

INQ[®] End-to-End Payment Platform

Terminal Testing

Out of the box testing



Integri's INQ[®] End-to-End Payment Platform caters for all the different functional testing needs of a complete payment system. Running on top of INQ[®] – Integri's open tool – the INQ[®] End-to-End Payment Platform includes simulators for each of the different units in a payment system. This brochure covers the system configuration and off-the-shelf tools available from Integri for terminal testing.

Terminal Test Environment

When configured for testing terminals, our INQ® End-to-End Payment Platform provides different types of automatic, application-level testing and certification of devices that accept smartcards. The terminal test environment can be used for countless applications – Point-of-Sale terminals, cash dispensers, petrol station terminals, electronic purse terminals, handsets and contactless card readers to name just a few.

Many of these devices involve complex systems that interact with a variety of external units. To ensure comprehensive testing of your application, the End-to-End solution caters for all these system components including:

- Smartcard or magnetic card
- Security module (SAM)
- Authorization host
- Clearing system
- Cash register
- The merchant
- The cardholder.

The configuration of the INQ® End-to-End Payment Platform used for terminal testing is illustrated below, with the live unit under test shown in red.

Terminal test configuration



To test a terminal, the terminal test configuration controls all its external interfaces.

- **The card interface** is controlled by one of the following:
 - Physical test cards – a labelled test card, personalized each time by the tool prior to making a test. Typically used for magnetic and memory cards.
 - Smartcard simulator – simulates the smartcard behavior including erroneous behavior to check error detection and recovery. A card probe inserted into the terminal forwards all communication to INQ®.
 - Smartcard pass-through – INQ® is inserted between terminal and smartcard to monitor the transaction flow. Test scripts can modify the smartcard's responses to see how the terminal reacts.
- **Test host simulators** – replace the authorization host, clearing host and/or cash dispenser. Test scripts can be written to cover any variation in the response such as format errors, invalid values, syntax errors and time-outs.
- **Test operator** – plays the role of merchant and cardholder. In some cases, even this can be fully automated by connecting the test tool directly to the keyboard and display interface, avoiding the need for interventions by the test operator.

Benefits

- Very flexible tool allowing you to control all interfaces between the payment terminal and the outside world
- Allows fully automated test execution, reducing the intervention of the test operator
- Off-the-Shelf Test Suites (including EMV level 2 test suite and most de-facto smartcard and terminal-to-host interfaces) available for all major 'de facto' standards
- Open project source: you do not depend on us for further evolution, your team can maintain or develop their own Tailor Made Test Suites
- Experienced team available to help you in customization and test services
- Used as platform by many European terminal manufacturers and acquirers

There are numerous advantages to this approach:

- You don't need physical smartcards as they are imitated by a software tool controlled by INQ®. There is no confusion, no loss of time. You can even simulate behavior that is impossible to realize with a physical card. Also, terminal testing can begin before the cards are available, resulting in reduced project elapse time.
- Using host simulators means the actual authorization host is not needed during testing.
- Due to the high level of automation, tests can be executed more quickly, the test coverage is higher and non-regression testing is easier.
- When using the appropriate methodology (for which training is available), the tests are quite easy to define, upgrade and maintain whenever specifications change.

All these advantages result in higher quality and lower costs – especially when you take into account the cost of correcting terminal software once the terminals are in the field.

Off-the-Shelf Test Suites

A number of Off-the-Shelf Test Suites are available, covering the major international payment system standards. Many communication protocols (x.25, tcp/ip, udp, serial, etc.), application protocols (ISO 8583, BER-TLV, EDIFACT, etc.), cryptographic algorithms (CRC, single and triple DES, RSA, MD5, RIPEMD160, SHA and others) and smartcard simulators (M/Chip, VIS, J-Smart) are available off-the-shelf and are fully customizable. As INQ® is an open platform, the source code can be adapted to your own needs and can be created or updated by your team.

Integri can also develop Tailor Made Test Suites for customer-specific systems or provide extensive support to help customers develop their own suites. Please ask your Integri representative for more details.

**Out of the box
testing**



Testing and Test Tools... out of the box testing

Specializing in simple-to-use test tools and services for payment, smartcard and mobile applications, Integri offers an approach that's 'As easy as it looks'. It's the key to achieving overall project quality on schedule and within budget. The Integri tools are based on the INQ® Open Platform. INQ® can easily be customized or adapted to your specific needs.

Integri offers also a number of dedicated platforms for specific applications:

INQ® End-to-End Payment Platform

To test the different units of a payment system (card, terminal, acquirer, network and issuer).

INQ® End-to-End Mobile Platform

To test handsets, SIM cards and mobile applications in the 3GPP world.

INQ® Stress Platform

To test host behavior under heavy stress and load conditions.

INQ® Level 1 Platform

To test the level 1 protocols between contact and contactless smartcard and terminal.

More information on www.integri.com or mail us info@integri.com



a Clear2Pay company

Integri is a wholly owned, autonomous business unit of Clear2Pay, an international financial technology company focused on delivering globally applicable solutions for secure, timely electronic payments. Clear2Pay operates from 13 international offices and currently employs over 400 staff.

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