

Architecture report out

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Nomenclature for the networked home

- * Devices are hardware on the network that offer services.
- * Services can be combined to perform tasks.
- * (the cloud can be seen as a device)

Team's end game

- * Build the home networking stack that enables sets of scenarios.
- * An architecture that allows someone of average intelligence to enable supported tasks without assistance.
- * Include support for diagnosis.

Architectural definitions

- * Definitions:
 - * A device has a name and a location
 - * A device has ports and characteristics
 - * The network moves data between names
 - * Ports can either be consumers or producers

Design principles

- * Diversity
- * Innovation
- * Extensibility
- * Profitability?
- * Scalability
- * Diagnosability
- * Usability (human in the loop)

Architectural components

- * Names have to be assigned to devices [HNS]
- * Names and ports have to be discovered [HDS]
- * Ports have to expose services
- * Secure pairing of devices (authentication)
- * Task enumeration by controller (tasks are event driven and/or timer driven)
- * Task selection by user
- * Task provisioning by controller

Controller (management plane)

- * List of devices and services
- * Implement user supplied policy
- * Optimization engine (to combine tasks) to provision tasks
- * Is Internet-accessible
- * Manages alerts and triggers

When Things Go Wrong

- * Each service must respond to synthetic probes
- * Each service checks for valid input data type
- * Check task specifics end to end
- * Use pluggable modules for each of the devices to get certification of function
- * Core dump of the components involved in the task

Development Ecosystem

- * Those who develop devices
- * Those who develop controllers
- * Home Networking Operators/Managers (for outsourcing)
- * Task Creators

Does it work?

- * Ben's birthday party. He wants his camera to display photos on the TV as he takes them.
- * Andy wants to hear his favorite playlist of songs stored in the server in the shower.
- * Erica wants to find out where the bugs are coming into the home.
- * Ben wants to know when the furnace needs a filter replacement.
- * A.J. wants her HVAC to start heating her home 30 minutes before she leaves from work.