

Challenges

Construct a brand-new network infrastructure for the Sochi 2014 Olympic Winter Games

Deliver to an unchangeable, unmissable deadline

Respond to an evolving scope of work

Deploy and manage the world's largest guest network

Value Created

Outstanding user experience for media, athletes and officials throughout the Games

High-performance Avaya Networking and UC infrastructure now in place across Sochi and the region

Skills legacy: hundreds of local staff now have knowledge of advanced Avaya solutions

The world's largest guest network

Pioneering platform and rigorous planning ensure a faultless performance from the Sochi 2014 network – thanks to Avaya



The Sochi 2014 Olympic Winter Games will be remembered for the stunning sunshine and for being the year that slopestyle went mainstream. But in technology terms, Sochi will also go down in history as the world's largest guest network to date – serving over 40,000 users during the Games and ensuring all of the essential communications to support the delivery of the Games were maintained flawlessly.

Behind this lay Avaya, the Official Supplier of Network Equipment to Sochi 2014, and a tale of pioneering technology, comprehensive long-term planning and relentless attention to detail, not only during the Games themselves but from the earliest stages of network design.

An early start

The snow had barely melted in Vancouver, the scene of the 2010 Olympic Winter Games, when Avaya's network architects

set to work on the plans for Sochi. From the outset, it was clear that the challenges would be very different.

Sochi was, technologically speaking, a greenfield site – or more accurately, sites: the Games would take place in two distinct clusters, a Coastal Cluster (on the Black Sea coast), and a Mountain Cluster (in the Mountains, some 40km away).

Rewriting the rules for network access

More significantly still, Sochi 2014 would be the first Olympic Winter Games of the smartphone era. While smartphones existed in 2010, penetration was still at relatively low levels; today, in many countries it exceeds 60%. Tablets too have become increasingly commonplace, but the iPad was only released in April 2010 – post Vancouver.

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*— Aleksander Vronski,
senior Vice-President of Technology for
the Organizing Committee for the 2014
Olympic and Paralympic Winter Games
(OCOG)*

In network design terms, this changed the rules. Not only would overall demand for high-speed internet access be far higher than ever before, but the pattern would change: Avaya architects estimated that there would be four times as much wireless access as wired. And user expectations would be higher too, not least amongst the most demanding audience of all: the media.

As Aleksander Vronski, senior Vice-President of Technology for the Organizing Committee for the 2014 Olympic and Paralympic Winter Games (OCOG) explains, “there will be some 14,000 representatives of television and the press attending the Games. Each of them will have a minimum of three devices: normally a smartphone, a tablet, and a computer. And for them, access to the Internet is essential for delivering their work.”

The BYOD Games

As the Avaya team digested the implications of this – including the close scrutiny network performance would inevitably be under – two further

developments, outside the original scope, added further challenges to the infrastructure. Firstly, OCOG decided that 10Mb Wi-Fi access should be free for the media: in both Vancouver and London 2012, it had to be paid for. Secondly, Samsung – the official Wireless Communications Equipment provider of the Olympic Games – announced it would offer athletes attending Sochi an exclusive Galaxy Note 3.

These two factors not only meant that the bandwidth demand on the network would be even higher than first anticipated, but also that the number of devices used would soar. In short, it went from what had been described as the “Bring Your Own Device Games” to Bring Your Own Devices, plural.

In response, Avaya engineers began the process of installing over 2000 802.11n WLAN indoor and outdoor access points, across competition venues, the athletes’ village, and numerous other sites. A narrow directional antenna was chosen, which meant fewer users would be able to connect to each access point – vital to ensuring a better user experience and faster speeds.

Multiple networks, multiple roles

But while wireless Internet capacity was a key consideration, it was far from the only factor shaping the infrastructure, as Mr Vronski explains.

“People talk about the network for the Olympic Games as if it’s all one thing, but in reality it requires the creation of several networks. The first of these is Games – a network specially designed for the most critical applications to work in it. A second is Admin. Then there are all sorts of other services. With all of these services in one network, it is obvious that they cannot simply share bandwidth without some sort of division.”

To help address this, Avaya created seven different Layer 2/3 Virtual Service Networks – Games and Admin, plus wireless LAN, IPTV, Voice, Media and a management network. These were then further segmented by user type: athlete, staff, etc. Access to each was tightly controlled using the Avaya Identity Engines portfolio, which allows access management at a granular level – not only by role, but also device type.

A further advantage of Avaya Identity Engines is that it makes creating a guest account straightforward. This was vital for the smooth running of the Sochi network, given the sheer number of ‘guests’ that were present.

Next-generation core

The ability to create these multiple VSNs on a single physical infrastructure was greatly enhanced by the underlying technology deployed: Fabric Connect.

Avaya Fabric Connect is a pioneering solution that transforms the way networks are deployed, implemented and operated. It uses Shortest Path Bridging to render physical topology irrelevant: the optimal route between different points on the network is automatically, instantaneously calculated, and recalculated at sub-second speed if there’s any delay or a fault. At the time the plans were being put in place for Sochi, Fabric Connect was still relatively unproven, but Mr Vronski and his team immediately saw the potential.

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For example, the voice network was essential to Games operations, and for the media. Avaya set up a separate L3 VSN, using Avaya Aura® Communication Manager, to ensure quality of service. Over 6500 IP Phones were installed across

multiple locations and a simple rate-card service was provided for the media to make calls or use conferencing services.

Intelligence at the edge

Underpinning the whole network, Avaya put in place a 54 Terabit backbone between the two clusters enabled by four Virtual Service Platform (VSP) 9000 switches, running Avaya Fabric Connect. The switches were located in each of the two technical operations centers and each of the two points of presence in the mountain cluster. This provided not only the capacity the Games needed, but also an unprecedented level of flexibility: by adding some 50+ Avaya Ethernet Routing Switch 8800s at the network edge, the entire infrastructure could be virtualized, and services provisioned at the edge, literally in minutes.

Not only did this allow intelligent routing of traffic, resulting in faster network speed, it also meant that as further demands were added – including the additional Wi-Fi requirement, and the need to support 36 IPTV channels broadcasting to screens around the Games venues – they could be simply absorbed. In fact, Fabric Connect proved an ideal platform for the broadcast-quality video needed for the IPTV, as it meant there was no need to introduce complex protocols like Protocol Independent Multicast (PIM) to deliver the video traffic. It was the first time that IPTV had been trusted to provide on-site broadcasting, and meant greater simplicity and significant cost savings for OCOG, without compromising broadcast quality.

The value of experience

The ability to deal with changes to scope was not only a result of the technology selected, but also Avaya's previous experience of supporting Olympic Games, and other events of similar scale, such as the FIFA World Cup. That experience directly influenced the choice of an underlying, flexible platform. But it also meant Avaya had the resources in place

ready to respond to scope changes. The team worked closely with local partners and provided detailed knowledge transfer to OCOG staff and others on configuring and managing Avaya solutions. In fact, several of the Avaya team from Vancouver moved directly on to Sochi.

For Mr Vronski, this was a great advantage. "We need people with experience and knowledge of what the Games are all about. In Avaya, we were able to find such people."

One crucial aspect of this was that Avaya clearly understood the nature of the deadlines involved. "Normally, when a service is launched, it will be refined slightly, then it can be debugged on the first clients. That is not so in our case," Mr Vronski confirms. "The Games have to begin immediately, and everything must start to work at the very moment it is supposed to."

Results that speak for themselves

To ensure it would, Avaya technicians and software associates not only completed the core network several months in advance – despite considerable practical challenges, including the fact that venues themselves were being constructed at the same time – but also tuned the infrastructure at a number of test events.

Performance was scrutinized and the solution adapted where necessary, so that capacity and speed were assured by the time the media and athletes arrived.

Avaya had operational and support staff members on duty in the on-site Technical Operations Center (TOC) throughout the Games. Only a very few minor incidents were logged, and no severity 1 or 2 tickets were raised to Avaya throughout the Games, meaning the team was able to focus on anticipating and preventing issues before they could occur.



In sport, the results always speak for themselves. But with zero downtime and 40,000 contented users, the performance of the Avaya Networking, Unified Communications and Contact Center infrastructure – and the Avaya Services team – at Sochi 2014 speaks for itself too.

Learn More

For more information, contact your Avaya Account Manager or a member of the Avaya Connect channel partner program, or access other collaterals by visiting www.avaya.com

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Products, Solutions and Resources

Avaya Fabric Connect (based on enhanced Shortest Path Bridging)

Avaya Virtual Services Platform 9000

50+ Avaya Ethernet Routing Switch 8800

2000+ Avaya 802.11n Wireless Access Points

Avaya Ethernet Routing Switch 5600

Avaya Ethernet Routing Switch 5500

Avaya Ethernet Routing Switch 4000

Avaya Identity Engines

Avaya Aura® Call Center Elite

Avaya Aura® Communications Manager

Avaya Aura® Session Manager

Avaya Aura® System Manager

40 Avaya Software Associates, Technicians, and Consultants, who worked throughout the Games to deliver a flawless network performance

THE CLIENT

Like its fellow committees around the world, The Organizing Committee for the 2014 Olympic and Paralympic Winter Games (OCOG) is responsible for organizing the Games, including building venues and facilities, meeting media requirements and lodging athletes and officials. It is given that responsibility by the International Olympic Committee. Organising Committees grow from small organizations of tens of employees to reach several thousand only seven years later. They start their work with a period of planning followed by a period of organization which culminates in the implementation or operational phase at Games time.

www.sochi2014.com

About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, networking and related services to companies of all sizes around the world. For more information please visit www.avaya.com.

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