



Quality and Quantity

With Ethernet backhaul and some of the world's most extensive data SLAs, Avea shakes up Turkey's mobile market.

By Lynnette Luna

In Turkey's mobile phone market, speed has become the name of the game in terms of both network and market innovation. Turkey boasts one of Europe's highest mobile phone usage rates. As a result, Turkey's operators are in a race to offer the most advanced services.

For Avea, Turkey's third-largest operator, standing out from the pack means offering the fastest data speeds. Behind the scenes, success also means radically transforming its network architecture to all IP. That makeover gives Avea cost advantages and the ability to offer SLAs that are nearly unprecedented in the mobile industry.

Government regulations regarding coverage and service rollout delayed 3G's debut until July 2009. Since then, usage has mimicked the trend seen throughout Europe and the United States: Smartphones, tablets and dongles are quickly driving up network traffic.

Turkey also has some unique market conditions. For example, although smartphones were 14% of global device sales in the first 3 quarters of 2010, they were already 16% in Turkey, said research firm GfK Turkey. Also, half of all users are 30 or younger.

"Young subscribers are using 1 GB to 4 GB of data per month, and data services are growing at least 15% month to month," said Coskun Sahin, chief technology officer at Avea, which has about 12 million subscribers. "The more money young users have, the more services they want."

To meet that demand, Avea sought Tellabs to enable its migration to Ethernet backhaul. That upgrade lets Avea reduce the cost of backhauling 2G TDM traffic and 3G ATM traffic, and it lays the foundation for future LTE services.

Selling SLAs

Avea and its majority owner, Türk Telecom, are finding lucrative opportunities in the enterprise market, too. For example, Avea has HSPA+, whose 42 Mbps theoretical peak speeds are ideal for bandwidth-intensive business services. As an added incentive, Avea offers SLAs, a rarity in any mobile market.

In the countries where they do exist, SLAs typically are limited to dropped data sessions and network availability. They rarely include guarantees for speed and quality. That mindset

is slowly changing. Operators realize that flat-rate pricing plans aren't increasing revenue enough to cover the cost of the additional traffic. Offering premium services with premium QoS is one emerging strategy for shoring up profit margins.

"This is one of our focus areas," Sahin said. "We are working to establish infrastructures with SLAs for our business customers. The market will see services such as remote office connectivity based on 3G and point-of-sale devices that not only use fixed-line connections but are backhauled by 3G, as well.

"We are helping businesses enable more automation in their operations. We are creating extra value for them and for us."

Bandwidth and Time Crunch

To offer SLAs to businesses and keep up with consumer demand, Avea knew it had to overhaul its core network.



"Young subscribers are using 1 GB to 4 GB of data per month, and data services are growing at least 15% month to month. The more money young users have, the more services they want."

— Coskun Sahin,
Avea CTO

"Being able to reduce our transport costs and increase transport functionality was a critical point for us," said Mehmet Erkul, Avea transport network manager. "This is a very competitive market."

Avea chose Tellabs to enable Ethernet backhaul, initially for 2G and 3G and eventually for LTE. The new architecture has 2 key benefits. Avea now is better able to keep up with bandwidth demands. It also has greatly reduced the cost of backhauling 2G TDM traffic and 3G ATM traffic.

Avea is the first Turkish mobile operator to migrate to an all-IP network core. This upgrade enables Avea to effectively double its RAN capacity with minimal OpEx impact.

According to Mehmet Erkul, Avea transport network manager, the operator is cost-effectively delivering average per-user speeds of 5 Mbps in the downlink and 2 Mbps in the uplink. That amount of bandwidth would nearly bankrupt an operator using E1s/T1s. Just 1 or 2 E1s are



Avea engineers and a host of professional services experts turned up the network in only 2 months. Shown left to right: Mehmet Sağıroğlu, Cihan Kumru, İsmail Odabaşı.

required to backhaul voice traffic. Add broadband traffic, and the requirement skyrockets to a dozen or more E1s. At hundreds of dollars per line per month, that scenario makes little economic sense, said Hakan Kural, Tellabs' country manager in Turkey.

Avea is using the Tellabs® 8600 Managed Edge System, which uses Pseudowire over MPLS as a cost-effective alternative to adding E1s. The tight time frame made deploying the Tellabs 8600 system more challenging. Avea contracted with its RAN vendors and Tellabs in April 2009, with the 3G network's commercial launch scheduled for just 4 months later.

"We had 20 teams in the field to install products, along with a host of professional services experts," Kural said. "By the time we got all of the equipment to the sites, we had 2 months to get our products provisioned and make the network live."

All IP, Then LTE

Avea plans to use the Tellabs 8600 system as a key transition piece to an all-IP RAN. In the process, Avea will become one of the few network operators to go all IP—both in the core and the RAN—before it deploys LTE.

"We'll be at an advantage to our competition," Erkul said of the move. "By moving IP to the radio, we will be able to deliver a better level of service, have tighter management of the network and achieve better unit costs when it comes to volume. Tellabs will play a very important role in that challenge because of its ability to handle multiple protocols. Each and every step we will have to add new protocols."

"Being able to reduce our transport costs and increase transport functionality was a critical point for us. This is a very competitive market."

— Mehmet Erkul,
Avea transport
network manager

LTE is typically the driver for an all-IP network because the wireless standard requires it, said Phil Marshall, head of Tolaga Research. However, 3G operators can accelerate their migration strategies to achieve efficiencies now.

"Collapsing network architecture is just more efficient," Marshall said. "You can converge services quite efficiently. If it's possible for a service provider to accelerate its migration to all-IP by overcoming the challenges of dealing with legacy infrastructure, it does make sense."

One wild card: Turkish regulators haven't announced when LTE can launch. Moving to an all-IP network now means Avea can seize that opportunity as soon as regulators give LTE the green light, Sahin said.

700% Traffic Growth

Analysts estimate that each LTE base station must be able to handle bandwidth in the range of 100 Mbps to 300 Mbps. As demand skyrockets, that could reach 1 Gbps or more, yet Avea's OpEx won't greatly increase.

A recent Informa Telecoms & Media report found that smartphone users are generating two-thirds of cellular traffic worldwide. That's despite the fact that just 13% of subscribers have a smartphone. Informa estimates that ATPU currently averages about 85 MB per

month and will increase 700% during the next 5 years.

For operators, that growth is both a problem and an opportunity. A recent Tellabs study predicts that many operators worldwide could run out of profitability within 3 years if they don't change their transport layers. (For more highlights from that study, see "The End of Profitability" on page 14).

Sahin said Avea is undertaking a unique and radical approach to its overall network architecture. "It's difficult being a pioneer, but we believe we'll be at an advantage to our competition by using technology properly. The technology management piece will be the most important element." ■

2G: Second Generation

3G: Third Generation

ATM: Asynchronous Transfer Mode

ATPU: Average Traffic per User

HSPA: High-Speed Packet Access

IP: Internet Protocol

LTE: Long-Term Evolution

MPLS: Multiprotocol Label Switching

OpEx: Operating Expenses

RAN: Radio Access Network

QoS: Quality of Service

SLA: Service-Level Agreement

TDM: Time Division Multiplexing