



Intel and noFilis Usher in a New Era in RFID Device Management

RFID device management capabilities have lagged behind the needs of enterprise deployments. Intel and noFilis technologies bridge this gap for large-scale RFID solutions.

RFID has proven its potential in transforming business processes across numerous market verticals by enabling the correlation of tracking data with business events. To date, however, the true benefits possible from wide-scale RFID reader deployments have rarely been achieved, primarily due to the immaturity of RFID device management capabilities. Achieving high read rates requires more than simply knowing whether a reader is alive; you must also know how well it is performing. The broad adoption of RFID will require infrastructure management capabilities consistent with the sophisticated expectation of today's IT community.

In this paper, Intel and noFilis explain how readers based on Intel® RFID technology and used in conjunction with the noFilis CrossTalk® 2.0 application offer such capabilities.

Intel® UHF RFID Transceiver R1000

Intel has expertise in providing processor and radio components for enterprise platforms, such as Intel® Centrino® mobile processor technology and Intel® vPro™ processor technology. Intel is now addressing a new class of enterprise platform: UHF RFID readers.

The Intel® UHF RFID Transceiver R1000 reader chip is a breakthrough: a highly integrated, high-performance UHF reader silicon radio that brings unprecedented capabilities and cost effectiveness to reader designs. The Intel R1000 includes support for:

- EPCglobal Class 1 Gen 2 and ISO 18000-6C
- Operation from 860-960 MHz
- Compliance with FCC 47 CFR Ch. 1 Part 15 and ETSI 302 208-1 including Listen-Before-Talk (LBT)

World-class hardware requires world-class software to enable it. To that end, Intel provides the Intel RFID Transceiver Interface, a software interface which provides any host processor with a plug & play interface to the Intel R1000 silicon. The Intel RFID Transceiver Interface complements the Intel R1000 by abstracting the low-level tag access and radio configuration operations to a level that allows seamless integration with the noFilis CrossTalk 2.0



agent. At the same time, the interface exposes the rich set of attributes required to fully enable emerging standards, for example, the EPCglobal Low Level Reader Protocol (LLRP) and Reader Management (RM) specifications. The Intel RFID Transceiver Interface enables:

- **Tag access** operations while allowing the user full control over the air protocol parameters.
- **Configuration** of the R1000 for optimal performance in its physical environment; for example, control of the antenna output power and antenna sequencing.
- **Provisioning** of the R1000, including the ability to upgrade the Intel R1000 firmware.
- **Fault detection** through the return of numerous health indicators to the host; for example, per-tag RSSI information and antenna impedance match information.

The Intel UHF RFID Transceiver R1000 extends Intel's leadership with building blocks across the full digital supply chain infrastructure. Intel® Architecture-based server platforms drive intelligent RFID data acquisition and management, while Intel® network processors and wireless computing technologies power the efficient distribution of massive volumes of data. Desktop PCs based on Intel vPro processor technology enable demanding collaboration and decision-making tools, and mobile PCs based on Intel Centrino mobile processor technology extend the power of RFID to virtually anywhere in the supply chain.

noFis CrossTalk* 2.0

noFis CrossTalk 2.0 is an enterprise software solution for the integration and control of devices in an RFID infrastructure. The noFis CrossTalk 2.0 application comprises two components:

- An embedded agent component which resides on intelligent enterprise devices, such as an Intel R1000-based RFID reader, exposes device management capabilities, and connects the device to the physical RFID environment.

- A server component which manages all embedded agents in a deployment. Through CrossTalk 2.0 Server*, all RFID events in an enterprise can be forwarded directly to a given business organization. Multiple business applications may access the same CrossTalk 2.0 Server and share captured data simultaneously.

Deploying noFis CrossTalk 2.0 in an RFID environment immediately enables:

- Live monitoring of readers and other devices such as I/O controllers, etc.
- Real-time reader optimization.
- 24/7 logging with forwarding to corporate monitoring systems like SAP CCMS.
- Support for standardized interfaces including XML and SNMP in addition to EPCglobal ALE and LLRP interfaces.
- Centralized reader configuration and software updating.
- Centralized storage, archiving, versioning and live comparison.

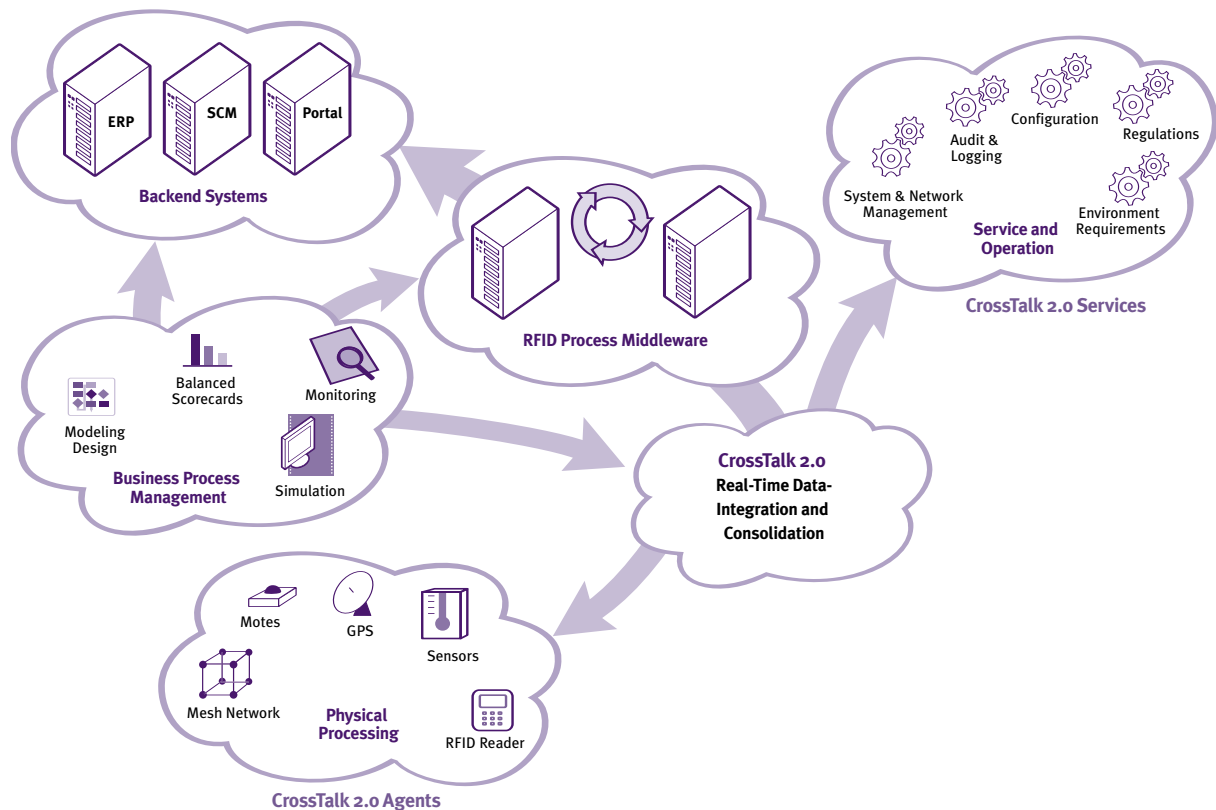


Figure 1. noFis CrossTalk* 2.0 deployment architecture

- Centralized or remote deployment of standard and custom services (i.e., filters, I/O activities, log levels and buffers) to the agent infrastructure.
- Business process integration with multiple RFID backend systems, including SAP, Oracle and IBM.

Figure 1 provides a logical representation of a noFilis CrossTalk 2.0 deployment while depicting the services offered by the application.

A New Era in RFID Device Management

noFilis provides a CrossTalk* 2.0 agent which has been fully optimized for the Intel RFID Transceiver Interface. The CrossTalk 2.0 agent enables readers based on the Intel R1000 infrastructure with advanced device management capabilities and network connectivity, all in a memory footprint of less than 2 MB. The Crosstalk* 2.0 agent will execute on any reader which operates a Java Runtime Environment. Figure 2 provides an example of an RFID reader architecture based on the Intel R1000 and noFilis Crosstalk* 2.0 Agent.

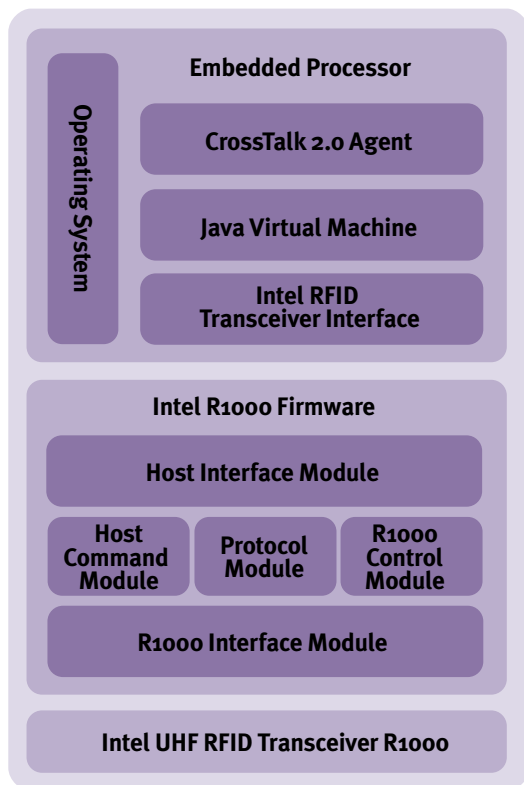


Figure 2. RFID reader based on the Intel R1000 and noFilis CrossTalk 2.0

Intel RFID Technology and noFilis CrossTalk 2.0 are the perfect technology compliment, with Intel providing an underlying hardware infrastructure and software access layer to the reader vendor community, while noFilis provides the device management intelligence to fully utilize the advanced features of this infrastructure.

A reader based on the Intel R1000 and noFilis CrossTalk 2.0 aligns the device management capabilities of the RFID community with the expectations of the IT community. The solution offers out-of-the-box:

- Live monitoring of the reader and tag inventory activities, including antenna power and per-tag RSSI.
- Real-time parameter adjustment between tag access cycles, including antenna, power, channel switching, and synchronizing with other readers.
- Enhanced diagnostics capabilities, including antenna mismatch detection.
- Intelligent read-rate analyzing using inventory information and local and remote buffers to guarantee high read performance and quality (thus avoiding false reads and positive false reads).
- Central storage, archiving, versioning and live comparison of all R1000 parameter settings.

Conclusion

Together, Intel RFID Technology and noFilis CrossTalk 2.0 provide a strong, scalable, end-to-end RFID management and monitoring system that better meets the broad range of enterprise-level requirements. Their complementary technologies are accelerating the deployment of high-performance RFID applications in real-world environments.

Intel and noFilis

Intel and noFilis are working together to provide seamless RFID solutions for the enterprise today. Together, we bring a complete RFID infrastructure management solution consistent with the sophisticated expectation of today's IT community.

For further information, visit:

www.intel.com/go/R1000

www.nofilis.com

Solution provided by:



noFilis

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