Building a magic mirror
Steven Wierckx

Application security consultant for Toreon (www.toreon.com)

OWASP volunteer (www.owasp.org)

I am the cavalry volunteer (www.iamthecavalry.org)

Twitter: @ihackforfun
Agenda

• Introduction
• Components
• Preparing the hardware
• Preparing the software
• MagicMirror installation & configuration
• Changing the modules
• Securing the magic mirror
• Next steps
• Credits
Introduction

What’s a ‘magic mirror’?

Just a mirror that also shows text, pictures etc.
Components

- Screen
- Computer
- One way mirror (a.k.a. Observation mirror, doorkijkspiegel)
- Various cables, case(s)
Preparing the hardware
Preparing the hardware
Preparing the hardware
Preparing the hardware
Building a travel case
Preparing the software

- Burn latest Raspbian to SD card (2017-03-02-raspbian-jessie.img)
- Enable wireless
- Update
- Configure SSH
- Disable ‘underscan’
Underscan
MagicMirror installation & configuration part I

• Rotate screen
• Autohide cursor
  • sudo apt-get install unclutter
• Disable screensaver
  • Can be difficult
  • Easy option: install xscreensaver and disable the screensaver
• Disable WiFi power save
MagicMirror installation & configuration part II

- https://magicmirror.builders/
- Config files can be found at /home/pi/MagicMirror/config

Not done:
- Autostart MagicMirror

```bash
```

Updating packages ...
Hit http://mirrordirector.raspbian.org jessie InRelease
Hit http://mirrordirector.raspbian.org jessie/main armhf Packages
Hit http://mirrordirector.raspbian.org jessie/contrib armhf Packages
Hit http://mirrordirector.raspbian.org jessie/non-free armhf Packages
MagicMirror installation & configuration part III

- npm start
- Web view of mirror (good for remote testing)
- Update config file

```
ERROR Linux 4.4.50-v7+
ERROR argv "/usr/bin/nodejs" "/usr/bin/npm" "start"
ERROR node v6.10.2
ERROR npm v3.10.10
ERROR path /home/pi/package.json
ERROR code ENOENT
ERROR errno -2
ERROR syscall open

ENOENT ENOENT: no such file or directory, open '/home/pi/package.json'
ENOENT ENOENT: no such file or directory, open '/home/pi/package.json'
ENOENT This is most likely not a problem with npm itself
ENOENT and is related to npm not being able to find a file.
ENOENT

Please include the following file with any support request:
/home/pi/npm-debug.log
```
Changing the modules

Standard widgets:
• Current weather in New York
• Weather prediction for New York
• News feed for a US news paper

Changed to:
• Current weather in Wezemaal
• Weather prediction for Wezemaal
• News feed for ‘De Morgen’
Securing the magic mirror

• Change default password
• Remove services that are not used
  • rcconf
• Secure SSH
  • Added fail2ban
  • Not done: disable password login and use key pair to authenticate
• Remove software
  • sudo apt-get remove --purge smbclient samba-common
• Setup iptables
Threat landscape

• Will run on my home WiFi
• Home WiFi is a trusted environment

If my home WiFi is compromised the magic mirror will be the least of my problems

If my home is invaded they can have the magic mirror if they leave me and my family alone
Next steps

• Facial recognition
• Motion activated powersave
• Motion activated widgets
• Voice control (like Alexa)
• Touch screen
• Button(s) in case
  • Start timer to brush teeth, play animation
  • Replay the latest news broadcast
• Time based widgets
  • Holiday themes
  • Halloween scare
Credits

• Michael Teeuw, creator of the MagicMirror² project

• Sebastiaan Mangoentonojo, security consultant & woodwork specialist