



# ISP-I™ Broadband Testing from Epiro

Customer Experience Analysis



The industry-leading solution  
for measuring fixed and mobile  
broadband performance

## Overview

The **ISP-I™ broadband analysis solution** empowers regulators, operators and service providers with a flexible, scalable test and reporting solution for understanding true customer experience of internet service and applications.

Virtually any of the industry's access technologies – ADSL, FTTX, Cable, 3G and WIMAX - can be tested to assist with network management and gather competitive intelligence across all available services.

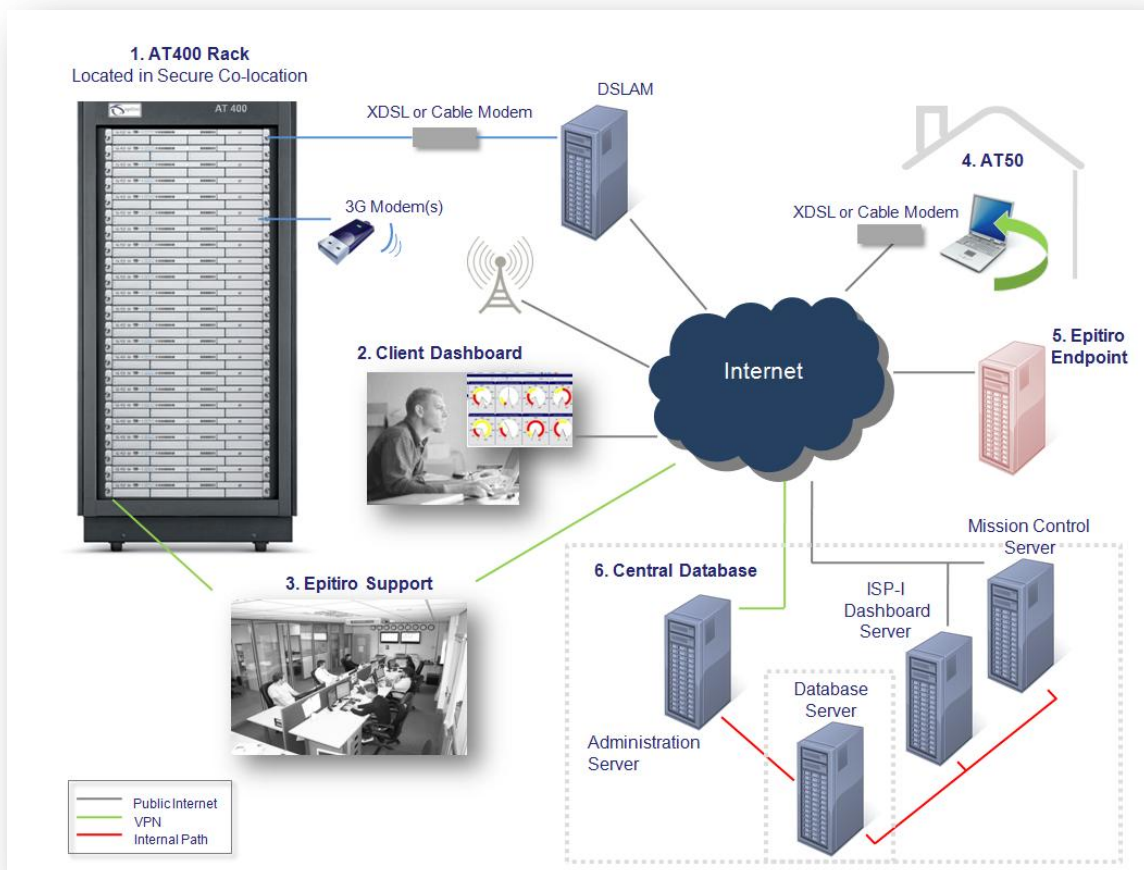
With a host of Key Performance Indicators, on-line views of metrics and the ability to automatically generate fault alerts and reports, **ISP-I™** is the complete broadband analysis solution.

## Test Architecture

The **ISP-I™** platform consists of a deployment of customer experience 'probes' that act as typical subscribers by connecting to the broadband network and performing routine tasks such as surfing, media downloading, sending emails, and streaming videos.

Key Performance Indicator (KPI) metrics that affect customer experience are recorded throughout the test sessions and the test results are forwarded to a central database where you can visually see quality statistics via the On-line Dashboard in a variety of graphs, tables and charts.

Probes can be located across a country or region of interest to test not just your network but the networks of competitors also.



## 4 Types of Customer Experience Probes

## One common Broadband Test Application

**ISP-I™** boasts 4 types of probes for measuring customer experience data in virtually any fixed or mobile situation. Each probe type runs the Broadband Test Application thus providing like-for-like testing and allowing direct comparisons between databases.

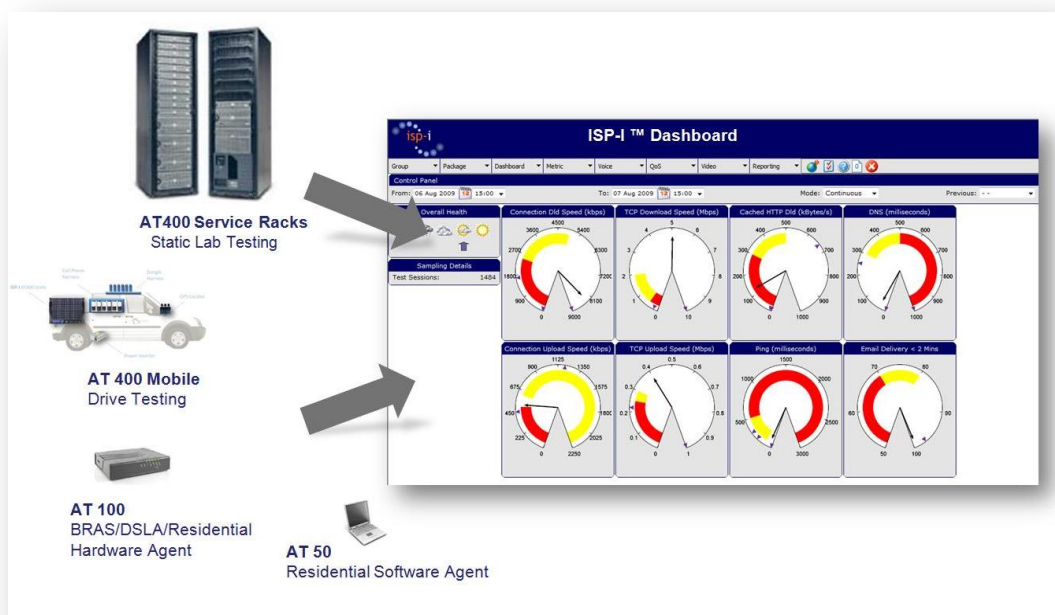
The **AT50** is a software probe that easily downloads to a selected panel of end user computers. It's ideal for large scale (nation-wide) analysis of networks as it scales economically and technically with ease.

Being a software solution, the AT50 works well for mobile (3G, LTE, WiMAX) broadband analysis

With its lower cost and ease of installation, the **AT100** hardware probe provides a practical means of deploying hardware to residential locations (consumer panels) or into 'last mile' handoff points (DSLAM, Cable Distribution) points in the network.

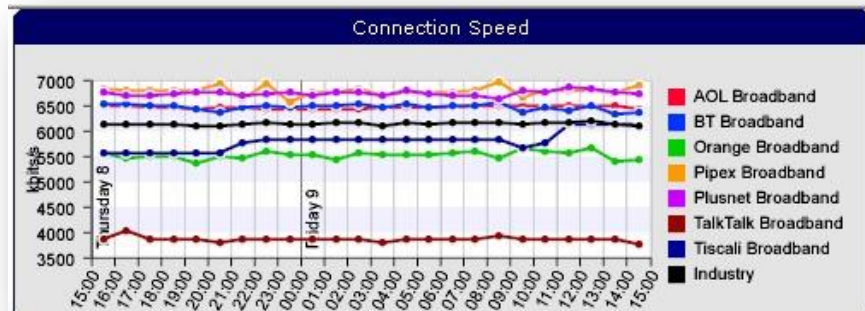


The **AT400** hardware probe is typically installed in controlled premises for detailed analysis of broadband services. The AT400 can run advanced analysis of Email, VoIP, Video and Traffic Management. The **AT400M** is the drive-test version of this enabling GPS data to be collected along with radio signal strength.



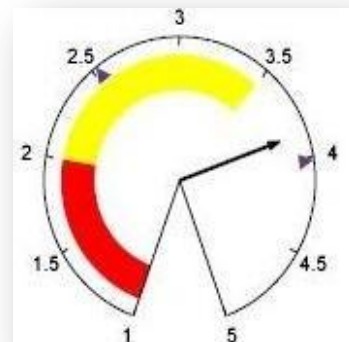
### 3 Key Scenarios for Broadband Testing

- ✓ **Competitive Intelligence** is essential for regulators and ISPs to understand the capabilities of all services in the market. Comparing individual metrics or overall performance over time, across a region or by a specific type of service is readily accomplished with **ISP-I™**.



- ✓ **Network Management and Quality Assurance** initiatives can be achieved as IP-I automatically alert staff when fault thresholds are exceeded. SNMP traps or an automatically generated email can be sent so your support staff is able to address customer-affecting issues straight away.

**ISP-I™** provides vital performance measurements for Capacity Planning showing historical views of service by geographical area and by service package. Using this intelligence network planners can predict the proper amount of infrastructure required and plan backhaul purchasing.

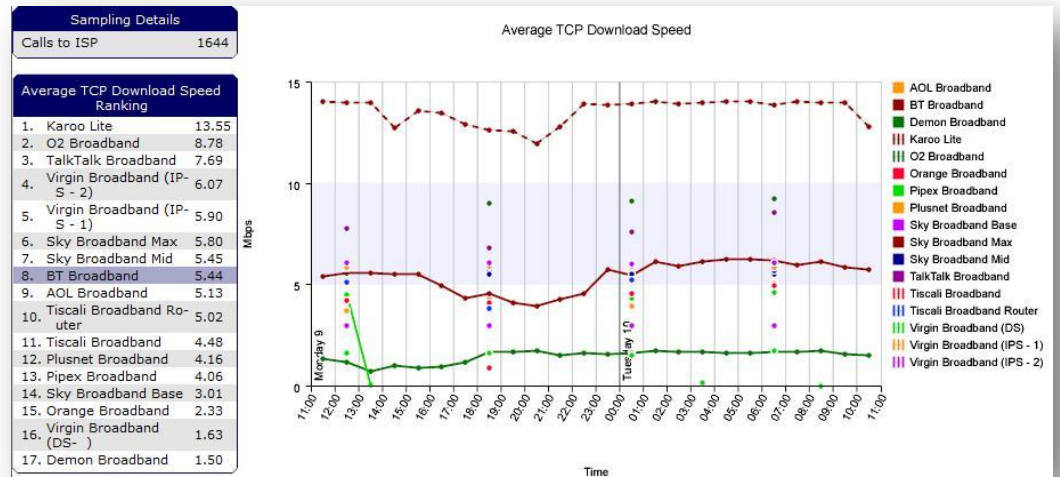


- ✓ **Pre testing** new devices and services is easily accomplished with **ISP-I™** to ensure they will meet customer expectations. Any of the probe types can be assigned to new services or areas where new services are being launched with specific chart and graphs made available on the dashboard and in reports.



## View the Performance of Any ISP or Mobile Network Operator

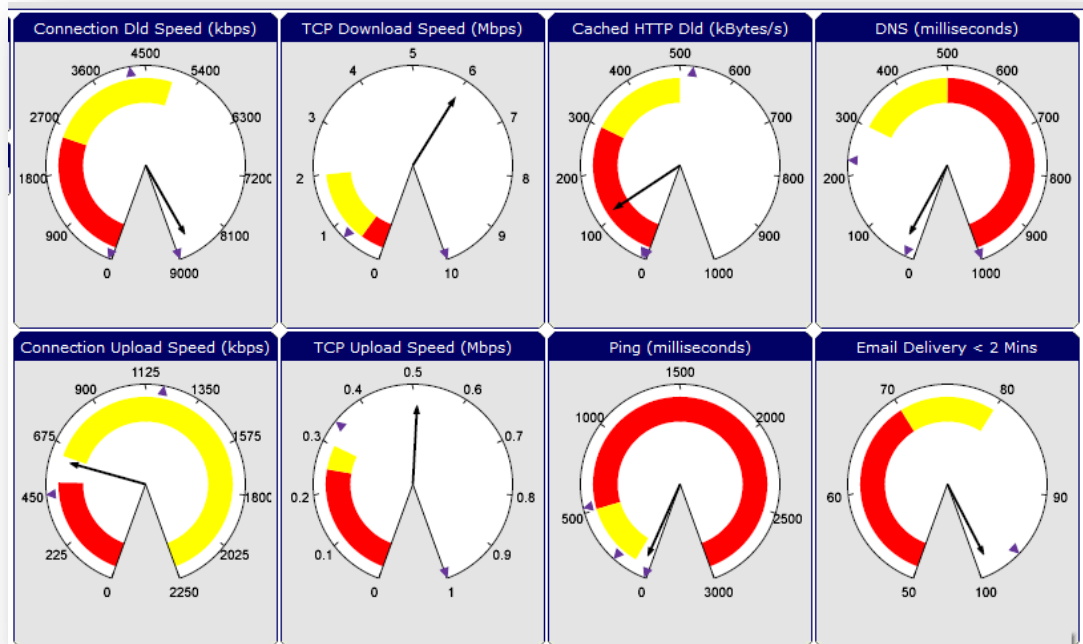
Each metric can be accessed online via the secure **ISP-I™** web browser interface. From there you can view up-to-the-minute data results and understand how your network is performing overall while also seeing the performance of other competing networks.



## Root Cause Analysis

**ISP-I™** goes beyond measurement of overall network health and quality performance and enables you to drill down to the root cause of network issues.

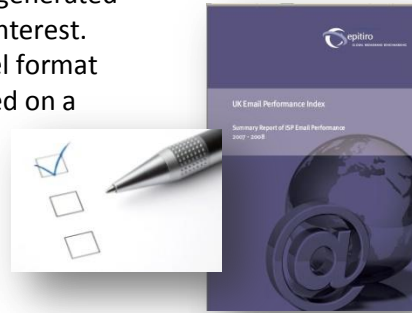
When probes are deployed in the core network, a view of network elements (MSC, DSLAM/MSAN, B-RAS and Packet Gateways) can provide comprehensive network insight for fast and accurate troubleshooting.



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## Easy Reports

Reports on any or all metrics are easily generated simply by selecting the type of data of interest. Reports can be presented in pdf or excel format and automatically published and emailed on a regular basis.



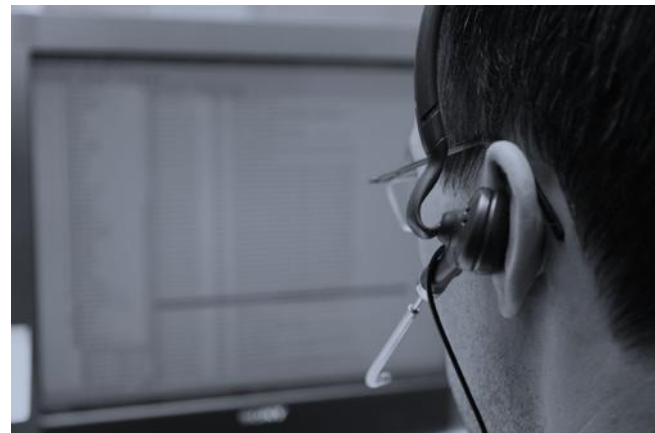
## Flexible Testing

Many aspects of the testing can be customized to meet requirements. The occurrence frequency of the test script is programmable while the destination, routes, duration of the test call, number tests per test call and more can be changed via EpiTiro's Network Operations Centre.



## Full Support

EpiTiro's Customer Services team goes well beyond typical 'product' support. Our team of professional services is available 24-7 to help you get to the heart of network issues and decipher the KPI data. **ISP-I™** remote access connectivity enables us have direct access to all your assigned probes plus we can see what you are seeing on screen - no guesswork over the phone. We're there to help you with training, interpret test results and share our insight into broadband network analysis.



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## Test All Broadband Access Technologies

**ISP-I™** is able to test to and from virtually any type of broadband access technology that is popular around the globe. From fundamental analysis of broadband services through to testing of applications, **ISP-I™** has a rich selection of Key Performance Indicators which reveal the overall competitive landscape or the performance of services by any single probe.

### ADSL ■ Cable ■ FTTH



Metrics such as TCP Throughput, HTTP Speed, Packet Loss and Latency help to show the quality of broadband service experienced by subscribers.

### 3G Mobile



Mobile phone radio signal strength and CellID help you to understand the environmental and location affects of mobile broadband services.

### WiMAX



Essential transmission characteristics such as signal-to-noise (+interference) ratio (SNR/SINR) and carrier-to-noise (+interference) ratio (CNR, CNIR) can be measured for WiMAX installations. In addition to broadband performance, voice quality can also be analysed for a complete WiMAX analysis.

### Traffic Management



ISP-I generates torrent-type traffic to monitor the way in which any or all service providers handle media downloads. Both upload and download TCP Throughput speeds are recorded for a true indication of movie and MP3 downloading experience.

### VoIP



UDP testing simulate actual VoIP signals to determine packet loss, jitter and delay based on real VoIP traffic scenarios. IP addressing adds further insight.

### Video



Video Streaming Testing from Flash, Realplayer and Windows Media Player shows the quality of the stream including start/stop time, frame count, dropped frames and more.

### Femtocell Picocell



With the ability to generate multiple simultaneous voice and data connections over a single access point (AP) **ISP-I™** can fully load-test femtocell and picocell services to provide a real-life view of customer experience.



## Metrics by Access Technology

ISP-I™ has a suite of key performance indicator metrics for testing all access technologies plus the ability to measure popular applications.



Metrics	AT400	AT400M	AT100	AT50
<b>Broadband Test Application</b>				
Synchronization Speed	✓	✓	✓	✓
HTTP D/U Speed	✓	✓	✓	✓
TCP D/U Speed	✓	✓	✓	✓
FTP D/U Speed	✓	✓	✓	✓
Traffic Management	✓	✓		
Traceroute	✓	✓	✓	✓
DNS Resolution Time	✓	✓	✓	✓
Ping Time	✓	✓	✓	✓
Packet Loss	✓	✓	✓	✓
Failures on above metrics	✓	✓	✓	✓
<b>Email Testing</b>				
Delivery Time	✓	✓		
Failures	✓	✓		
<b>IP Voice</b>				
TCP/UDP Performance	✓	✓	✓	✓
E-Model MOS	✓	✓	✓	✓
Packet Loss	✓	✓	✓	✓
Jitter	✓	✓	✓	✓
Round Trip Delay	✓	✓	✓	✓
IP Address	✓	✓	✓	✓
Voice Analysis*	✓	✓		
<b>Video Metrics</b>				
Start-up time	✓	✓		
Non-playing time	✓	✓		
Re-buffering Time	✓	✓		
Bandwidth/Throughput (kbps)	✓	✓		
Delivered Bandwidth	✓	✓		
Delivered Frame Rate	✓	✓		
Frame Drops	✓	✓		
<b>Radio Metrics</b>				
RSSI	✓	✓		
Cell ID	✓	✓		
CINR	✓	✓		
SINR	✓	✓		
CNR	✓	✓		
SNR	✓	✓		

*\*ISP-I has an extensive suite of voice test for PESQ MOS, Call Setup and Completion statistics*

## ISP-I™

ISP-I™ is used by regulators, operators and ISPs for authoritative analysis of voice and broadband networks.

## The choice of industry

Whether it's benchmarking the leading ISPs across a country, managing network performance or launching new services ISP-I™ has the capability to meet your analysis requirements.



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