Tizen, Security and The Internet of Things

Casey Schaufler
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- Security Dinosaur
- Smack Linux Security Module
- Manager Tizen and Linux Kernel Security
Tizen

- Linux based operating system
- Project of the Linux Foundation
- Lead by Samsung and Intel
Security

• Does what it’s supposed to
• Doesn’t do anything else

• Know the difference
Internet of Things

• Collection of computing devices
• Heterogeneous
• Autonomous
Things

- Just want to perform their function
- Not primarily computers
Things need to communicate

- Willing to talk to anyone
- Wide variety of “networks”
- Free from traditional administration
Device Views of the Internet of Things
Security By Proximity

Only connect with things nearby
Security by Obscurity

No one could possibly guess!
Security By Pairing

Ask human permission

Requires a user interface
Security by Wire

1970’s Smart House
OPEN INTERCONNECT CONSORTIUM
Back To Tizen

- Linux distribution for devices
- Collection of profiles
- Common security base

The OS of Everything

Tizen is the open-source operating system for all device areas.

- Mobile
- Wearable
- In-Vehicle Infotainment
- TV
Tizen Security Basics

- HTML5 Application
- Native Application
- Crosswalk
- Weston X11
- Ofono
- Bluetooth
- tz-launcher
- Systemd
- Cynara
- dbus
- Buxton
- Connman
- Smack
- Capabilities
- Kernel Services
- User Based Controls
Tizen Three Domain Security

HTML5 Application

Native Application

User

System

Floor (“_”)

Write
Read

Additional restrictions may apply

Intel Open Source Technology Center
Tizen Application Privileges

- HTML5 Application
- Native Application
- Cynara
- Service
- Service
- Linux Kernel Services
Security Perimeter

- Bluetooth
- Body Area Network
- Internet
- 4G
- Application
Application Privilege Attributes

• Name of the privilege
  • http://tizen.org/privilege/vibrator

• Smack label of requester
  • RaunchyRhinos

• UID of requestor
  • 5001

• Access permitted
  • r, rw, …
Native Application Woes

- Use kernel interfaces directly
- Avoid service based controls
System Object Attributes

- Smack label
- UID
- GID
- Mode bits
- Smack access rules
Running Applications

- Unique Smack label per application
- Unique UID per user account
- Application launcher
Thank You