

byte  mobile

# Unison™

## Smart Capacity™ Platform

Increase Existing Network Capacity by 50%  
Save 20-30% of Planned Capex



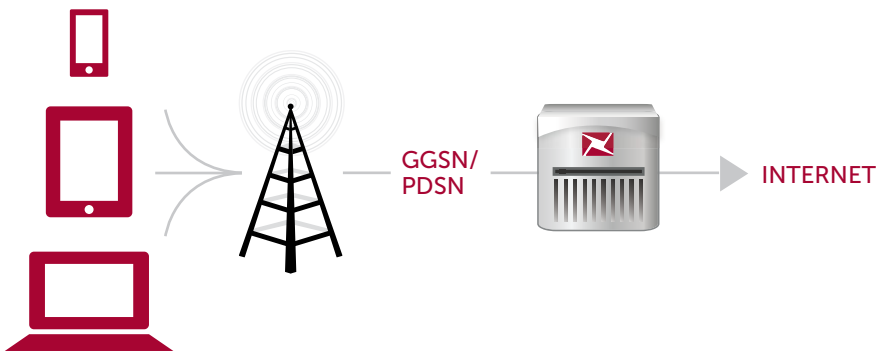
# Unison

## Smart Capacity Platform

Designed for 3G and 4G core networks, the Unison Smart Capacity Platform delivers the next generation of intelligent capacity management for mobile video and web applications. The Unison platform helps mobile network operators:

- Control network costs through improved utilization and performance of existing network capacity
- Increase revenue growth by delivering more content to more subscribers
- Reduce churn by improving the user experience for video and other bandwidth-intensive applications
- Monetize traffic through tiered services based on policy enforcement and web gateway services

With the Unison platform deployed in their core network, operators can reduce data traffic volumes by 40-60% – increasing existing capacity by 50%. As a result, they can defer 20-30% of planned capital expenditures (capex) for infrastructure build-out required to meet demand for capacity.



The Unison Smart Capacity Platform is deployed on industry-standard hardware next to the GGSN or PDSN in the mobile packet core. The preferred hardware is the IBM BladeCenter.

The Unison platform's content- and subscriber-aware capacity management solutions give operators vital tools to address network congestion and deliver tiered services. Unison Smart Capacity applications dynamically manage video and web traffic based on network conditions, yielding extra capacity in the network to support increased usage, additional subscribers and a higher quality of experience (QoE) for all subscribers.

Higher QoE means reduced stalling of video and faster downloads of web pages. As a result, operators can differentiate their networks, attract new customers and reduce churn. The Unison platform also provides web gateway functionality for the creation of new tiered service plans.

### Market Leadership – Continued Innovation

Bytemobile's Unison Smart Capacity Platform has been designed from the ground up to process video and web traffic in mobile networks with reduced complexity and increased efficiency. It is backed by over a decade of product development and network deployment experience. The Unison platform enables operators to increase available bandwidth to keep up with growing subscriber demand and the evolution of new mobile devices and applications.

### New features in Unison 6.0 include:

- *Streaming policy control* for all major video and audio services – including maintenance of rights for Digital Rights Management (DRM) content – increasing network efficiency and enhancing multimedia delivery
- *High-definition (HD) video optimization* for a quality mobile HD video viewing experience
- *Video caching with adaptive optimization* to balance network performance across viral and long-tail video content, resulting in faster download times and significant bandwidth utilization improvements

## Applications

The suite of Bytemobile applications available on the Unison Smart Capacity Platform offers operators improved network *performance*, greater *control* of their network and detailed network *intelligence*.

## Video Optimization – Smart Capacity

In December 2010, YouTube announced that 200 million videos per day were being played on mobile devices – up 300% from January 2010.

In commercial network deployments, the Unison platform is capable of reducing video traffic by 35-45% and web traffic by 30-35% – thus freeing up capacity for existing or new subscribers.

As the global market leader in network capacity management, Bytemobile helps operators manage explosive growth in video traffic with Lossless and Lossy Video Optimization.

### Lossless Video Optimization

Lossless Video Optimization allows operators to reduce the amount of video traffic in their networks – without changing the quality of the content – using the following technique.

*Just-in-Time Delivery* manages the download of video over the network to match the rate at which it is being watched by the subscriber. This improves capacity utilization and performance by minimizing wasted traffic caused by video downloads to a buffer, which are terminated before viewing completion.

### Lossy Video Optimization

Lossy Video Optimization removes inefficiencies in the encoding of video and optimizes the video to better suit the network and the device. It addresses both HTTP Progressive Download and RTMP Streaming traffic, using the following techniques:

- *Quality-Aware Transcoding* to deliver video in the most efficient codec without degrading quality. This reduces the video traffic load on the network.

- *Dynamic Bandwidth Shaping* to match the video bit rate to the amount of bandwidth available in the network. This minimizes video stalling and improves the user experience.

### Video Caching

Video Caching reduces the amount of bandwidth consumed in the packet core and the Internet backhaul, and improves the user experience by moving content closer to the subscriber.

Caching allows offline optimization processing during non-busy hours and delivers the following benefits:

- Improved start-up times – by moving content closer to the user
- Reduced stalling – by avoiding congested links and overloaded servers
- Reduced hardware requirements – by optimizing content once and then serving it multiple times
- Lower costs – by reducing traffic on links to the Internet

### Policy Control

A growing percentage of data traffic in mobile networks is being generated by streaming media applications. These applications transmit data at the highest quality supported by the network, often consuming as much capacity as possible. The Unison Policy Control application is designed to address this issue and also limit low-priority traffic such as automatic software updates during peak hours.

- *Streaming Video Policy Control* enables operators to manage the bandwidth consumed by streaming video – encrypted and unencrypted – such as RTMP and HTTP live streaming.
- *Streaming Audio Policy Control* allows operators to manage bandwidth consumed by streaming audio applications.
- *Software Download Policy Control* lets operators time-shift automatic

software update traffic from busy to non-busy hours.

## Traffic Management for 3G and 4G Networks

The Unison Smart Capacity Platform provides mobile operators with fine-grained control over the traffic flows in their networks. The Traffic Management application offers the following tools:

- *Content Filtering* to protect subscribers from objectionable content
- *URL Redirection* to manage both the routing of traffic flows through their networks and the services that are applied to each flow
- *Quota Management* to manage data consumption and enforce fair use policies
- *Partner Mediation* to securely provide subscriber information to trusted content partners

When integrated with the Policy Control and Charging (PCC) architecture, the Unison platform operates as a Policy and Charging Enforcement Function (PCEF).

### Network Intelligence

The Unison Smart Capacity Platform provides operators with valuable network intelligence through a sophisticated analytics and reporting system. This system offers deep insight into the traffic and content mix, data volumes and trends, optimization performance, and other factors. The analytics component consists of the following elements:

- *Key Performance Indicator (KPI) tool* to provide detailed metrics on a per-site basis
- *Centralized Dashboard* for network-wide and even multi-operating company analysis
- *Data Loader* for integration with third-party analytics tools

# Bytemobile: Smart Capacity at the Core™

Bytemobile's Smart Capacity platform gives mobile operators more control of existing network resources to manage escalating subscriber demand for capacity due to video and other bandwidth-intensive content and applications. By deploying the Unison Smart Capacity Platform in the mobile network, operators can defer costly network capital expenditures and control operating expenses, while improving revenue growth and profitability. Bytemobile® Smart Capacity solutions have been deployed with over 125 operators in 60 countries, including 8 of the world's top 10 tier-one carriers. To learn more, visit [www.bytemobile.com](http://www.bytemobile.com).

## Protocol Support and Standards Compliance

### Infrastructure

#### IETF

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RFC 2865 RADIUS  
RFC 2251 LDAP  
RFC 3588 Diameter  
RFC 791, 1122, 1191 IPv4  
RFC 793, 1323, 2001, 2018 TCP  
RFC 1945, 2109, 2518, 2616, 2817, 2965 for HTTP  
RFC 1035 DNS  
RFC 2784 GRE tunneling

#### 3GPP

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Policy and Charging Control TS 29.212 version 9.0 (Gx Interface)

#### IEEE

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802.1Q VLAN

### Web Optimization

#### IETF

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RFC 1945 HTTP v1.0  
RFC 2616 HTTP v1.1  
RFC 821 for SMTP  
RFC 1939 for POP3  
RFC 1731 for IMAP 4  
RFC 765 for FTP  
RFC 3977 for NNTP  
RFC 1952 for Gzip file format  
RFC 1521 MIME Multipart

#### Image compression

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GIF: 87 and 89a  
ITU-T: T.81  
JPEG: IS 10918-1

### Video Optimization

#### IETF

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RFC 1945 HTTP v1.0  
RFC 2616 HTTP v1.1

#### 3GPP

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3GP container: ETSI 3GPP TS 26.244  
3G2 container: 3GPP2 C.S0050-0

#### ITU-T

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H.263, H.264, and MPEG-4 encoding  
MP4 container: ISO/IEC 14496-12:2003  
MP3 and ACC audio with MPEG/FLV

#### Proprietary

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VP6 encoding  
FLV and FLV container

### Traffic Management

#### Encryption and Hashing for Header Enrichment

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Symmetric-key encryption: AES, Blowfish and DES  
Asymmetric-key encryption: RSA  
Hash functions: MD-5 and SHA-1

#### Content Filtering

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IETF RFC 3507 for ICAP Gateway

#### WAP Gateway

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WAP 1.2 and WAP 2.0 as defined by the Open Mobile Alliance (OMA)  
PPG PAP interface: OMA WAP-247-PAP and WAP-151-Push Messages  
PPG SMSC interface: OMA WAP-235-PushOTA and SMPP v3.4

### Network Management

RFC 1157, 1213, 1215 for SNMP v1  
RFC 1901, 1908 for SNMP v2c  
RFC 2570 for SNMPv3

#### Preferred Hardware Support

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IBM BladeCenter HS22 (Six-Core and Quad-Core)



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