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CON3434
Bringing IoT Cloud Services to Edge Devices with Java ME Embedded 8

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Program Agenda

1. The Internet of Things is Changing the Rules
2. Enabling Intelligence at the Edge: Java ME Embedded 8
3. Brief Overview of Oracle IoT Cloud Service
4. IoT Cloud Service Integration Aspects
5. Demo
6. Summary/Call to Action/Resources

The Internet of Things is Changing the Rules

Subtitle

The Internet of Things…

The Internet of Things Is Here (and Everywhere)

Industrial Automation

- Building automation
- Manufacturing automation
- Logistics & supply chain
- Smart cities

Automotive/Telematics

- Fleet management
- eCall (safety)
- Remote diagnostics
- Traffic Management

Healthcare

- Tele-Health
- Remote monitoring
- Emergency help
- Elderly care

Environmental Monitoring

- Monitor soil, air, water conditions
- Customer Self Service on Environmental Conditions
- Energy management

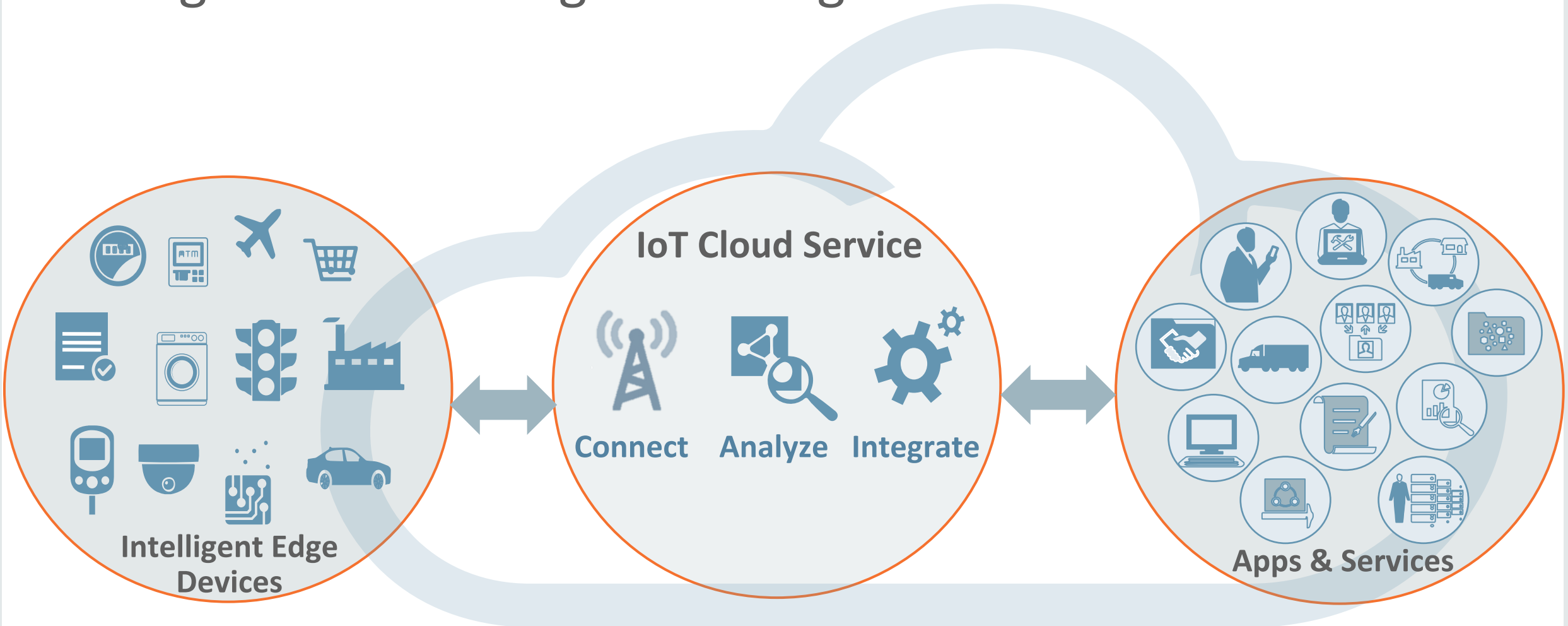
Energy Management

- Balance power generation & supply
- Energy consuming devices
- Remotely control of devices, or
- Cloud Managed devices

Infrastructure Management

- Monitor bridges, rail lines, wind-farms
- Monitor events or structural conditions
- Efficient Repair and Incident Management
- Reduce Operation Costs

Intelligence at the Edge: Building better IoT Solutions

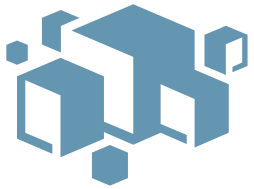


The Internet of Things Momentum

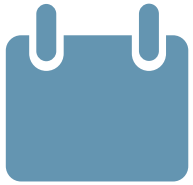
Demand for an Intelligent Edge

ROI,
Lower Costs

Safety
and Security



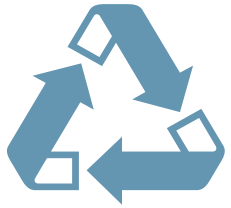
Open Standards
Support



Time-To-Market
Device Lifetime

IoT Innovation
High Rate of Change

On-demand Business
Logic Changes



Code Reuse: App,
Integration, Porting

Scalable, Reliable
Update In-Field

Concept **Deployment** **Update**

The Rules are Changing

From limited-function devices to connected, flexible embedded software platforms

Intelligent Devices

+ ubiquitous **Internet Connectivity**

+ integration with the Cloud

+ Distributed Intelligence

…are transforming

the Embedded Industry

Enabling Intelligence at the Edge: Oracle Java ME Embedded 8

Subtitle

Oracle Java ME Embedded: Embedded-By-Design

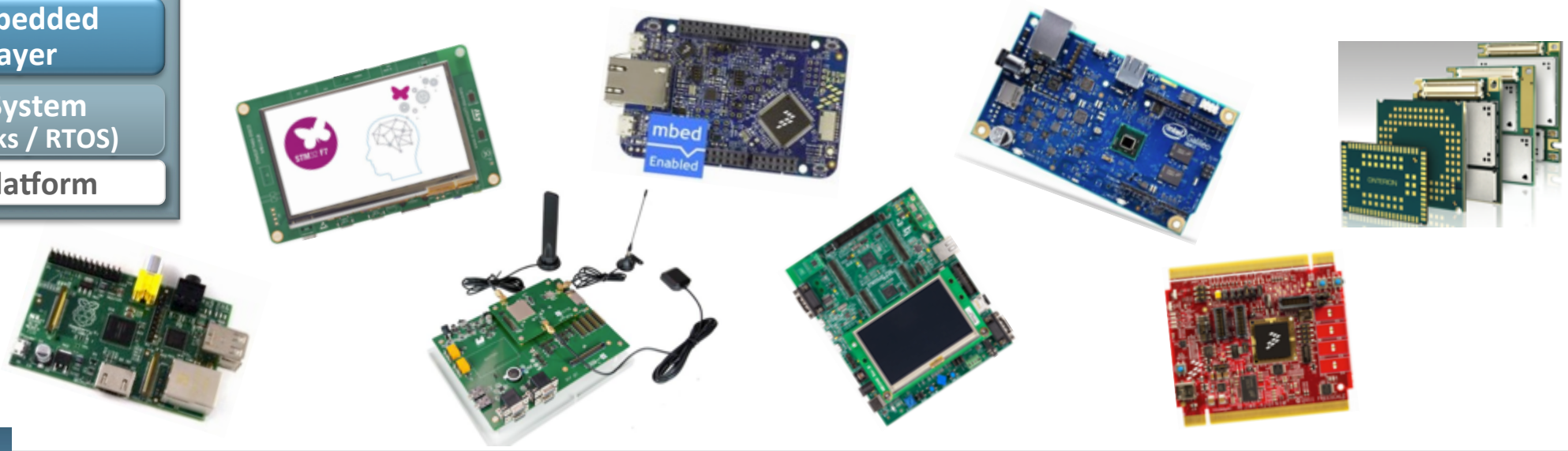
Paving the way for developer innovation

Java ME Embedded Platform

- **Java ME EP 8 Application Platform**
- **Java ME CLDC 8 Virtual Machine**
- **Java ME Embedded Porting Layer**
- **Operating System (Linux / VxWorks / RTOS)**
- **Hardware Platform**

- Modern, Compact and Configurable
- Dedicated to Embedded
- Java Intelligence for the IoT Edge

Java™ POWERED



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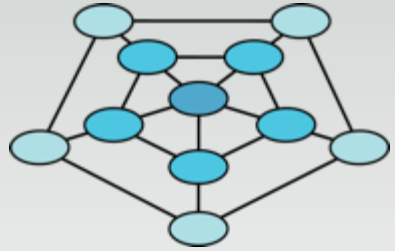
Oracle Java ME Embedded 8

Features at a Glance

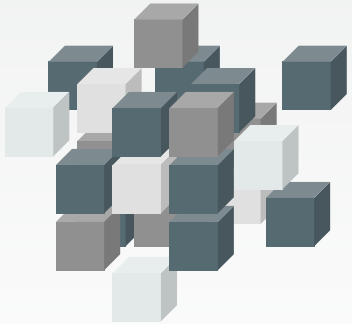
Proven Java embedded platform based latest Java ME 8 standards

Highly optimized, robust multitasking Java Virtual Machine

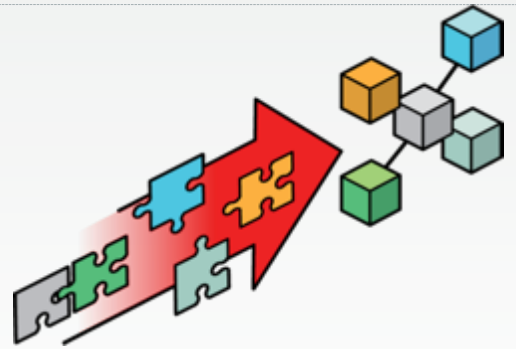
Fully headless operation with wired & wireless connectivity



Versatile, cross-platform access to peripherals and networks

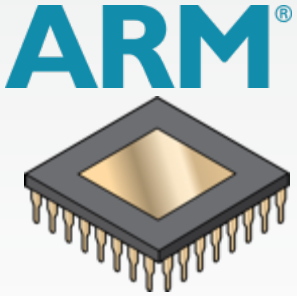


Modular software platform, ideal for granular in-field upgrades



Remote software deployment and management

Multiple RTOS or bare metal supported



Scalable from microcontroller-class systems upwards

Oracle Java ME Embedded 8 Values

Developer and Deployment Benefits

- **Developer Value – Java Platform**
  - Mature, feature-rich
    - Proven, secure*, performant – 20+ years
  - Fast-time-market
    - Programmability, dynamic / in-field updates*
    - Designed for embedded
    - Pre-integrated and –tested*
  - Large, established ecosystem*
    - Java Community
  - ROI*
    - Cross platform, portability, code reuse

- **Deployment Value for IoT-CS**
  - Edge-to-Cloud OOTB* Integration
    - IoT CS Client Libraries: Tightly engineered-in, multi-platform, drop-in integration*
  - Enterprise grade features
    - Built-in software provisioning and management*
    - Full-stack end-to-end testing*
  - On-demand distributed intelligence*
    - Application logic can dynamically change or be added/pushed to Java ME-E devices

**Typically no or limited supported in native platforms*

Brief Overview of Oracle IoT Cloud Service

Subtitle

Oracle Internet of Things Cloud Service

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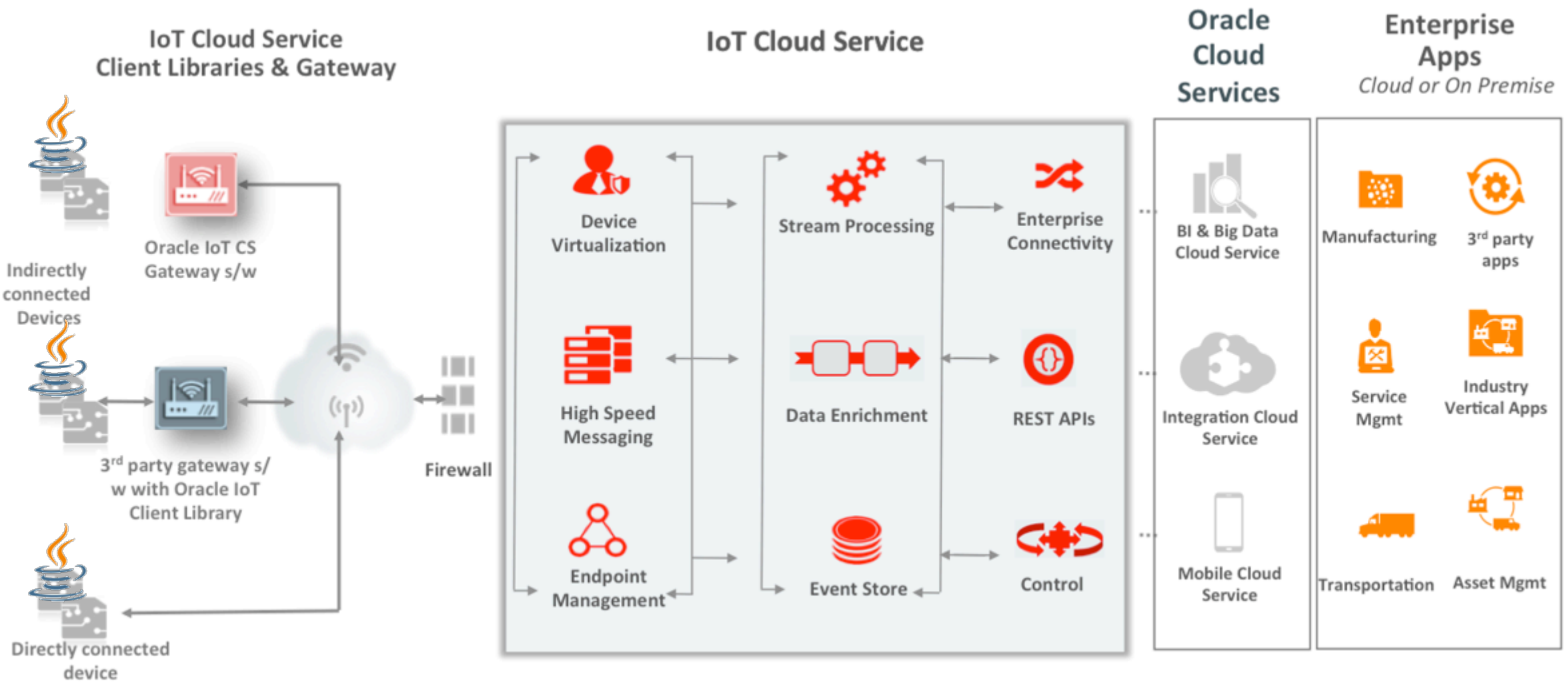
INTERNET OF THINGS
CLOUD SERVICE

- **Connect:** Reliably and securely collect data from devices
- **Analyze:** Perform real-time, Big Data and predictive analytics on IoT streams and events
- **Integrate:** Seamlessly extend enterprise Applications and processes with IoT data

- Get started quickly and with no up-front capital costs
- Scale your applications rapidly as your business evolves

Oracle Internet of Things Cloud Service



IoT Cloud Service Integration Aspects

Subtitle

Key Java ME Embedded 8 Cloud Integration Aspects

Building on pre-integrated and pre-tested platform functionality

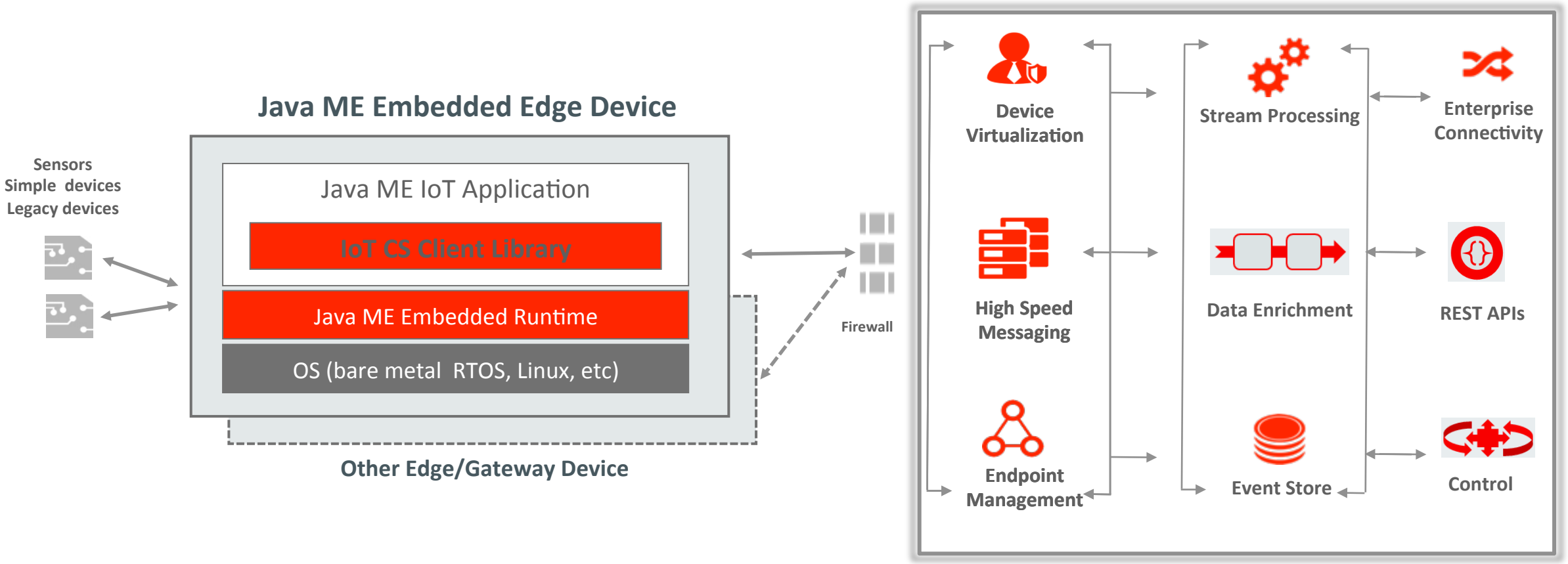
- Security
  - Sandboxed execution, permissions, security services (encryption, ciphers)
- Software provisioning and management
  - Secure and robust in-field software installation and updates, with versioning
- Communication
  - Flexible wired and wireless (WiFi, cellular, multichannel)
- Protocols
  - TCP, UDP, SSL/TLS, HTTP/HTTPS, OAuth, REST, JSON, XML, extensibility
- Connectivity
  - Range of I/O support (sensors, actuators, converters, busses, other peripherals)

Oracle IoT Cloud Service Client Library for Java ME

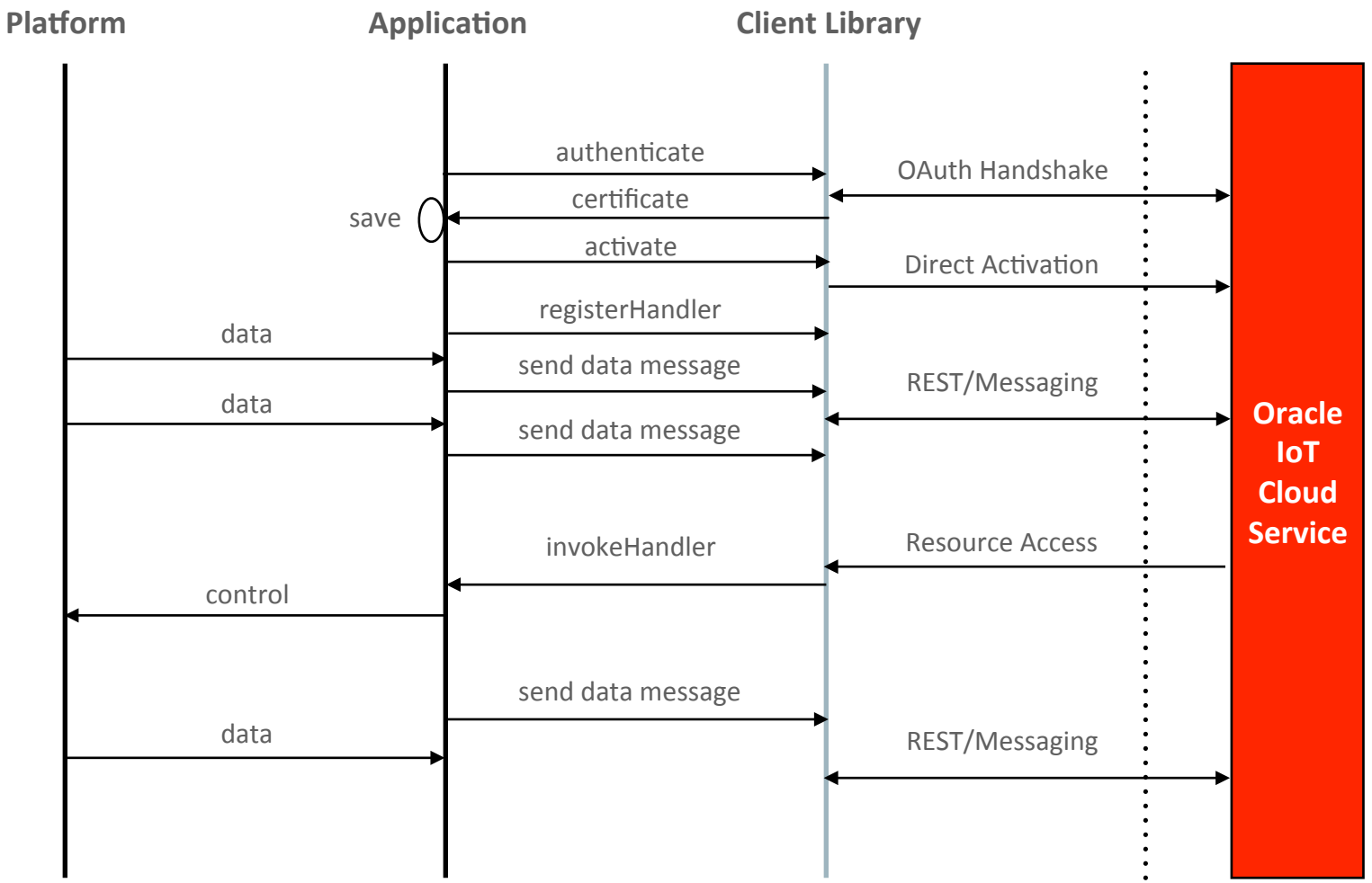
Preview - Key Features

- Enables Java ME devices and apps to connect directly to Oracle IoT CS
  - Single, easy to use, multi-platform drop-in library
  - Fully tested, pre-integrated: Out-of-the-box, minimal time-to-market
- Provides functionality essential for IoT CS integration
  - Secure transport-level Authentication and Communication
  - Secure lifecycle management: Device registration, activation, identity
  - Bi-directional HTTPS/JSON-based Messaging, Alerts, Commands
  - Exposes optional programmable device REST resources to IoT Cloud Service
- Planned for availability in H1 2016

Java ME Embedded 8 IoT Cloud Service Integration



Client to Server Lifecycle Interaction Model



Demo

Subtitle

Summary/Call to Action

Subtitle

Summary / Call to Action

- The Internet of Things needs intelligence at the edge
- Oracle Java ME Embedded has a rich set of out-of-the-box features making it easy to
  - Connect securely to the cloud
  - Deploy intelligence to the edge
  - Build more valuable end-to-end IoT solutions
- Call to Action
  - Download Oracle Java ME Embedded 8.2 today and try it out
  - Leverage your Java skills to be part of the IoT wave
  - Stay tuned for more ….

Resources

- Oracle Java ME Embedded 8.2 Overview and Download:
  - oracle.com/technetwork/java/embedded/javame/embed-me/overview/index.html
- All Java ME documentation
  - Release Notes, Getting Started Guides, etc
  - docs.oracle.com/javame/8.2/
- Blogs
  - https://blogs.oracle.com/javame
  - https://terrencebarr.wordpress.com/

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