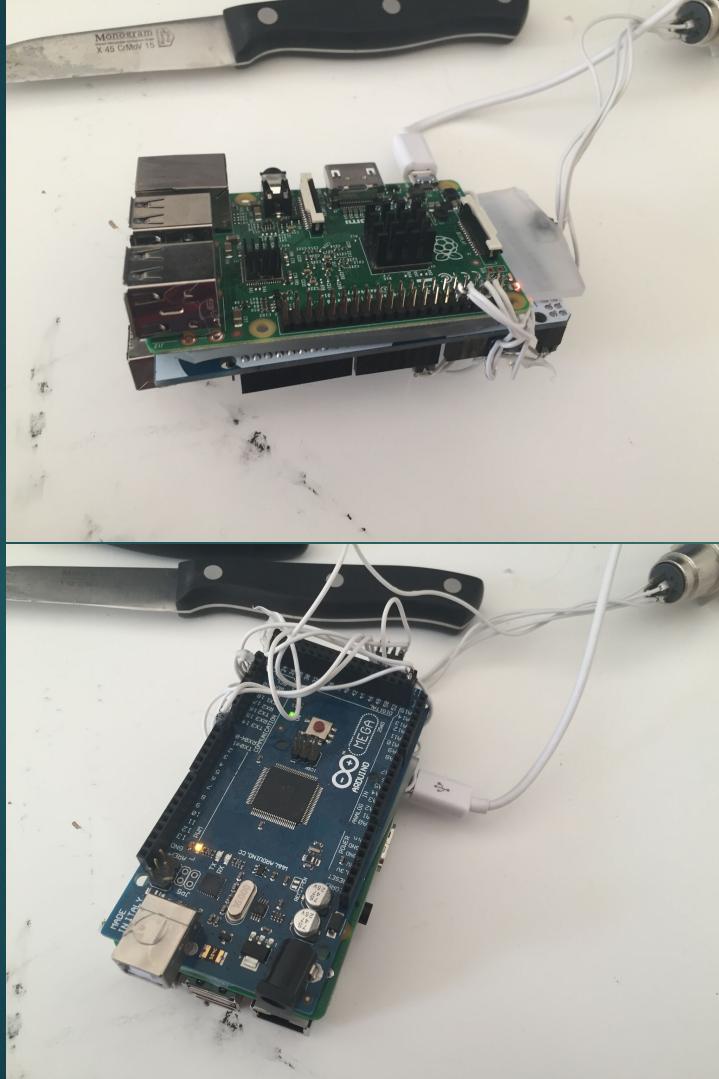
- ▶ To run the SmartLightHub you will need:
 - a) A set of supported light accessories
 - b) One or more SmartLightHubNodes
 - c) LAN/WAN-Network-Wired connection
 - d) Client with a web browser to setup the system

Compatible accessories

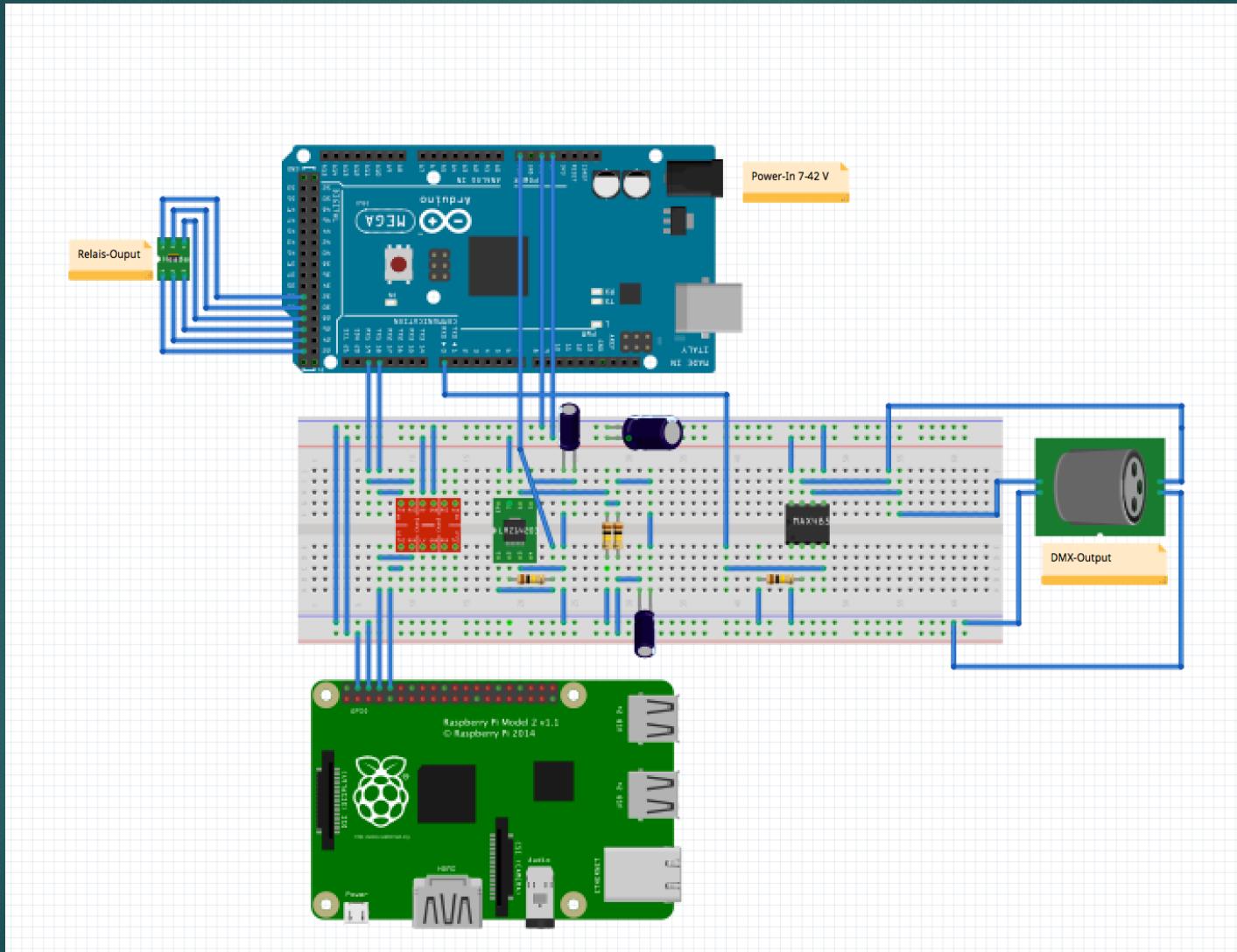
- ▶ Default node configuration :
 - ▶ DMX512 (with not more than 32 unit loads on the node output)
 - ▶ Philips Hue (via the Philips Hue-Bridge)
 - ▶ 16x ON/OFF channels to control simple accessories
 - ▶ 10x 0-10V outputs for use with SPS (e.g. Siemens Logo) or to use electric cabinet dim components.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

The Hardware-Package

The Hardware-Package [Node V1.0]



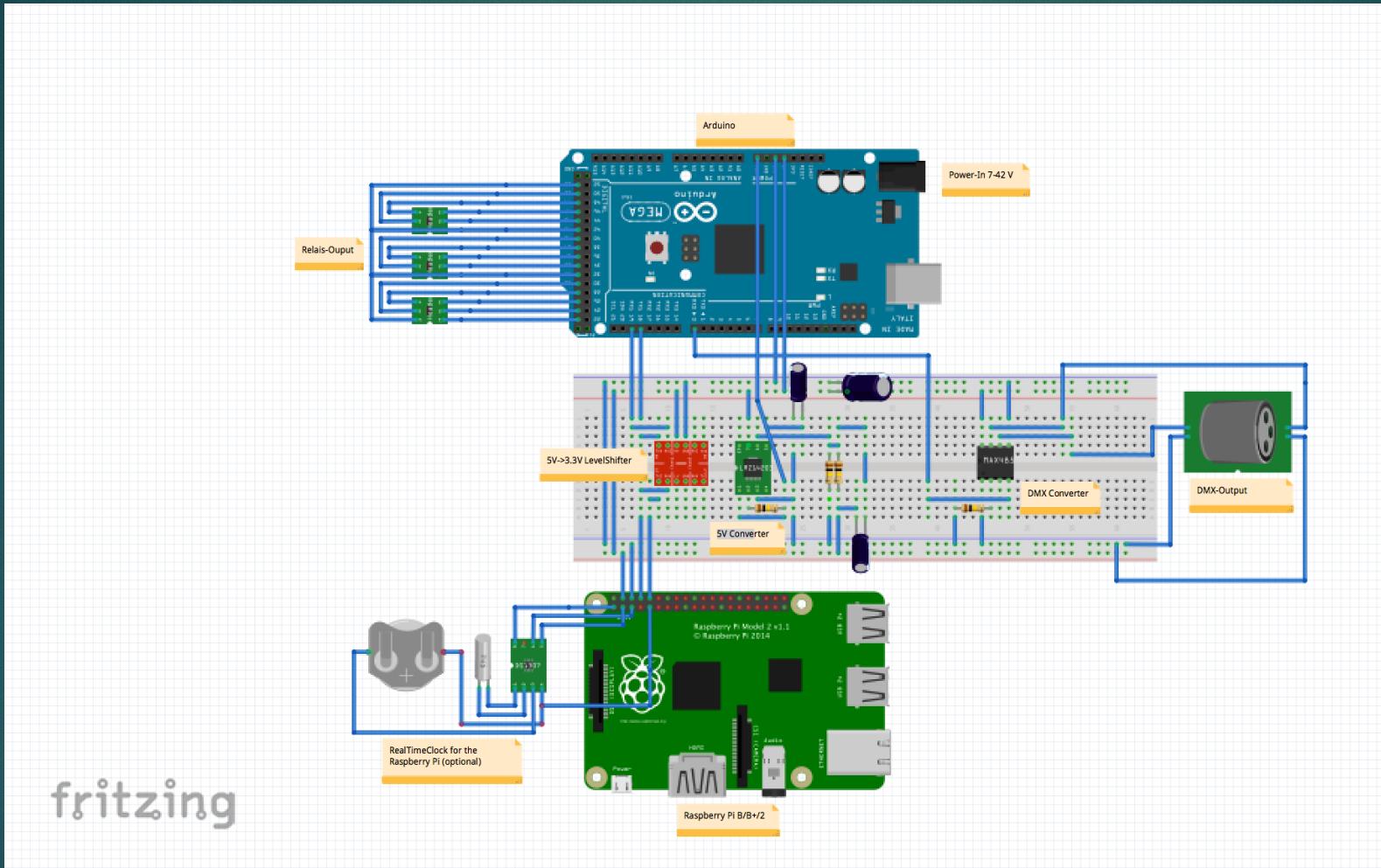
Hardware-Schematic [Node V1.0]



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 web server with PHP,FTP, Database (if you only want a receive node you can disable the web server)
- ▶ Database with a example configuration
- ▶ Complete pre-configured web interface
- ▶ Installed python scripts to receive the control requests and manage the tasks

The App

iOS SmartLightHub-App (SLH)

- ▶ 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

Channel Management

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Activity Log

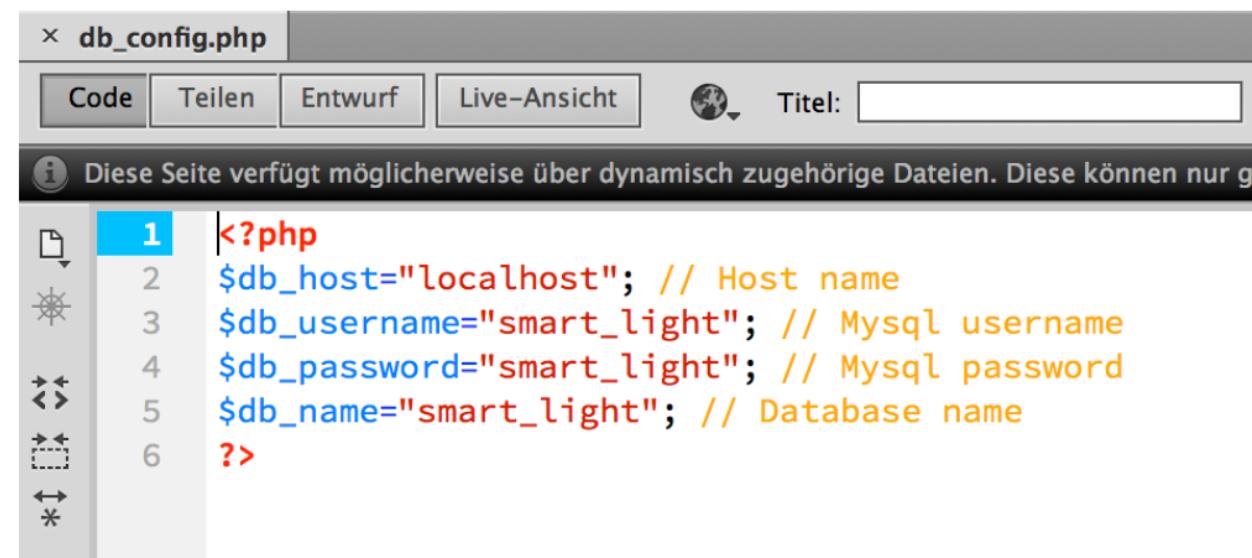
SETUP Cronjob

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

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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

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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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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

IP (IPv4)

Port

NODE PASSWORD

ADD NODE

SmartLightHub

- Backend -

Start

Dashboard

Channel Management

Device Management

Zone Management

Node Management

Scene Management

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](#)

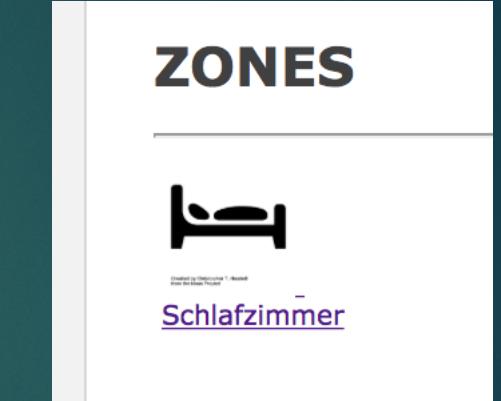
ZONES



- [Schlafzimmer](#)

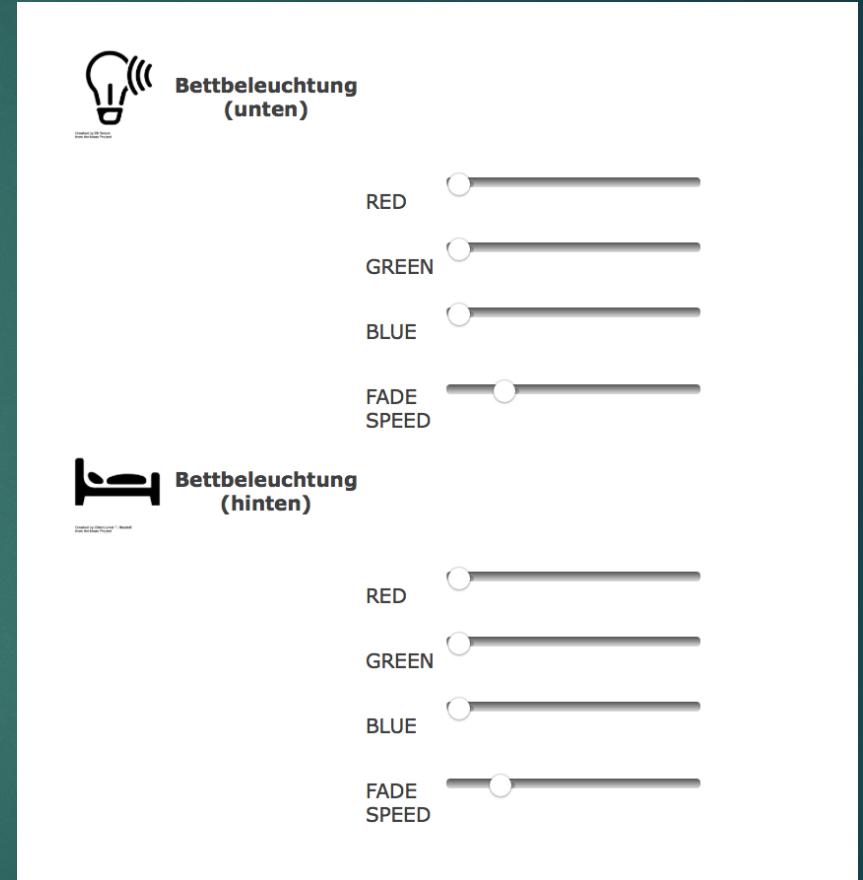
ZONES

- ▶ A collection of devices
- ▶ Individual Icon



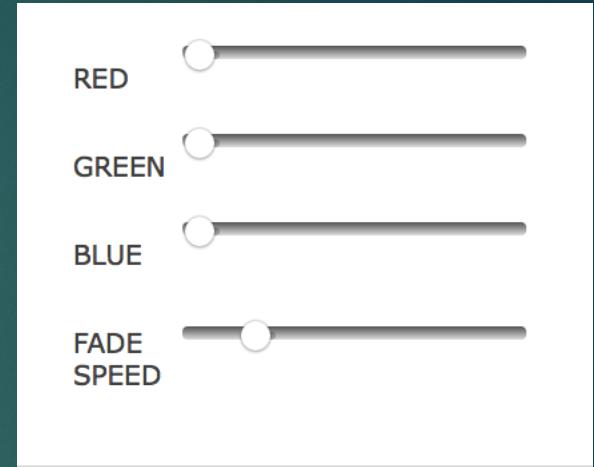
DEVICES

- 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>