

# UPNP and digitalSTROM

Roman Köhler

# Content

- UPNP
  - Capability of UPNP
  - Architecture of UPNP
- Reflecting UPNP in digitalSTROM
  - Example: Acting as a Controlpoint on audio Mediarenderer
  - Demonstration of a early Proof-of-Concept
  - Limitations & Drawback of Demonstration
  - Futher Tasks

# Universal Plug and Play - Capabilities

- Vendor independent Protocol for IP-based devices
- Core capabilities:
  - Discovery
  - Description
  - Control
  - Event-Notification
  - Presentation

# Universal Plug and Play - Architecture



- Typical IP-Network technology, utilizing UDP-Multicasts, TCP-Connections, HTTP Requests, SOAP
- Device "Roles":
  - Control-Point
  - Root-Device
  - Media-Renderer
  - Media-Server
  - Home Automation: Solar Protection, Digital Security Camera, HVAC, Lighting Control
  - Additional Types: Network, Printer, etc.

# Reflecting UPNP in digitalSTROM

- Similar Features: Discovery, Generalisation
- Missing Features: central control, orchestration individual features to solve high-level Usecases
- Mapping UPnP Device types to digitalSTROM classes
- Technical Integration: vdSM, vDC

# Example: Acting as a Controlpoint



- digitalSTROM System acts a controlpoint
- UPnP – Audio Renderer will be controlled by dSM-Statemachine to realize digitalSTROM Usecases
- Reacting on audio group commands
- Reaction on apartment wide events
- Doing the configuration ... on the digitalSTROM way

# Demonstration: UPnP App and SONOS

# Limitations & Drawback of Demonstration



## Technical

- Initial Initialisation of Devices
- Making SOAP-Calls via JS
- The System is not really aware of Devices

## Architectonical

- Missing Device-Profiles
- Anticipated Behaviour
- Limitations caused by implementation causes future incompatibility on usecases (not only devices)



# Tasks



## Technical

- Getting the discovery working
- Show singular devices at least as a black/white dS-Device
- Get an efficient communication to the SOAP-Enabled devices

## Architectonical

- Device-Profiles
- Behaviour for the Audio and/or Multimedia Group
- Extend the known Usecases on Audio

# Q & A



Thank You !