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
How a Device Views the Internet of Things

• Wisdom
• Danger
Back To Tizen

- Linux distribution for devices
- Collection of profiles
- Common security base
Tizen Security Basics

HTML5 Application

Crosswalk

Weston X11

Ofono

Bluetooth

tz-launcher

Systemd

Cynara

dbus

Buxton

Connman

Smack

User Based Controls

Capabilities

Native Application

Kernel Services

Crosswalk

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Smack

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User Based Controls

Capabilities

Kernel Services

Native Application
Tizen Three Domain Security

HTML5 Application

Native Application

User

System

Floor ("_")

Write
Read

Additional restrictions may apply
Tizen Application Privileges

HTML5 Application

Native Application

Cynara

Service

Service

Linux Kernel Services
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, …
Security Perimeter

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