



IDENTIFICATION NETWORK

Scalable RFID Performance

White Paper



EXECUTIVE SUMMARY

7iD's **Identification Network** is a software suite for AUTO-ID and RFID solutions for demanding environments of small to large enterprises, which provides a rational development path towards full-scale identification applications.

The software suite consists of three major software products:

- RFID Enterprise Server
- Device Agent
- Data Center

7iD offers a truly scalable and reliable standard architecture for high performance RFID networks called **Identification Network**. It allows customers and system integrators to start small without the need for large investments. A first installation can easily be expanded with additional devices and services without making any changes to the existing installation base.



The IT architecture provides high performance applications for any infrastructure scale. The central dashboard features configuration and monitoring of infrastructures at enterprise level. 7iD's Data Center is the host for logical workflows for fast local business decisions. Almost any AUTO-ID and RFID device is integrated and can be used with a mouse click.

7iD's **Identification Network** enables customers and system integrators to:

- Use an incremental, low-risk approach to AUTO-ID and RFID implementations
- Leverage existing investments
- Meet critical business priorities
- deliver a clear return on investment

STARTING INTO RFID

There are many challenges facing customers considering AUTO-ID and RFID solutions. There are several business key factors to be considered:

- The investment needs to make sense both in the short term and long term.
- Ensuring cost-efficiency across the entire business lifecycle

There are also a lot of technical questions, which have to be solved. The most important may be:

- How are carefully evolved enterprise systems protected against rapidly changing AUTO-ID and RFID hardware devices?
- Is a unique configuration tool available to avoid the use of several proprietary vendor specific tools for hardware configuration?
- How can software, hardware and sensor failures be monitored?
- What is the best architecture to minimize response times between a transponder read, a business decision and a user notification?
- How to handle mass data flood from AUTO-ID and RFID devices?
- Is it possible to get AUTO-ID and RFID data even with network latency and connection problems?
- How can reading distance of transponders be maximized without reading too much?
- Is it possible to integrate AUTO-ID and RFID infrastructure which are installed at a remote site?
- Is a standard relational database available to store and exchange AUTO-ID and RFID data between companies and departments?
- What does the user interface for local workplace business decisions look like?
- Is a general IT architecture for AUTO-ID and RFID infrastructure available?

7iD understands the importance of these questions and addresses. The careful planned and executed design of the **Identification Network** gives answers to the demanding requirements of industries. 7iD's implementation of distributed intelligence delivers the promises of AUTO-ID and RFID technology.

7iD'S IDENTIFICATION NETWORK

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The software suite consists of three major software products:

- RFID Enterprise Server
- Device Agent
- Data Center

RFID ENTERPRISE SERVER

7iD RFID Enterprise Server is software for managing RFID and AUTO-ID infrastructures and is specially designed for creating and changing RFID and AUTO-ID infrastructures from a central enterprise dashboard. The monitoring features give a comprehensive overview of the operation status of the infrastructures.

The server also has an EPCglobal EPCIS compliant database application featuring a data repository at enterprise level.

Certified interfaces to SAP, IBM, Oracle and other enterprise applications provide fast integration and reliable communication protocols.

DEVICE AGENT

7iD's Device Agent software can be used to integrate a whole range of AUTO-ID hardware into the 7iD RFID Enterprise Server.

Device Agent is designed to facilitate the rapid integration of RFID readers, printers and barcode devices. Device Agent features full configuration and monitoring functionality for the device.

It is compatible with HF and UHF RFID technologies, active and passive devices and features LLRP, RP and vendor specific communication protocols.

Device Agent also features full EPCglobal Tag Data Standards and Tag Data Translation functionality for flexible EPC handling.

Device Agent is executed directly on smart devices, which provides not only high level data caching features but also reliable data integration messaging protocols.

Smart devices with the Device Agent installed remain operational even during network downtime or network failure.

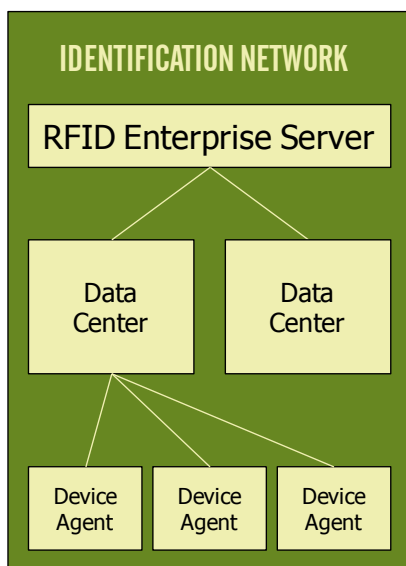
DATA CENTER

7iD's Data Center is software for AUTO-ID and business data management. It can be installed either centrally or locally to provide business intelligence distribution for local workplaces.

The AUTO-ID data management features intelligent filtering algorithms to help avoid false-positive reads and cross reads as well as filtering EPC and RSSI levels to provide 100% accurate read rates.

Batch and online business data interfaces enable standalone business decisions thanks to rapid workflows and user response times.

Identification Network – general architecture



Central configuration and monitoring

- At enterprise level
- EPCIS compliant data repository

Distributed Intelligence for

- Auto-id and business data management
- Local workplace workflow

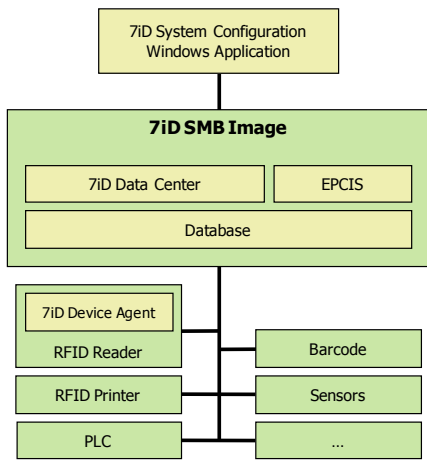
Smart Device Software for

- Device management
- Reliable communication

EXAMPLE CONFIGURATIONS

7iD's **Identification Network** is applicable from small to large enterprises scenarios.

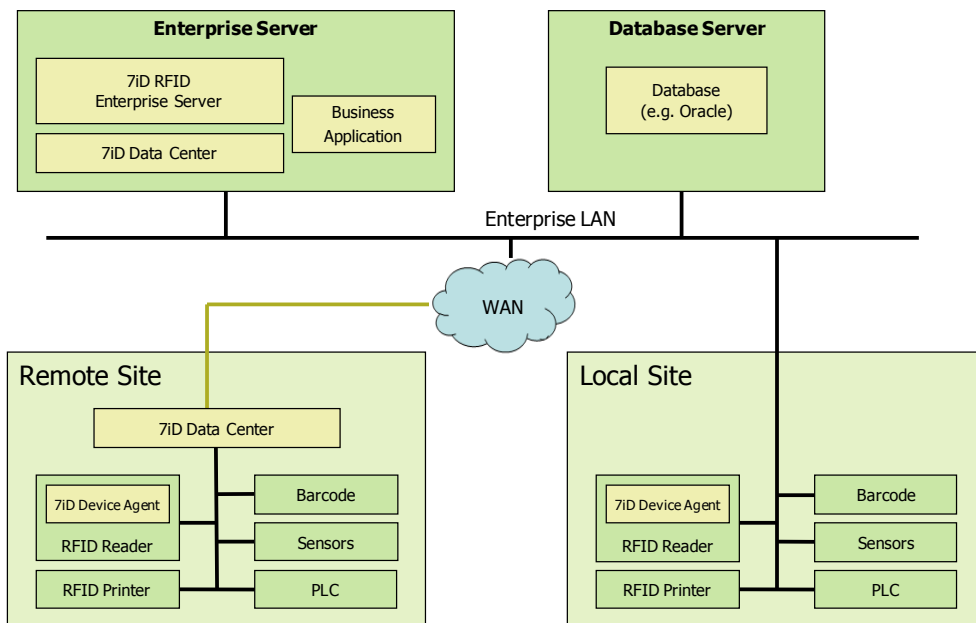
Identification Network for Small and Medium Businesses



7iD delivers virtual machine images with pre-installed software

- Demonstration mode
- Pilot and test installations
- VMware and Oracle VirtualBox
- RNC hardware appliance option available

Identification Network for large Enterprises



SCALABLE PERFORMANCE MATTERS

7iD's **Identification Network** is a suite of software products with an IT architecture designed to provide the best network performance for AUTO-ID and RFID applications.

Key features:

- Configuration of hardware devices from a central dashboard
- Monitoring of software, hardware, and sensors at enterprise level
- Storage of AUTO-ID data in an EPCIS compliant data repository
- Easy integration into almost any AUTO-ID and RFID device on the market
- Enterprise applications protected from AUTO-ID and RFID mass data flood
- Intelligent filtering of any reflections, false-positive and cross-reads
- Bidirectional concurrent transponder identifies inbound or outbound movement without the need for additional hardware
- User notification business decision response times at local workplaces are minimized
- Infrastructure integration at remote sites
- Identification Networks retain high performance levels, even with expanding AUTO-ID and RFID infrastructures
- AUTO-ID and RFID infrastructure continues to run without data loss despite potential network latency or connection problems
- The software is certified as meeting EPCglobal and SAP standards.

The architecture and the software products that make up 7iD's Identification Network have been proven to provide truly scalable performance in many projects across the automotive, logistic and railway industries.

“Unwanted reads have always been a major problem. With 7iD Technologies we are now employing a system that avoids unwanted reads.”

Chris Bartkiewicz

Production & Joint Venture Planning of the IT Europe business unit of Ford, Cologne

“7iD Technologies offers a powerful basis for us to implement even the most challenging projects. Cost efficient, software-based methods ensure high quality data.”

Marcel Schirmer

Project Manager of the Technology and Innovation Management business unit at the DHL Innovation Centre Troisdorf/Spich.

“The use of RFID technology has not only significantly optimised our processes and improved quality, it has also boosted our image, giving us a decisive competitive edge!”

Erwin Gabriels, Managing Director of Transport Service NV Genk, Belgium



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