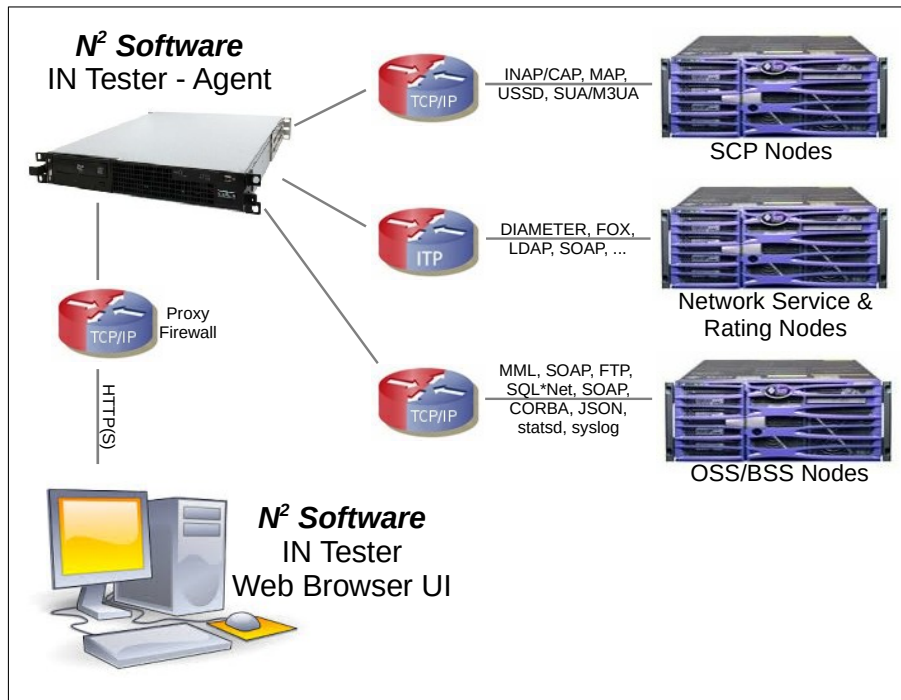


Summary

The *N-Squared Intelligent Network Tester* provides a modern, interactive platform for the structured testing of Telephony Rating and Call-Control Services. The solution implements an extensive range of protocols in a single, integrated end-to-end test framework with a fully graphical point-and-click guided test designer.



Key Features:

- **Graphical User Interface**
- **Voice Call Testing**
- **IVR Interaction**
- **Data & SMS Billing**
- **Short Message Delivery**
- **LDAP, MML, SOAP, CORBA**
- **Direct Database Query/Update**
- **Pre/Post-Call Set-Up & Checks**
- **Import/Export/Versioning**
- **Dashboard/Traffic Lights**
- **Multi-User Shared Tests**
- **On-Demand & Scheduled Tests**
- **Load Testing**

Test Coverage

The *Intelligent Network Tester* from *N-Squared Software* supports test coverage of the most common scenarios implemented within any mainstream Telecommunications environment:

- **Usage Scenarios:** INAP/CAP, DIAMETER, MAP charging for Voice, Data, SMS, MMS, *etc.*
- **Call Rating Verification:** Automated cost-of-call verification through pre/post call balance difference.
- **IVR/USSD Self-Management:** Validate PIN, language, voucher, top-up, pre/post-call notifications, *etc.*
- **Subscriber Management:** Integrate and validate tests for BSS subscriber management services.

Test Flows & Test Execution

Test Flows within the *N-Squared Intelligent Network Tester* are defined using the web-based GUI for Test Design, Management & Execution.

Test Flows can be assembled into Test Groups for batch-running. Advanced features include variable parameters, branching/looping, random and rule-based attribute generation, pattern-matching, and vendor-specific variants.

Other Test Execution/Display/Management features:

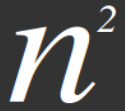
- **Split-Screen Organiser, Folder and Tagging features.**
- **Comparison of Actual vs. Expected results per operation.**
- **Green/Orange/Red indicators for Pass/Warning/Fail.**
- **Built-In Protocol Analyser for DIAMETER & ASN.1 Messages.**
- **Calls Per Second Graph (in Load Testing mode).**

| Message Flow | |
|----------------------------------|---|
| For General/Voice announcement 2 | |
| 0 | ➤ IDP (1) 4410001003 → 0800123000 |
| 1 | ⬅ CTR 2 |
| 2 | ⬅ PA (123) 1 1 |
| 3 | ➤ SRR |
| 4 | ⬅ DFC 1 |
| 5 | ⬅ ReleaseCall (31) 1 |

Key Benefits of Automated Testing

Manual testing of Telecommunications Services is repetitive, error-prone, and prohibitively time-consuming.

N-Squared Product – Intelligent Network Tester



Modern test tools such as the *N-Squared Intelligent Network Tester* offers extensive benefits:

- a) Exact tracing and automated validation of detailed message parameters.
- b) Ability to simulate exact call durations. Ability to simulate overseas calls to any country.
- c) Reduce risk by running complete regression test suites after system upgrades or configuration changes.
- d) Retain a complete Test Execution Record, ideal for demonstrating ISO9000 or other QA compliance.
- e) Integrated Test Management system. Tests are easily grouped, named and annotated.
- f) Scheduled Tests. Load Testing. User Access Control. Configurable Parameter Defaults.

Feature Packs

The *N-Squared Intelligent Network Tester* offers licensing flexibility through extensible Feature Packs:

| Feature Packs | |
|--|--|
| Base Features <ul style="list-style-type: none">• Test Creation Interface & Repository w/ Import/Export.• Scheduled & On-Demand Test Execution Daemon.• Test Reporting & Protocol Analysis.• Stacks: SIGTRAN, SUA, M3UA, ASN.1, SCCP, TCAP.• INAP (excluding Charging & SRF interaction). | DIAMETER Protocol Pack |
| | Short Messaging (MAP) & USSD Interaction Pack |
| | Short Messaging (SMPP) Pack |
| | Load Testing Pack |
| | LDAP Queries Pack |
| INAP Voice Interaction Pack | Oracle OCNCC Subscriber & Balances Pack |
| INAP CAMEL Charging Variants Pack | Oracle OCNCC Open Services Development (OSD) Pack |

Hardware & Operating System

The *N-Squared Intelligent Network Tester* runs under most standard Linux distributions. It is offered as "software only" solution, or as a pre-loaded standalone 1RU system running on x86 hardware.

Support & Maintenance

Initial licence includes three months of warranty and phone/email support. Subsequent ongoing support is available at 20% per annum of the base list price. A continuous support agreement includes zero-cost upgrades.

About N-Squared

N-Squared is an Oracle Gold Partner based in New Zealand. We are specialist providers of products and services for the Telecommunications domain.

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Protocol Specifications

ETSI INAP (ETS 300 374-1)
CAMEL Phase 2+ (ETSI TS 101 046)
SCTP/IP (IETF RFC 2960)
M3UA (IETF RFC 4666)
SUA (IETF RFC 3868)
ITU-T SCCP (ITU-T Q.713)
ITU-T TCAP (ITU-T Q.771-775)
DIAMETER (RFC 6733)
Genband "Refinement 1"
XML/HTTP/SOAP/SMPP 3.4

Note: Protocols are supported to the extent necessary to support test actions.