INTERNET OF THINGS

SECURITY @ KONTRON

EMBEDDED COMPUTING CONFERENCE 2017 ECC
WINTERTHUR
SEPTEMBER 5TH, 2017
AGENDA

01 INTRODUCTION
02 SECURITY LAYERS
03 KONTRON & S&T
WHAT IS IN IT FOR YOU THROUGH THIS SESSION

- Explain market development: from history to today’s requirements
- What are the main requirements – big data, analytics, smart applications
- Why should I protect my systems – now it is becoming interesting – authentication, trusted computing
- What are the security layers – not a single program, which protects the world
- What makes a security solution complete – several layers
- How to engage with Kontron / Kontron capabilities
INTRO – TECHNOLOGICAL EVOLUTION

Continuous evolution

1930
- Manual operations required to fulfill services

Today
- Hardware is commodity (servers)
- Software is replacing manual labor

New demand drivers ...
- Smart applications
- Data needs
- Connectivity needs
- Security needs

... lead to new IoT solutions, related infrastructure, and business models
- Smart applications that use connected devices and cloud software to build IoT solutions
- Device software/middleware is key to enable the needed infrastructure and function
INTRO – OT & IT ENVIRONMENT

Manufacturing
- PLCs and Gateways
- Communicate by wired and wireless communication
- Control & Data aggregation

Fog Computing
- Rackservers
- Wired communication
- Data pre-production / analysis

Cloud Computing
- Server farms
- Internet communication
- Big data, Smart application

Factory Floor / On Premise
Internet
INTRO – ONE SERVER – VARIOUS CUSTOMERS/INSTALLATIONS

Cloud Computing
- Protected access to server
- Access to trusted devices
- Analytics of trusted data

Manufacturing
- Various decentralized installations
- Be a trusted device / group
- Provide trusted data

MAKE SURE YOU HAVE RELIABLE INFORMATION
INTRO - SUMMARY

Is the computer really trustful?
- Trusted hardware / BIOS
- Trusted OS
- Trusted Application
AGENDA

01 INTRODUCTION

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SECURITY LAYERS

3 LEVELS OF SECURITY ENSURE HIGHEST LEVEL OF SECURITY FOR EMBEDDED SYSTEMS
NETWORK SECURITY ON A PROJECT BASE
SECURITY LAYERS – SECURE & TRUSTED BOOT

- Built into the BIOS
- BIOS Flash is protected
- OS loader is verified
- Software based
- Make sure the correct BIOS is executed

EVERYTHING STARTS WITH THE BIOS AND PROTECTED STORAGE DEVICE
SECURITY LAYERS – SECURE & TRUSTED OPERATING SYSTEMS

- Windows 10 IoT featuring with TPM 2.0:
  - Trusted Boot Loader
  - Verification of executables
  - Measured boot stores boot history
  - BitLocker
  - Device Guard

- Alternatively Linux

- Remote attestation (external or internal)

MODERN OPERATING SYSTEMS PROVIDE ENCRYPTION, AUTHENTICATION, KEY HANDLING
SECURITY LAYERS – SECURE APPLICATION

- APPROTECT – IP protection, copy/reverse engineering protection
- APPROTECT Licensing – Enabling new business models

HARDWARE SUPPORT TO PROTECT YOUR INTELLECTUAL PROPERTY
SECURITY SOLUTION KONTRON APPROTECT / APPROTECT LICENSING

HW enabled on all new Kontron embedded designs plus SW framework

Kontron APPROTECT
- IP protection
- Copy/reverse engineering protection

Kontron APPROTECT Licensing
- Enabling new business models

ALL NEW DESIGNS OF MODULES/BOARDS/SYSTEMS INCLUDE APPROTECT HARDWARE
SECURITY LAYERS – SECURE CONNECTION

- Static Firewalls
- Routing firewalls
- Packet inspection
- ...

FIREWALL PROTECT THE INFRASTRUCTURE AND REQUIRE CONTINUOUS MAINTENANCE
FACTS & FIGURES: KONTRON - AN S&T COMPANY

Founded:
1959 by Dr. Branco Weiss

Employees worldwide:
About 3,700
Kontron and S&T Group

Represented in all major regions and countries with multiple sales offices & partners

Kontron Headquarters:
Augsburg, Germany

Engineers worldwide:
About 2,300
Kontron and S&T Group
BEYOND THE STANDARD: KONTRON & S&T EXPERIENCE

- Installed base > several Mio. embedded Computers (operating)
- Strong embedded computer portfolio
- Security platforms
- Service & Support offering

- Application Software
- Security SW for IoT platforms
- IoT head end Systems – Embedded Cloud
- Software & Maintenance Service offering

NEW INNOVATION POWER WITH MORE THAN 2,300 EXPERIENCED OT AND IT ENGINEERS
### Modules & Boards
- Computer-on-Modules
- SBC/Motherboards
- Passive Backplane Blades
- Mezzanines
- Switching Boards
  - 1/10/40 GbE

### Integrated Systems
- Embedded Box IPC
- Touch Panel IPC / HMI
- 19” Rack Mount IPC
- CPCI / VME / VPX
- Switches 1/10/40 GbE
- Firewalls

### Application-Ready Platforms
- Market specific middleware
- Market specific certifications
- Market specific protocol stacks
- Cloud solutions
- Security solutions

### Services
- Technical support
- Professional services
- Extended warranty

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**UNLEASHING THE FULL POTENTIAL**
BEYOND THE STANDARD: PROFESSIONAL SERVICES

OPEN BOUNDLESS OPPORTUNITIES TO INCREASE THE OVERALL VALUE OF YOUR APPLICATION WITH KONTRON AS YOUR TRUSTED PARTNER AND ADVISOR

DESIGN-IN
CUSTOMER PRODUCT SPECIFICATION SUPPORT
SMALL CUSTOMIZATION
APPLICATION VERIFICATION
PROTOTYPING
BOARD BRING-UP SUPPORT
SOFTWARE SUPPORT
TESTING
DEDICATED ON-SITE SUPPORT
TRAINING

FULL SERVICE PROGRAM
END