

RSA[®]CONFERENCE2014

FEBRUARY 24 – 28 | MOSCONE CENTER | SAN FRANCISCO

Share.
Learn.
Secure.

Capitalizing on
Collective Intelligence

When Worlds Collide – The Fusion of Cloud and Embedded

SESSION ID: TRND-F03A

Tim Skutt

Solution Architect
Wind River



Two Worlds



+

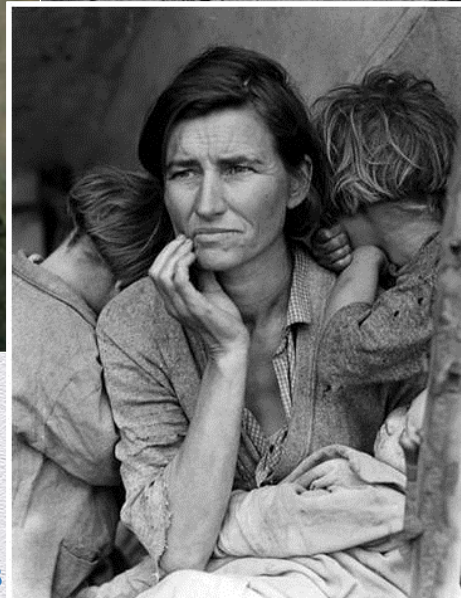


WIND RIVER

Worlds Collide

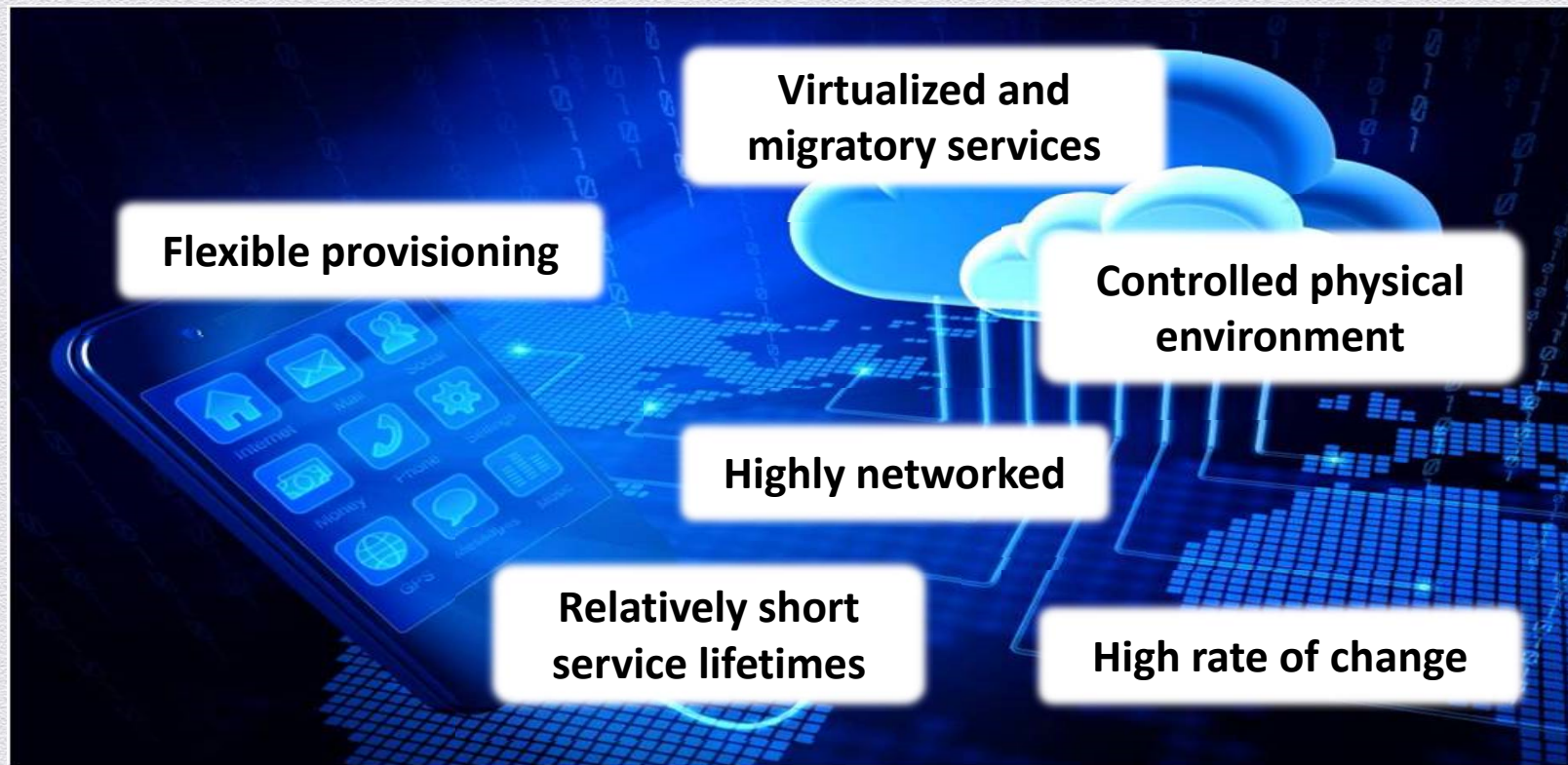


WIND RIVER



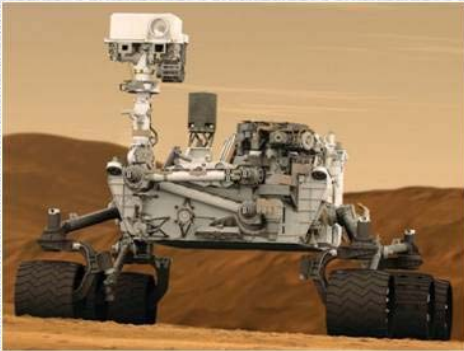
3

The Foundation of Cloud



WIND RIVER

The Foundation of Embedded



WIND RIVER

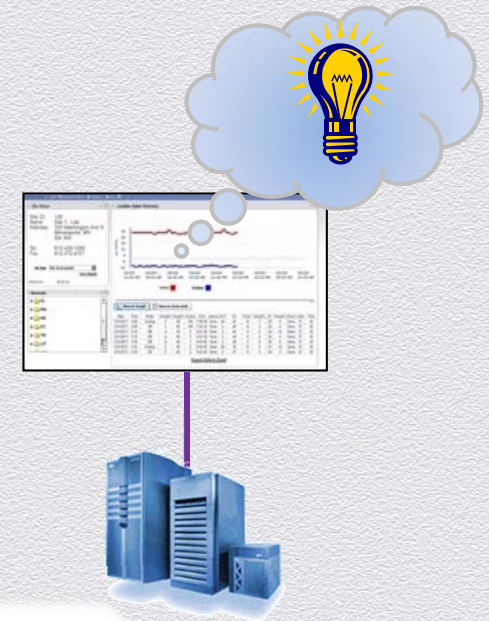
- Resource constrained
- Safety critical
- Challenging physical environment
- Highly predictable
- Long service lifetimes
- Low rate of change



Why We Want to Bring Cloud and Embedded Together



Embedded senses
and controls the
physical world



Cloud distills
intelligence from
the senses

WIND RIVER

Threats

Threats to the Cloud from Embedded

- ◆ Many networked sensors with little security
 - ◆ Misleading information
- ◆ Embedded device as ingress point for attackers
- ◆ Limited visibility into multitude of devices
 - ◆ Lots of places for bots to hide

Threats to Embedded from the Cloud

- ◆ Sophisticated networking
 - ◆ Device access vectors that weren't originally considered
- ◆ Complexity increased
 - ◆ Increase in vulnerabilities
- ◆ Loss of predictability
 - ◆ Interplay of embedded function and network connectivity

WIND RIVER

Solutions

- ◆ Cryptography for securing communication and content
 - ◆ VPN protects communication links
 - ◆ Key distribution and storage considerations for embedded
 - ◆ Data at rest encryption
 - ◆ Disk encryption for both Cloud and Embedded
 - ◆ Block encryption



Solutions



- ◆ Establishing mutual trust
 - ◆ Authentication
 - ◆ Attestation
 - ◆ Trusted Network Connect
- ◆ Separation through virtualization

Embedded | Cloud

WIND RIVER

Solutions

Embedded virtualization

- ◆ Virtualization exists for embedded!
- ◆ Separation of concerns and domains
- ◆ Example - legacy embedded function in one VM, networking facing in a second VM

Cloud virtualization

- ◆ Virtualization already a cornerstone of Cloud
- ◆ Separation of concerns and domains
- ◆ Network Function Virtualization (NFV) enables insertion of crypto and trust functions independent of traditional Cloud capabilities

Bringing Worlds Together

- ◆ Mutual understanding is crucial
- ◆ Common needs mean opportunities for “best of both worlds”
 - ◆ E.g., cryptography and trust
- ◆ Strategies for separation and controlled interaction ease the fusion



Solutions exist – leverage the wisdom of experienced “settlers” to ensure success

WIND RIVER

Resources

- ◆ IoT Infographic
 - ◆ <http://www.windriver.com/iot/Wind-River-IoT-infographic.pdf>
- ◆ IoT Solutions
 - ◆ <http://www.etsi.org/technologies-clusters/technologies/nfv>
 - ◆ http://www.trustedcomputinggroup.org/solutions/network_access_and_identity
 - ◆ <http://www.windriver.com/iot/>
- ◆ Embedded virtualization and separation
 - ◆ <http://www.windriver.com/solutions/virtualization/separation.html>

Contact

Tim Skutt at Tim.Skutt@windriver.com

WIND RIVER