MEET THE MACHINE
INNOVATION TO GET YOUR APP IN GEAR
Agenda

- Who We Are – nPhase & DHWS
- Verizon’s Machine to Machine Management Center
- Wireless Network Services (WNS)
- Application Services (AS)
- nPhase ONE Developer Program
Who Is DH Wireless Solutions? A True SI.

- **Mobile Applications**
  - Commercial Fleet
  - Service Fleet
  - Public Safety/Emergency
  - Utility
  - Metro Transport (Bus, Rail)
  - Mobile Command Center/Office
  - Asset Track/Monitor (Trailer/Heavy Equipment)
  - Medical

- **Fixed Applications**
  - Financial/Banking
  - IP Camera Systems
  - Telecommunications (Wire Line Back-up)
  - Utility (SCADA / Remote Monitoring)
  - Wastewater
  - Retail
  - Alternative Energy
  - Vending
The nPhase/DHWS Relationship

• Both key M2M partners of Verizon
• nPhase and DHWS collaboration through the Friendly User Trial
• DHWS has hands-on development experience using the services
• DHWS is the distributor of “nPhase Ready” devices
• DHWS to support the development ecosystem as it relates to nPhase
• Partners in educating developers in the value/use of nPhase tools
M2M Management Center

Advanced M2M Cloud Platform

• Automate the Provisioning and Management of M2M Devices
• Make it Easier and Less Expensive to Build Custom Applications
• Differentiate Your Product and Service Offerings
• Tap Into a Massive New Growth Industry
Customer Challenges

• Monitoring connectivity
• Analyzing usage patterns
• Organizing lines of service
• Ability to administer rate plans
• Create usage alerts

Benefits

• Provides an immediate solution for small to mid-size customers
• Allows for monitoring devices centrally, lowering support costs
• Custom filtering allows locating of specific devices
• View historical activity device logs
• Facilitates behavioral device support
Overview

• Targeted for OEM and Enterprise customers with thousands of dispersed assets

• UWS provides a rich set of features that enable customers to quickly build their own systems

• Allows the customer to integrate systems to remotely manage and maintain assets

Benefits

• Enables integration of device management with customer applications

• Allows automatic device provisioning, eliminating manual interruptions in

• Enables data collection for trending and analysis
How Does a Developer Use nPhase Services?

1. WNS/AS features are available via Unified Web Services APIs
   - Customers request a toolkit from nPhase
   - Device must have pre-loaded Discovery Client

2. Customers issue simple web service calls from their M2M application, over a secure internet connection, to an nPhase server that manages communications with the device

3. With these web services customers can:
   - Manage device discovery and software configuration
   - Author sensor configurations
   - Download a chosen configuration to a device
   - Manage device sensor configurations
   - Retrieve sensor data
Wireless Network Services

- Wireless Network Services
- Application Services
- Device Performance Services

Management Portal + Unified Web Services
WNS APIs

Carrier Services
- Add a Unit or Units
- Change ESN/MEID
- Change Service Plan
- Suspend /Auto Suspend
- Resume
- Auto Rate Plan Change
- Wake Up Device
- Update PRL

Device Services
- Get Device List
- Get Connection History
- Get Device Usage/Provisioning History
- Get Device Information
- Create/Delete Device Groups
- Get Group Lists/info on Groups
Wireless Network Services: Summary

• Connectivity Management
  - Device provisioning
  - Connection and usage monitoring
  - Notifications/alerts (usage/connectivity)
  - Support and troubleshooting
  - Private network options
Application Services – Main Components

Sensor Configuration Service
- Configures collecting and reporting of sensor data
- Synchronizes device configurations, simplifies deployment

Discovery Service
- Automatically detects device and delivers the correct software OTA
- Just-in-time software delivery

Sensor Data Delivery Service
- Collects, transforms, and routes sensor data
- Provides validated delivery

Customer Host Application
Application receives meaningful data that can be acted on or fed into other existing systems

Device Control Service
- Device-side control & management
- Control device outputs, device restarts, device upgrades, and device status

Discovery Client – Thin client pre-installed at the device factory
Sensor Management Client – Device-side application used to monitor and report sensor data in a configurable way
Main Configuration Elements

• **Data Elements** – Define external or internal inputs/outputs to be monitored or controlled

• **Schedules** – Define when to sample/set data and when to send it back to the host

• **Schedule Groups** – Allow definition of complex schedules by combining individual schedules

• **Thresholds** – Define when events should be declared and reset. Also defines what data should be returned when an event occurs.

• **Key Value Pairs** – Misc configuration, for example of baud scan settings
### Screen Shot of SMC

#### Sensor Configuration Editor

<table>
<thead>
<tr>
<th>User Login</th>
<th>Device Configuration Editor</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Name: serhiy</td>
<td>Config Name: VDCDemo</td>
<td>Help</td>
</tr>
<tr>
<td>Password: **********</td>
<td>Account: Digital Highway</td>
<td>Help</td>
</tr>
</tbody>
</table>

#### Data Elements:

<table>
<thead>
<tr>
<th>Delete</th>
<th>Asset</th>
<th>Data Pt.</th>
<th>Name</th>
<th>Ctrl Pt.</th>
<th>Data Type</th>
<th>Sensor Type</th>
<th>Location Type</th>
<th>Location</th>
<th>Read Sched.</th>
<th>AS</th>
<th>Send Sched.</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete</td>
<td>1</td>
<td>Temp</td>
<td>Temp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Define Read and Send Schedules

<table>
<thead>
<tr>
<th>Delete</th>
<th>ID</th>
<th>Name</th>
<th>Type</th>
<th>Interval</th>
<th>Factor</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete</td>
<td>1</td>
<td>Default Send Sched.</td>
<td>Daily</td>
<td>1</td>
<td>0</td>
<td>00:01:00</td>
</tr>
<tr>
<td>Delete</td>
<td>2</td>
<td>Default Read Sched.</td>
<td>Daily</td>
<td>1</td>
<td>0</td>
<td>00:00:30</td>
</tr>
</tbody>
</table>

#### Key/Value Pairs

<table>
<thead>
<tr>
<th>Delete</th>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete</td>
<td>4</td>
<td>Modbus Register Type Read</td>
</tr>
<tr>
<td>Delete</td>
<td>5</td>
<td>Modbus Register Type Write</td>
</tr>
</tbody>
</table>
Visualize the Data
• Discovery Client
  - Device client software responsible for downloading and updating the software and configurations
  - Talks to Discovery Service, receives compressed files

• Sensor Management Client
  - Monitors and Controls Remote Equipment
  - Sends events based on configurable schedules and thresholds
  - Sends compressed data back to host computer
  - Allows output set remote command or internal logic
  - Handles 2-way pass through communication
  - Communicates via wired or wireless networks
Application Services: Summary

• Application Services
  - Automatic device detection and OTA delivery of software and configurations
  - Sensor configuration controls sensor data collection
  - Reliable data delivery from asset to application server
  - Device-side control and management capabilities
Device Performance Services

Wireless Network Services

Application Services

Device Performance Services

Management Portal

Unified Web Services
A vast amount of diagnostics data available through a diagnostic interface on cellular modem chipsets, accessible for troubleshooting, connectivity and performance issues.
At the Portal

- Enables support staff to debug wireless issues
- Modem events that may affect user experience are displayed
- On-demand
- Reports

At the Device

- Full featured API at device
- Agent that monitors modem state
- Queues & sends DPS data, receives commands
Device Performance Services: Summary

• Diagnostic Management
  - Debug Wireless Issues
  - Access to Modem Events
  - Notifications/alerts (sensor data)
  - Reports
  - Queues & Sends DPS data, receives commands
What is Included?

**Wireless Network Services (WNS) Kit**
- UWS Developer’s Guide
- XML Schema
- HTML Documentation
- WSDL Files
- Reference Implementation for Callback Service

**Application Services (AS) Kit**
- AS Developers Guide
- Hello World .net application
- Hello World Documentation – Quick Start guide
- AS UWS Demo
- AS UWS Demo Documentation – Quick Start Guide
- Configuration Authoring and Visualization Tool
Example of Our Beta Application
Thank You!

Contact Information

- Brian Rosema
- VP of Sales and Marketing
- brosema@dhm2m.com
- 269.998.6670

- Serih Smelker
- Application Integration Specialist
- ssmelker@dhm2m.com
- 269.929.7693
Thank you.
Intel® M2M Reference Design
Based on the Intel® Atom™ Processor

Bill Tiso, Intel Corporation
September 14, 2011
M2M technology is a specific capability that enables ‘machines’ to connect, then intelligently and securely interact over a network.
Enable standards based M2M solutions that reduce industry fragmentation & complexity while scaling across connected embedded segments.

Intel Simplifying M2M

Simplify
Horizontalize

Enable standards based M2M solutions that reduce industry fragmentation & complexity while scaling across connected embedded segments.
Simple, Robust and Secure M2M

Intel M2M program focused on reducing TCO (NRE, TTM & OPEX) while enabling options for increasing ARPD*

1. **Common/Simplified M2M Hardware**
   - Intel® Atom™ Processor based Off-the-shelf industry standard boards
   - COM Express Nano

2. **Integrated Communications Platform**
   - CPU + multi-comms capability
   - WWAN (2G/3G/4G), WLAN (802.11), WPAN (802.15.4), LAN (Ethernet)

3. **M2M Development Kits**
   - HW Platform + Development SW + Connectivity
   - Intel® M2M Reference Design + Wind River Development SW + Connectivity

* Avg Revenue per Device
Kontron’s M2M Solution was Co-developed with Intel

**Applications**
- M2M Gateway (Aggregation Point)
- M2M Direct Control Node (Terminal)

**Features**
- Kontron’s nano ETXexpress™-TT
- Intel Series 2 E6xx 600MHz Atom™ and EG20T PCH
- 2 Mini PCIe Card slots for COTS WWAN 3G/4G Broadband
- Modem & WiFi IEEE 802.11x Radios
- On board 802.15.4 Radio & Accelerometer
- USB and Gigabit Ethernet ports
- MicroSD card support
- Enclosure designed for application and mounting flexibility
Kits available 4Q-2011 in Service Provider specific configurations
For Verizon: LTE & CDMA SKUs
Additional Software Partners will soon be enabled by VZW Developer’s Kits
2 SKUs – targeted at multiple Verticals & Solutions Sets

- CDMA "Baseline" Version (EV-DO Rev A with fallbacks)
  - Availability Target Date: Mid November 2011
- LTE "Premium" Version (fallback to CDMA)
  - Availability Target Date: Early December 2011
- Pre-integrated with Verizon Wireless “Network Certified" Modems
  - Modem Decisions to be made by Sept 20,
  - Certified modems assure OTA compatibility with nPhase SDP
- Dev Kit Objective: Verizon Wireless “Network Certified Device”
  - Simplifies development and certification for GTM volume products for adopters
- Network ready with Verizon Wireless Accounts & Data Plans
- Common Development Tools: OSGI and C/C++ WRS Project Workbench
- Standard Open Intel Atom™ Hardware Platform from Kontron
- Common SW foundation – evolved from current SDK 1.5
VDC 2011
M2M Smart Building Demo

Wireless Carrier/ISP

LTE or CDMA Wireless Broadband

Future Services (eHealth, MultiMedia Streaming, Digital Signage)

WAN

4Home

Open Multi-Services Wireless Gateway

Intel® M2M Reference Platform

Z-wave Devices & Web Cams

Bldg Control, Video Monitoring, HVAC & Light control, Security client, eHealth Continua client - services running on Gateway & Cloud

Other names and brands may be claimed as the property of others. Copyright © 2011 Intel Corporation. All rights reserved.

- Wireless LTE & CDMA WAN Connectivity
- M2M Cloud based Svcs – multiple Portals & Application Svc Providers
- Intel® e620 Atom™ processor, Multi-Services GW – Wireless Router, WiFi AP, Services Aggregation point
- 4Home Control Point
- Physical Security
- Building Automation
- HVAC Control
- Digital Signage plus Consumer eHealth & Multi-media streaming & (future)

Demo built with Kontron M2M Dev Kit
Thank you.
MEET THE MACHINE
INNOVATION TO GET YOUR APP IN GEAR