

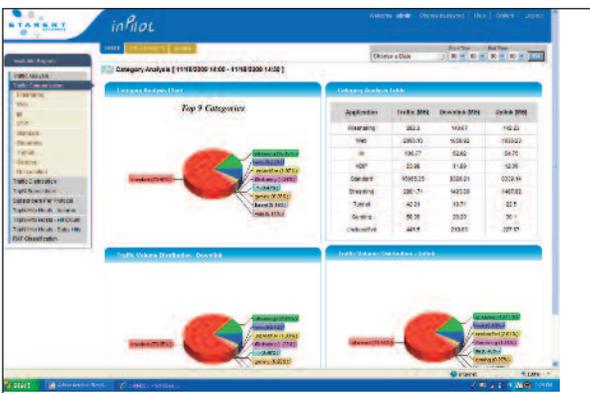
# Mobility Unified Reporting System

**W**hat are the usage patterns of individual subscribers—how do they vary by time of day, subscriber group, or region? What applications are consuming the most bandwidth on your network? Are there subscriber segments ripe for new services?

As a mobile operator, you've deployed a mobile broadband network that provides subscribers with Internet access, messaging, streaming video, audio downloads, and other multimedia services.

Session, application, and network knowledge is critical to provide a superior service experience to customers. Real-time statistics and usage trends can help prevent network issues before they occur and identify customer segments for targeting new services.

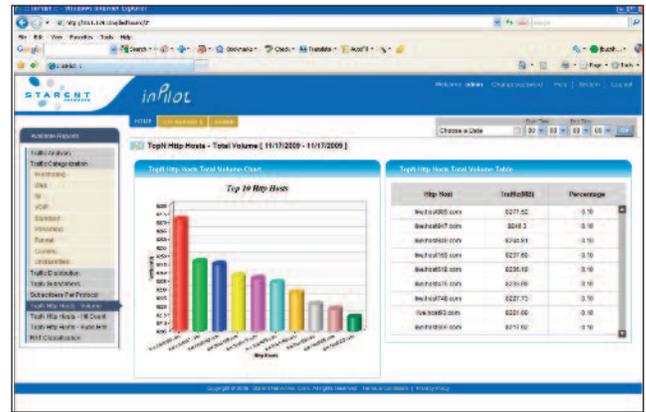
Starent's Mobility Unified Reporting System captures real-time service, tracing, and troubleshooting information and outputs a comprehensive set of statistics, customized reports, and statistical trending from a single unified platform.



Traffic categorization reports allow the viewer to see connections, throughput, bandwidth, and more.



Reports drilled down by individual subscriber help optimize network performance and introduce targeted services.



Reports like the Ten Top HTTP Hosts can be generated to provide a snapshot on subscriber usage.

**Starent's Mobility Unified Reporting System provides the following key benefits:**

- Optimize network performance
- Introduce targeted services
- Plan infrastructure investments

Unlike external deep packet inspection (DPI) solutions, Starent Networks integrates DPI, along with its In-line Services, into the mobile access gateway function. This integration of functions provides a very cost-effective solution, eliminating the need for additional platforms to provide a reporting solution. And with access to all control and data plane packets, the system can report on any attribute associated with a subscriber session.

**Examples include:**

- **IMSI/MSISDN/APN**—identify top subscribers utilizing the network based on their volume. Use APNs to view bandwidth utilization for a particular corporate group.
- **RAT**—identify if a subscriber is using a 2G network or 3G network and optimize services accordingly.

**Optimize Network Performance**

Engineering and operations organizations can now have access to powerful statistics to help optimize the performance of the network, gauge effectiveness of traffic policies, and identify subscribers or applications that are consuming an inordinate amount of bandwidth.

**Examples include:**

- View total data usage per subscriber
- Protocol distribution during the day – identify the busy hour
- Top user report can highlight heavy users and the need for fair usage policy adjustments

**Introduce Targeted Services**

Marketing departments are now armed with the usage patterns of individual subscribers and can identify subscriber groups or segments to target for new service offerings.

**Examples include:**

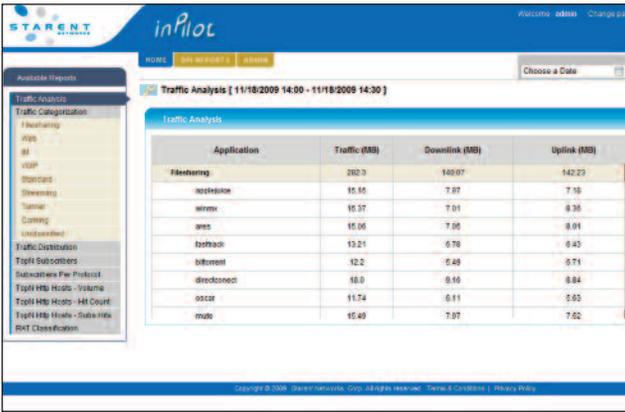
- Number of subscribers that like a particular service, for example, gaming
- Top URLs browsed – create a premier service bundle, for example, a sports fan package
- Subscriber quota usage – identify up-sell target if subscriber is consistently going over quota

**Plan Infrastructure Investments**

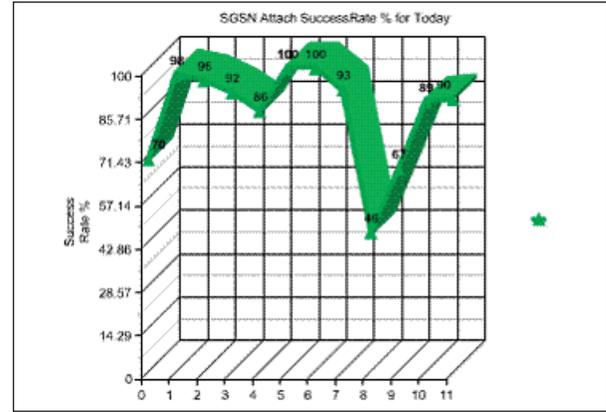
The planning organization now has access to important data around application usage, key performance indicators, and subscriber behavior to more effectively plan infrastructure investments.

**For example, organizations can see:**

- Total volume per gateway
- Total bandwidth utilized per gateway
- Total number of subscribers per gateway



With gateway statistics, it becomes easier to plan for network updates and improvements.



Key Performance Indicators help with infrastructure planning activities.

## Report Type Examples

### Protocol

- Per hour/day/week/month
- Global—per APN
- Volume distributions
- Sum over all subscribers

### KPI's (Key Performance Indicators)

- Daily/Weekly/Monthly
- SGSN attach success rates
- Inter SGSN RAU attach success rate
- Iu interface throughput (Mbps) and utilization
- Intra SGSN RAU attach success rate
- PDP activation success
- Gr/Gn interface throughput (Mbps) and utilization

### Subscriber

#### Data Usage

- Total volume per user for top N<1000 subscribers— by fixed intervals (minute, day, week, month)
- Total traffic vs. traffic used by top N<1000 subscribers
- Per protocol volume for unique subscriber for each of the top N<1000 subscribers

#### Subscriber per protocol/service

- Number of subscribers for each protocol type (number and percentage)

#### RAT Type

- 2G vs. 3G service

#### Device Type (IMEI)

- Number of subscribers for each device type

### Applications

#### P2P

- Throughput for P2P counters
- Connections, bandwidth, and hosts by protocol
- Total bandwidth

#### VoIP

- Average call duration
- Calls by protocol (SIP vs. RTSP)
- Minutes by protocol
- Bandwidth by protocol

#### Firewall

- Total Denial of Service (DoS) attacks

#### Gaming

- Bandwidth and hosts by protocol
- Total bandwidth

#### HTTP

- Services: URLs, hostnames, aggregation of URLs to common services, top N by host name
- Content type: Flash video, images, plain text, compressed data

#### In-line Services

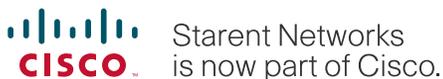
- Reports on content filtering In-line Services

## CONCLUSION

As mobile broadband network subscribers expect more services, it is critical that operators have access to session, application, and network knowledge. Starent's Mobility Unified Reporting System captures the real-time service, tracing, usage, and troubleshooting information operators need and delivers a comprehensive set of statistics, reports, and statistical trending from a single platform.

Starent's Mobility Unified Reporting System is a component of our Intelligent Management suite which includes:

- Unified Reporting—comprehensive set of statistics and customized reports
- inTracer—high performance network troubleshooting and monitoring tool
- Element Management—protocol monitoring, session monitoring and auditing, and compilation of bulk statistics



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