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Dynamic optimization eliminates the wait between the clicks

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Delivering data services to any mobile device is fraught with challenges and cellular handsets present unique problems - and unique business opportunities. As well as delivering data services that are valuable or useful to the subscriber, successful operators must also offer readily available network capacity and a consistently high-quality user experience.

Dynamic data optimization serves both these requirements. Optimized data conserves bandwidth, which extends network capacity and helps to smooth out over time the need to expand network infrastructure. And if done correctly, dynamic data optimization increases data rates and reduces transmission latencies - both of which are important to a high-quality user experience.

Mobile data subscribers have long been frustrated by excessive waiting times between clicks as data are slowly rendered on the screen. While 3G and 3.5G technologies are reducing waiting times, there will still be much work to be done long after these technologies are widely deployed and high-end handsets become commonplace. The reason is that most data services are based on Internet protocols such as HTTP and TCP.

These protocols were not designed for mobile networks and are inherently inefficient. When used to deliver wireless services to mobile devices, delays are magnified with every click. While designers of handset user interfaces (UIs) are working hard to reduce the number of clicks required to get to useful content, little has been done to reduce the time delay between the clicks.

User frustration

Users are also frustrated by the actual utility of browsers and Web-based applications on handsets. Beyond small screens and inappropriate UIs, Web portals that are supposedly optimized for the mobile user fail to deliver any real benefit. The disadvantages of portal optimization often outweigh the benefits because too much utility must be sacrificed in the interests of performance. And if subscribers are forced to endure an unsuitable UI for too long, the quality of the user experience will plummet. This approach also forces many content providers to slim down their content so that it can be delivered over various wireless networks. As well as being expensive, this practice discourages the development of services with richer content.

One of the greatest challenges facing operators is that the demand for mobile-data services is not a simple linear function of quality. Recent studies in Germany suggest that demand increases dramatically when transmission latency declines and data rates increase to certain threshold levels. Greater demand can be a good thing, but problems can arise if it is not easy to predict when these major increases will occur. Sudden increases can severely stress network capacity, which can be very difficult to expand on short notice due to capital constraints. And radio spectrum is a finite and regulated resource, which puts an ultimate limit on the bandwidth available for mobile data services.

Full-featured dynamic data optimization is an important real-time core network tool that can help operators address latency and capacity challenges. It allows operators to make much more efficient use of existing network capacity, buying them more time to consider major decisions about adding infrastructure and bandwidth.

However, the greatest benefit of dynamic data optimization is that it creates a much better experience for mobile device users. Not only does it increase access speeds and reduce latency - essentially solving the frustration problem - but it also makes mobile browsers truly usable, opening the door to true Internet access. Such significant improvements encourage greater usage and boost revenues.

Bytemobile has developed dynamic data optimization products for wireless networks that employ a portfolio of state-of-the-art data-reduction and protocol-acceleration techniques. The techniques have already been deployed worldwide in the company's Optimization Services Node (OSN) server, which optimizes data traffic for laptop access. The company has released the new OSN Monaco Edition software, designed specifically for a wide variety of mobile devices.

Less data, faster transfer

Monaco improves the speed of access on mobile handsets, reducing the amount of data transferred by two to five times and increasing the data transfer rate by up to ten times for portal browsing. OSN Monaco employs Bytemobile's Macara Dynamic Interleaving (MDI) technology, which is available in both clientless and client formats. MDI allows OSN Monaco Edition to ensure the very fast downloading of site content in a range of formats including WML, cHTML, xHTML and HTML. In most cases, data rates can be increased without adding any additional software to the handset.

The Monaco software operates simultaneously in both clientless and client-server modes. The clientless mode does not require the deployment of software on handsets and can therefore be used in the rapid development of services using phone-based content on mass-market feature phones. Client-server operation offers opportunities for greater speed when using full HTML sites, but the Bytemobile Monaco Client must be deployed on the end-user device.

The success of handset-based data services is linked strongly to dynamic optimization solutions that provide truly useable access to rich web content - at speeds and in ways

that users are accustomed to. As operators continue to roll out optimization-enhanced networks and provide a user experience on handsets similar to that on a laptop or PC, data usage and revenue growth will follow.

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