21st Century Engineering Adventure

Customer Case Study

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BLOODHOUND supersonic car project inspires next generation of scientists, technologists, engineers and mathematicians

EXECUTIVE SUMMARY

Customer Name: BLOODHOUND SSC (supersonic car)

Industry: Engineering

Location: United Kingdom and worldwide

Number of Employees: 50

Challenge

- Confront and overcome the seemingly impossible using science, technology, engineering and mathematical (STEM) disciplines
- Motivate and equip next generation to deal effectively with 21st century global challenges

Solution

- Cisco Collaboration platform supporting the BLOODHOUND SSC world land speed record attempt and global education programme

Results

- Project team finds it easier to reach each other, liaise with suppliers, and complete engineering tasks faster and with less errors
- BLOODHOUND SSC can be promoted with much greater impact to partners, schools, universities and the media
- Powerful ability to keep the global audience engaged and informed at all stages

Challenge

Science, technology, engineering and mathematics (STEM) are the lifeblood of innovation. Yet these subject areas are often perceived to be boring, hard work and unlikely to sustain a well-paid career. As a result, many countries are facing a critical skills shortage unless they can solve a fundamental question: how do you motivate young people to acquire the knowledge and talent that will help overcome future challenges?

This issue of STEM skills shortage is particularly relevant to the United Kingdom. Originally flagged by the Lord Sandy Leitch report in 2005, the skills shortage was highlighted more recently by the Royal Academy of Engineering. It warned that the current pool of STEM expertise is stretched thin, and the median age of chartered engineers is rising rapidly. The report revealed the United Kingdom had dropped to eighth globally in the number of US patents registered. The report further estimated that 830,000 graduate-level STEM experts and 450,000 technicians will be needed by 2020.

Richard Noble, OBE and director of the BLOODHOUND Project, says: “Past engineering spectaculars, like Concorde and TSR2, galvanised interest in STEM subjects. We know, for example, that science PhD levels rose sharply during the manned space programme. It was high time for a new iconic project that would once again excite young people.”

Having held the world land speed record for 28 years and broken it on three occasions, Richard Noble picked up the gauntlet. He assembled a new team with some of the world’s strongest engineering talent, this time to build the BLOODHOUND SSC aiming for the first 1,000mph land speed record. A parallel global education project sought to achieve an international surge in the popularity of STEM subjects by helping enable the student population join in with the adventure.

Less clear was how the BLOODHOUND Project would navigate its own business challenges: moving rapidly from start-up mode to become a multi-sited, international organisation, yet always running lean and making the best use of finite resources.

"There are now 4,800 schools taking part, with two million kids designing and building rocket-cars. How do they learn? They spend 30 hours a week at school in the UK, but 40 hours a week on their computers."

Richard Noble
Project Director
BLOODHOUND SCC

Solution

Early on, the BLOODHOUND team had a number of crucial decisions to make. "We wanted minimal IT infrastructure put together in a way that delivered maximum benefit," says the BLOODHOUND's engineering lead, Conor La Grue. "We knew Cisco made great products, but we quickly realised they could bring a lot more to the table."

Initial discussions confirmed that both organisations shared values of collaboration, openness and education.

Both Cisco and BLOODHOUND SSC were committed to inspiring a new generation of engineers, experts who will build tomorrow's high-tech world. Moreover, for Cisco, the project offered the perfect opportunity to help empower, encourage, and enable a great feat of engineering and to play a part in inspiring the future. Expertise in the Internet and digital media, powerful enablers for the project's marketing strategy, sealed the appointment of Cisco as the BLOODHOUND SSC video and networking partner.

As part of a complete networking technology overhaul at the Bristol main office, Cisco replaced the existing BLOODHOUND SSC IT environment, which, at the time, comprised one phone line and a LAN with a 2Mbps DSL connection.

Based on a Cisco® Borderless Network design, the new infrastructure delivers 1Gbps to the desktop and is optimised for video. The network comprises Cisco Catalyst® 2960C and 3560V2 Series Switches and Cisco 3925 Series Integrated Services Routers. It also includes a Cisco ASA 5510 Series Adaptive Security Appliance with AnyConnect® software, allowing remote team members to quickly and securely get to data and tools via a VPN. With the addition of Cisco Aironet® 1140 Series Wireless Access Points, project staff can work flexibly, moving smoothly around the Bristol office while staying connected to voice, video and business applications.

An integrated suite of Cisco Collaboration applications runs across the Borderless Network. Meanwhile, a Cisco Unified Workspace Licensing (CUWL) agreement covers the Cisco Unified Communications Manager call control system and Cisco Unified IP Phones, many of which are equipped with cameras, effectively forming video endpoints. "We decided to license 30 users so that we could scale up and down in the most economical way possible," says Sarah Covell, BLOODHOUND head of IT.

At the core of the BLOODHOUND collaboration platform is Cisco Jabber™, which brings staff together productively by integrating desktop and mobile devices (PC, MAC, iPhone, iPad, and Android) and helping ensure anytime, anywhere access to:

- Presence information showing people's real time availability and preferred method of contact
- Cisco Unity® Connection for flexible access to voice messages
- Cisco WebEx® Messenger for cloud Instant Messaging
- Cisco WebEx Meetings for web conferencing, combined with desktop and application sharing, voice and HD video

Completing the BLOODHOUND IT transformation is a super-efficient, virtualised data centre built on the Cisco Unified Computing System™ (UCS®). These UCS C220 servers come pre-validated to work with VMware virtualisation software, significantly boosting compute and storage capabilities.

"We're able to take audiences behind the scenes so they can live and breathe every minute of the car's design and testing. And it's really taking off. Our website is already attracting more hits than most Formula 1 teams."

Conor La Grue
Engineering Lead
BLOODHOUND SCC

Results

In 2011, three years after its public launch, BLOODHOUND announced its relationship with Cisco. Over 6,000 people attended Cisco Live in 2012 to hear Richard Noble talk about the project. "There are now 4,800 schools taking part," says Noble, "with two million kids designing and building rocket-cars. How do they learn? They spend 30 hours a week at school in the United Kingdom, but 40 hours a week on their computers."

With digital and social media firmly embedded in everything the team does, the project's positive impact on education has already been staggering. The effect is expected to multiply massively as the record attempt gets nearer. "The job is made considerably easier when you have a first class collaboration and IT platform that allows you to capture and share the innovation process," says La Grue. In fact, every time the car runs, 500 channels of data are streamed to the web. The project has reached 230 countries, notching up 400 downloads of design drawings in Taiwan alone.

Outreach capabilities have been further boosted using webcams, blogs and Cisco BLOODHOUND TV, a blend of live and recorded video news feeds. "With the help of Cisco, we're now making two TV programmes each month," says La Grue. "We're able to take audiences behind the scenes so they can live and breathe every minute of the car's design and testing. And it's really taking off. Our website is already attracting more hits than most Formula 1 teams." Attracting visitors to the site is in turn helping to increase sponsors, donations and supporters through initiatives such as the 1K Club, Names On The Fin and Ambassador Programme.

Behind the scenes, the BLOODHOUND Project team has been using Cisco Collaboration technology on PCs, laptops and IP and video phones as well as iPads and iPhones. "Before, people used to use their mobiles all day, which was pretty expensive," says Covell. "Even the most basic task, such as sending CAD drawings was painful and slow. Now, we can locate the right people, see if and how they're available, and collaborate using their preferred method, whether that's meeting via WebEx, on the phone or over IM."

The benefits, which include less travelling time, faster problem solving and improved decision-making, extend far beyond the core engineering team in Bristol. In the wider BLOODHOUND virtual community, a lead engineer in Ireland can view an image or video captured on a Cisco IP phone. A main consultant in Manchester no longer needs to make a regular six-hour round trip to the Bristol office. Cisco Technical Response teams can troubleshoot PCs remotely via Cisco WebEx instead of visiting site or talking users through desktop issues. A web designer in Birmingham can easily update content and keep the site looking fresh and engaging.

Also, because the collaborative platform is compatible with future versions, as the project lifecycle develops and changes, BLOODHOUND can add technologies quickly and inexpensively. One example is the introduction of Cisco TelePresence® to hold life-like virtual meetings with partners in South Africa and around the world using HD video.

The notion of the world's first 1000 mph supersonic car is getting closer. Buckle up and enjoy the ride.

For More Information

To learn more about the Cisco architectures and solutions featured within this case study, please go to:

www.cisco.com/go/borderless and

www.cisco.com/go/collaboration

For further information on the BLOODHOUND Project, please go to:

www.bloodhoundscc.com

Product List

Routing and Switching

- Cisco Catalyst 2960C and 3560V2 Series Switches
- Cisco 3925 Series Integrated Services Router

Security and VPN

- Cisco ASA 5510 Series Adaptive Security Appliance with AnyConnect VPN software licence for 30 users

Unified Communications

- Cisco Unified Workspace Licensing Professional for 30 users, covering:
  - Cisco Unified Communications Manager
  - Cisco Unity Connection
  - Cisco Jabber for PC, MAC, iPhone, iPad, Android (including cloud-based presence and IM)
  - Cisco WebEx Messenger
  - Cisco WebEx Meetings
  - Cisco Unified IP Phone 8945
  - Cisco Unified IP Phone 9951 with camera
  - Cisco Unified Conference Phone 7937

Virtualization

- Cisco Unified Computing System
- VMware ESX 5.0i

Wireless

- Cisco Aironet 1140 Series Access Points

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