

[SOLUTION SHEET]

Platform: TEMS™ MONITOR MASTER

- Find problems before subscribers do
- Capture the diagnostic information required to fix issues
- Ensure availability of services



TEMS™ MONITOR MASTER END-TO-END MONITORING SOLUTION

TEMS Monitor Master is a carrier-grade software and hardware solution to test and monitor wireless and fixed line services.

SERVICE MONITORING CHALLENGES

- Customer satisfaction hinges on delivering proven, high-quality services.
- Some problems cannot be detected from within the network.
- Problems must be detected immediately.
- Correcting problems depends on quickly collecting detailed information.
- The range of services that must be monitored for quality is vast and ever-growing.

SOLUTION

TEMS Monitor Master provides a comprehensive solution for end-to-end monitoring which is used by regulators, operators, and content providers around the world.

- Active test probes run 24 hours a day to test any service on any bearer at any time – all with a Layer 3 Trace option.
- Threshold-based alarms provide automatic alerts when problems arise.
- Centralized reporting and data warehousing support short-term, long-term, and trend analysis reports.

BENEFITS

- Monitors services from the subscriber's perspective.
- Provides instant notification if Key Performance Indicators (KPIs) go beyond their ranges.
- Uses trend analysis to forecast problems before they happen.
- Adapts easily to emergent technology without product upgrades.
- Allows fast diagnosis and resolution of faults using detailed trace information.
- Promotes benchmarking against competitors and strategic goals.

TEMS MONITOR MASTER OFFERS:

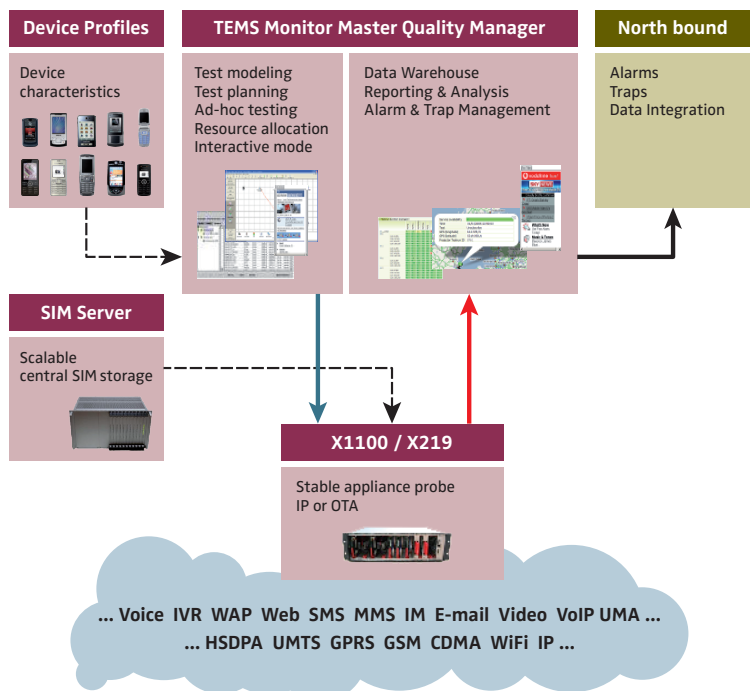
- Flexible centralized test scheduling and distributed probes to provide full 24x7 monitoring across your entire network.
- User-configurable alarms and dashboards to warn when key performance indicators (KPIs) move outside the desired range.
- Trace capability to capture the detailed measurements you need to investigate complex issues.
- Interactive Mode to run ad-hoc real-time tests at any location.
- Powerful and configurable user reporting and data export in the right format for downstream systems.

MONITORING SERVICES FOR QUALITY AND RELIABILITY

Malfunctioning services cost operators money and, potentially, subscribers. When there is a problem, it must be identified immediately, with enough detailed information to diagnose and correct the problem quickly. Even if services are working, the quality must meet or exceed subscriber expectations in order to maintain the customer’s satisfaction.

It is not always easy to evaluate and maintain service quality. Modern services are complex and often involve third parties. All the parts of the network may appear to be working properly, and yet the service still fails from the customer’s point of view. Therefore, it is not enough to monitor the parts of the delivery chain; instead, it is vital to test each service from one end to the other.

TEMS Monitor Master’s End-to-End Monitoring Solution supports this approach. Based on our award-winning TEMS Monitor Master platform, it can test virtually any service, over all major technologies, with all the devices that customers use. With its powerful functionality and flexible architecture, TEMS Monitor Master provides an advanced solution for around-the-clock monitoring of complex user transactions in mobile and fixed networks. Tests to simulate users accessing different services are scheduled to run at different locations, using different SIMs and APNs. Characteristics of thousands of different devices are available to simulate nearly any user’s experience. The flexible functionality enables testing of all of today’s services and will also adapt seamlessly to the new services introduced by LTE, IMS, and Web 2.0.



Typical TEMS Monitor Master Architecture

USING TEMS MONITOR MASTER FOR END-TO-END MONITORING

Active testing. Traditional OSS monitors new services by performing call traces. With mobile services, however, the entire network – base stations, gateways, and devices – can be working perfectly and still the application fails. TEMS Monitor Master promotes active testing that monitors every service throughout the process.

User simulations. TEMS Monitor Master runs tests to simulate real users using real devices on real networks.

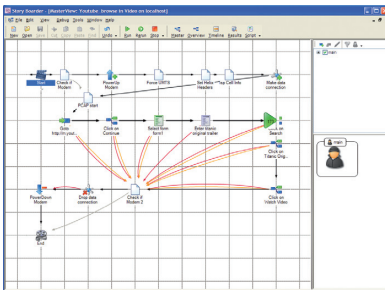
Flexible testing. Tests are available off the shelf, and can also be created using Story Boarder, TEMS Monitor Master’s graphical user interface. The drag-and-drop editor creates tests easily for complex services, without any programming knowledge. This approach allows tests for new services to be created easily.

Distributed monitoring. A typical system consists of many agent appliances at locations across the network. These appliances run tests to monitor the service, generating large volumes of detailed data – tens of thousands of results per day on a large system.

Reliable components. TEMS Monitor Master components are built using Ascom’s established Quality Manager Architecture, to provide the level of flexibility, reliability and performance demanded.

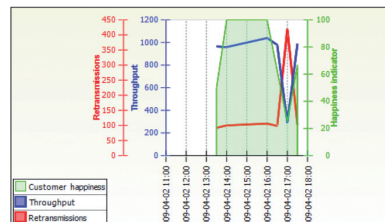
- The platform supports distributed agent appliances and centralized management, and is extremely configurable and flexible.
- A SIM Server provides centralized storage for all the SIMs. This allows flexible call campaigns including roaming scenarios.
- Interactive Mode allows probes to be used in any location, such as a phone on the desktop, for ad-hoc interactive voice and data testing.
- Web based reporting is highly flexible and user configurable. It supports high level KPI dashboard reporting all the way to Layer 3 radio trace presentation to support the needs of everyone within an organization.

Example Story Boarder Script



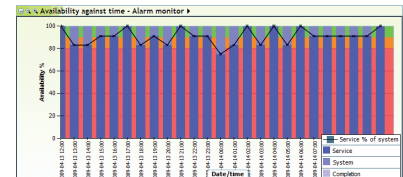
Details of what happened during a test are recorded in complete detail. This starts at the application layer where content is captured, and includes the IP layer as well as Layer 3 Trace data from the radio interface.

Example TEMS Box Office Report



Long-term results are stored in a data warehouse. Web-based reports can be created using TEMS Monitor Master’s reporting platform, TEMS Box Office. Extremely flexible, TEMS Box Office allows operators to report on new services instantly.

Alarm Dashboard



In addition to reporting, TEMS Monitor Master includes alarm capabilities to alert operators to issues that affect services. Alarms include e-mail alarms and SNMP traps to integrate with OSS northbound destinations such as Netcool or HP Openview.



USAGE SCENARIOS

24-hour monitoring. Regional and even nation-wide networks can be monitored by a system of TEMS Monitor Master distributed agents. The results can be used at the board level, to assess the delivery of services against group-wide KPIs and against competitors, down to the details of resolving issues with specific handsets with network infrastructure.

Video streaming. TEMS Monitor Master can also conduct 24-hour video streaming tests which navigate through the operator's portal and initiate a real time stream of video content to confirm both availability and quality.

Voice and IVR. TEMS Monitor Master also monitors voice services including IVR systems. It can navigate around an IVR system and record the responses, to check they are correct.

VoIP. Voice over IP services can be monitored by TEMS Monitor Master to confirm that all parts of the VoIP service are functioning. It also monitors the voice quality as perceived by end users.

Visual Voice Mail. TEMS Monitor Master can be used to monitor visual voice mail services for iPhone™ subscribers, to measure end to end correctness, performance and availability

BENEFITS OF TEMS MONITOR MASTER

- Lower cost of fault correction
- Improved diagnostics with shorter error resolution times
- Minimized revenue outage
- Increased user satisfaction, which lowers churn
- Improved usage of applications

Supported by a team of expert consultants, TEMS Monitor Master provides the carrier-grade tools operators need now and in the future to deliver a visible return on investment.