Getting to Know You: Secured IoT Onboarding

iotops WG Virtual Interim Meeting
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IoT Operations Challenges

• Device Onboarding
  • Verification
  • Credential establishment
  • Configuration
  • User-visible Naming

• Device Management and Maintenance
  • Monitoring
  • Configuration changes
  • Firmware/software updates

• Device Disposition
  • Resale, gifting, destruction
Project Connected Home over IP (CHIP)

- Effort to create widely-supported IoT communications standards
  - Runs over any media that supports IP (Internet Protocol)
    - First priorities will be Wi-Fi, Thread, and BLE
  - Focus on Smart Home

- Working Group in Zigbee Alliance
  - More than 180 companies participating
  - Including many market leaders
  - Open to all Zigbee Promoter and Participant members
  - Intellectual Property contributed by many members

- For more info, see https://www.connectedhomeip.com
Why CHIP?

• Consumers want and need to make their homes smarter
  • Especially with recent trends to Work From Home and Remote Learning
  • But today's Smart Home is often too complex, insecure, and incompatible

• CHIP will deliver
  • Smoother and easier experience
  • For consumers (onboarding, control, monitoring, etc.)
  • For manufacturers
  • Universal interoperability
  • Products from all CHIP members should work together easily
  • Strong security
  • Pervasive & robust
  • Based on proven techniques
CHIP Onboarding

1. User brings new device to Smart Home
2. User scans QR code
3. User presses pairing button
4. Device is verified and provisioned
5. Device connects to secured home network
6. Device operates smoothly in Smart Home
Typical CHIP Network
What is CHIP?

**Standard communications protocols**
- Working over any IP network
- Enabling interoperability across all certified products
- Including initial profiles for BLE, Thread, & Wi-Fi

**Project Connected Home over IP Application Layer**

**Easy onboarding process**

**Reference implementation**

**Certification program**

**Network Protocols**
- TCP
- UDP
- IPv6
- DOCSIS
- DSL
- Cellular
- Ethernet
- Wi-Fi
- 802.15.4
- Thread
- IPv6 for BLE
- Bluetooth Low Energy (BLE)
CHIP reference implementation

Open source software library

Available to anyone, royalty free

Implements CHIP standards

Flexible

▷ Any Application
▷ Any Hardware
▷ Any OS

Based on market-tested technologies
Addressing IoT Operations Challenges

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Possible Next Steps

• CHIP specs to be published soon
  • Products shipping by end of 2021

• Collaborations with other standards groups encouraged
  • Liaison Agreement with IETF
    • Formal collaboration
  • Joint Membership
    • Informal collaboration
  • Status Quo
    • Informational reports