Home Appliance Control System

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Topics to Discuss

- Introduction
- Interface
- Architecture and Design
- Conclusion



Introduction

Why HACS?







Introduction

- What is a HAC System?
 - Why HAC?
 - Saves time
 - Saves money (long run)
 - Self maintenance
 - Security
 - Makes life easy

Why HACS?







Introduction

Preexisting HAC Systems

- Wired/Wireless
- Centralized/Distributed



Interface

Services provided by HACS

- Browse all devices
- Select a particular device to get or set its status
- Categorize the devices according to functionality/location
- Provide security to device options
- Notifications sent by devices to user

Master Use Case



Class Diagram



Sequence Diagram



Example





Architecture and Design

Extensibility

Standard Networking
 Preexisting Protocols
 "Do one thing and do it well"
 Distributed
 Controller
 Device

Ease of Installation and Use

Standard Networking Ubiquitous Service Discovery Metadata UPnP Zeroconf Generic Device Protocol property name, data type, value SNMP

Cost of Installation and Use

- Standard Networking
 - Ubiquitous
 - Stateless Protocol
 UDP
- Two Tier
 - Smart Device
 - Dumb Device
 - More Extensibility

Communication Mediums

- 1st Tier Communication
 - Ethernet
 - 802.11 (Wireless)
 - Optical Fiber!
- Other
 - Internet
 - Radio
 - Mobile Device

- 2nd Tier Communication
 - USB
 - Bluetooth
 - Firewire
 - Electric Outlets
 - Infra-red
 - Serial (COM) Port
 - 1-wire bus
 - String
 - Morse Code

Standard Networking Side-effects

- Speed
- Reuse
- Simplicity
- Security

Reuse



Simplicity



Simplicity



Simplicity



Access Control

Property basedPin number

Poll v Event

- Microwave
- Fire alarm
- Support both

Tool for the Interface





Conclusion

Conclusion

- What we have done
 - Use case diagram, sequence diagram, class diagram, domain analyze.
- What we will do
- Implement the web interface, networking.

Conclusion

- Key point and highlight of our project
- Good balance between the extensibility and cost
- Distributed system
- What we learned
 - It's team work
 - Use diagrams to help with building the system

Question and Answer

"You've got questions, we've got answers."