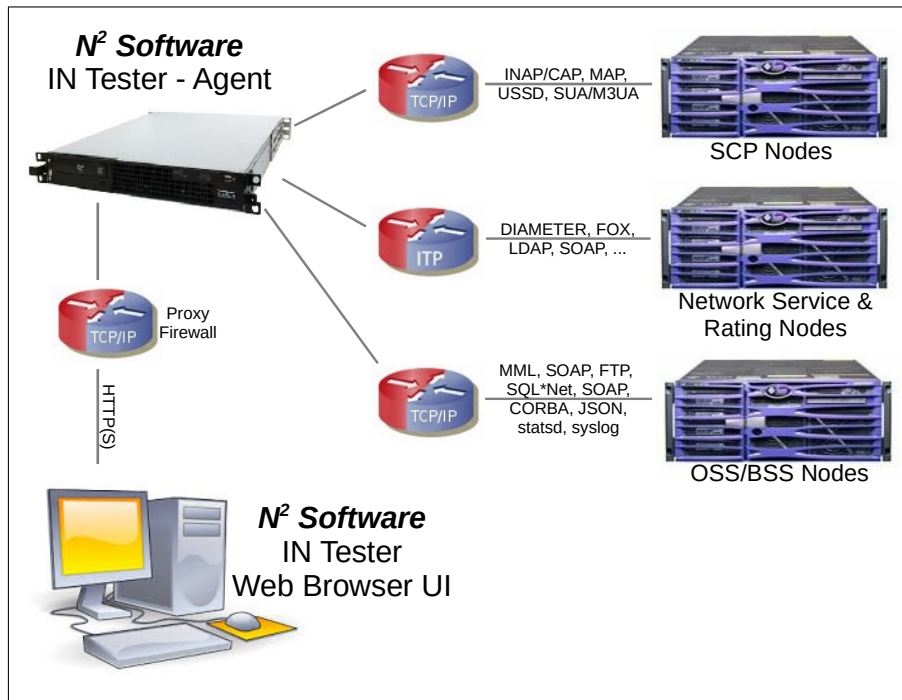


Summary

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.

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.

Web: <http://www.nsquaredsoftware.com/>

Email: info@nsquaredsoftware.com

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.