LLRP Toolkit

Project Overview
1-21-2009

LLRP Toolkit (LTK)

www.llrp.org
LRP-Toolkit

LLRP Toolkit (LTK)

• What is it?
  – Open source software
    • Programming libraries for building LLRP enabled devices
    • Apache 2.0 license
    • http://www.sourceforge.net/projects/llrp-toolkit
  – Integrated LLRP documentation
    • With permission from EPCglobal
  – Community web site
    • http://www.llrp.org
Goals

LLRP Toolkit (LTK)

• Goals
  – Accelerate the development of LLRP enabled devices
  – LLRP interfaces for common programming languages
  – Common method to describe LLRP extensions
  – Human readable description of LLRP packets
  – Integrated documentation

• Out Of Scope
  – An implementation of LLRP client or reader
  – Define new features or packet for LLRP
  – Provide RFID based applications
Timeline

LLRP Toolkit (LTK)

• 2007 April – LLRP Ratified
• 2007 May – Community meets to discuss LLRP libraries
• 2007 June – Project Kickoff
• 2007 August – Alpha release for LTK-Perl and LTK-C
• 2007 September – Online packet decoder tools use LTK
• 2007 October – LTK Java development begins
• 2008 January – LTK C#.NET beta begins
• 2008 March – Impinj ships production LTKC/LTK
• 2008 December – Production release 1.0.0.5
Status

LLRP Toolkit (LTK)

- Production Libraries available:
  - C, C++, Java, C#.NET, and Perl
- Parsing and serialization of all LLRP frames
- Converts LLRP packets to LTK-XML
  - Share among implementations
  - Debug or troubleshoot
- Complete Vendor extension model
  - Easily adapt extension into any language
- Preliminary packet test framework
Technology/Architecture

LLRP Toolkit (LTK)

- LLRP Reader/Client Implementation
  - Program Objects
  - LTK-XML Marshalling
    - LTK-XML notation used by application to build/validate packets
  - XML Files
- LLRP Connection
  - TCP Setup
  - Encode/Decode Ctrl
  - Transaction Support
  - LLRP Framer
  - Stream
- LLRP Marshalling
  - Program Objects
  - LLRP Messages
- LLRP Framer
  - LLRP Messages
  - LLRP 1.0.1 Binary Protocol Description
  - LLRP Binary Protocol Schema
- Vendor Extension Protocol
- ABSTRACT LTK-XML Schema
- Vendor Extension Schema
- LTK Library Code
  - Vendor Defined
  - Toolkit User Application
  - LTK LLRP Data
  - Interfaces
- LTK Library Code
Future

LLRP Toolkit (LTK)

• Packet test framework
• LLRP 1.2
• More user documentation
• LTK-XML for C and C++