

## Mobile Device Perspective

### Mobile Device Perspective Highlights:

**Test and monitor** on real handsets connected to live networks, around the world

**Access remote networks** to conduct on-device interactive testing

**Monitor and report** on service degradation across locations, networks and handsets

**Use the largest hosted test & measurement network** to cut significant capital, travel and training costs

### Test and monitor using real handsets

Given the current complexity and multitude of handsets, Keynote Mobile Device Perspective offers you the ability to monitor mobile applications, content and services on real handsets. With Mobile Device Perspective ensure delivery of the highest quality user experience on any device over any network around the world.

Mobile Device Perspective® gives you the ability to dramatically improve mobile quality with on-device interactive testing and performance monitoring.

Interactive testing offers three modes of operation: functional testing, record & playback and full test automation using advanced scripting.

The mobile performance monitoring capability delivers a fully automated solution to measure, correlate, diagnose and report on the quality of services using real mobile handsets over live networks.

### Interactive Testing

Mobile Device Perspective gives you remote access to actual handsets to perform on-device interactive testing. The handset is displayed on your desktop screen as a WYSIWYG representation giving you full and accurate remote visibility and control.

With Mobile Device Perspective you have the ability to download, install and interact with applications directly on the handset. Mobile Device Perspective captures images at a full-frame rate, delivering the actual video quality from a real handset.

### Functional Testing

Mobile Device Perspective utilizes direct keyboard mapping for full handset control from the convenience of your computer. The handset LCD information is streamed back, in real time, to give you an optimal test environment.

The on-device interface allows you to press handset buttons; view LCD displays; connect/ disconnect the battery; reset the handset; or test signal strength—remotely.

### Record & Playback

Mobile Device Perspective's interactive development environment allows developers and QA staff to record transactions and generates and saves scripts.

All recorded sessions are saved as PERL scripts. With these scripts, you can add powerful yet flexible test cases and have absolute command over the inputs, outputs, conditions, timings, and results. As the scripts run you will be able to watch each step execute on the handset and identify any problems that may result.

## On-Device Testing

**Remotely access** any real handset connected to a live network and control it using your desktop keyboard

**Interactively** test applications, services and content directly on an actual handset

**Download** content and play streaming video directly from the handset

**Record & Playback** user interactions to expedite the completion of development and QA

**Automate** test cases across handsets and locations using a powerful scripting engine

**View** the results of tests through a single Web portal

## Test Automation

Mobile Device Perspective comes pre-loaded with the following script utilities: key presses, power cycling a handset, sending AT commands, and comparing images. These script utilities help generate a variety of use cases to add to your automated test case scenarios.

With Mobile Device Perspective, you can rapidly create and automate hundreds of scripts that can walk through multi-step transactions.

These automated scripts can be reused to test a single application on many handsets making the QA assurance process more productive and efficient.

Using Mobile Device Perspective's test automation capabilities, you can run tests in batches and learn quickly which tests passed or failed with details on where and why they failed.

All of your automated test results are conveniently located in a single unified Web portal.

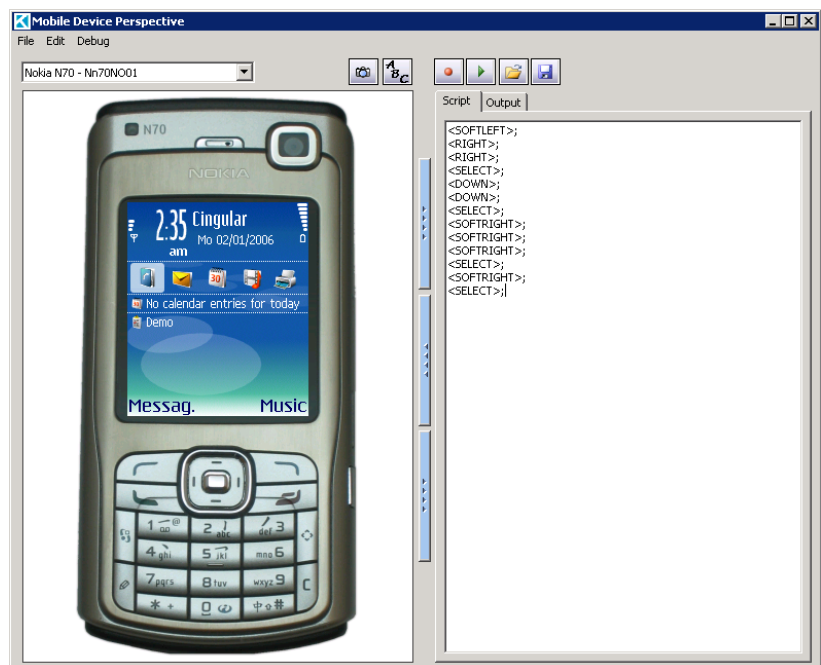
The Web portal expedites problem diagnosis by displaying the image of the LCD during a failure as well as details on the exact transaction that failed.

## On-Device Monitoring

Post-deployment monitoring is vital to maintaining customer loyalty and addressing performance and availability problems. Keynote Mobile Device Perspective tracks response time, accurate content rendering and video streaming quality. Mobile Device Perspective enables you to measure all of this from the most reliable source, the handset.

Using MDP you can identify which transactions are underperforming across locations, networks and handsets. Determine whether the problem was an isolated incident in a single point in time or a performance degradation over time.

Keynote has already deployed real devices for On-device monitoring in multiple locations worldwide. Some of the devices that are deployed



*On-device interactive testing allows developers and QA staff to functionally test on a real handset, record and playback sessions, and automate tests, all using a powerful scripting engine.*

## On-Device Monitoring

**Create** automated monitoring scripts using a powerful scripting language

**Measure** timing characteristics of single or multi-step transactions through customizable scripts

**Detect** problems before they affect end users and avoid costly downtime and lost revenue

**Define** thresholds and set alerts to notify your Web portal or management system

include popular smart phones such as iPhone 3G, Samsung Instinct, Blackberry Curve, Nokia N95 and others. Customers can easily sign-up and begin monitoring in remote locations and carriers without having to be physically present.

Listed below are key features of MDP On-device monitoring.

### End User Monitoring Metrics

Mobile Device Perspective triggers common user actions, measures the service response and tracks whether critical transactions can be completed.

The key metrics are:

**Availability:** a view of whether the service was accessible or not, based on the number of successful tests within a selected time interval that were under the latency threshold.

**Latency:** defined by how long it took to complete the task from the subscriber perspective, e.g. the time it took to load a page in a browser.

**Error Count:** collect non critical error information along the monitoring process to optimize your service quality

**Geographic handset location:** Compare mobile transaction performance across locations, handsets and carriers from a single screen.

### Reporting

The Mobile Device Perspective Web portal provides a high-level dashboard view of how content and services are performing, as well as more detailed analysis and reports of particular measurements over time. Based on the ongoing measurements, you then have the ability to customize and run performance and availability reports up to the hour or trend over weeks or months.

### Alerts and Notifications

Customized real-time alerts and notifications are sent via e-mail, SMS or SNMP trap when errors occur or defined thresholds are crossed.

Diagnostic tools are provided to quickly understand and respond to error notifications.

		1/29		1/30				
1/29 9:00 AM to 1/30 9:55 AM		6:00 AM to 9:59 AM	10:00 AM to 1:59 PM	2:00 PM to 5:59 PM	6:00 PM to 9:59 PM	10:00 PM to 1:59 AM	2:00 AM to 5:59 AM	6:00 AM to 9:55 AM
<b>IM</b>	Instant Messenger Seattle, WA	100%	100%	100%	93.8%	100%	100%	100%
<b>WWW</b>	Download Knoxville, TN		0%	0%	0%	0%	0%	0%
<b>HTTP</b>	Home Page San Mateo, CA	100%		100%	100%	100%	100%	100%
<b>OTA</b>	Provisioning Knoxville, TN		100%	100%	100%	100%	100%	100%
<b>OTA</b>	Provisioning LOM2, IL	93.8%	100%	100%	81.3%	68.8%	100%	100%
<b>Portal</b>	To Go Ringers Kansas City, MO	100%	100%	100%	100%	100%	100%	100%
<b>Streaming Video</b>	- Sprint San Diego, CA	100%	100%	100%	100%	100%	100%	100%
<b>Streaming Video</b>	- Verizon Chicago, IL	93.8%	100%	100%	93.8%	100%	100%	100%
<b>Streaming Video</b>	- Verizon Dallas, TX	100%	100%	93.8%	93.8%	100%	100%	100%
<b>Streaming Video</b>	- Verizon New York, NY	86.7%	93.8%	100%	93.8%	100%	100%	100%
<b>Streaming Video</b>	- Verizon San Diego, CA	100%	100%	81.3%	93.8%	100%	100%	93.8%
<b>Yahoo</b>	Home Page Seattle, WA	0%	0%	0%	0%	0%	0%	0%
<b>Zingy</b>	Ringtones Seattle, WA	100%	93.8%	100%	100%	100%	100%	100%

*Using Mobile Device Perspective's performance scoreboard, quickly see which locations, handsets, and networks are underperforming. Drill into any data point to view reports with transaction and measurement details.*

## Supported Mobile Services:

- SMS
- MMS
- Email
- PTT
- IM
- IVR
- Ringtones
- Video Streaming
- Games

## About Keynote

Keynote Systems (NASDAQ "KEYN") is the global test and measurement company for mobile communications and online business performance.

As an independent and trusted third-party, Keynote provides IT and marketing executives with an unbiased view into their Internet services from around the world. For over a decade, we have been providing measurement data and testing capabilities that allow companies to understand and improve their customer's online and mobile experience.

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## Data Feed Service

Use the Keynote data feed service to retrieve raw data on a daily basis and analyze it with your own software analysis tools. The data can be read as a flat text file or imported into a spreadsheet or database.

## Mobile Device Perspective is Your Competitive Advantage

Whether you are a large carrier, a mobile virtual network operator or a content provider, Keynote Mobile Device Perspective offers a complete solution for testing and monitoring mobile services using real handsets.



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