Realizing the Internet of Everything

Customer Case Study

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Cisco Borderless Network tests the limits as world's largest digital festival reaches record-breaking Internet speeds

EXECUTIVE SUMMARY

Customer Name: DreamHack

Industry: Gaming and digital arts

Location: Sweden

Challenge

- Make next event bigger, better, safer, and faster while continuously improving gaming experience

Solution

- Cisco Borderless Network specially designed to deliver most challenging bandwidths in ultimate bring-your-own-device environment

Results

- With 20,000 network users generating world-record traffic levels, infrastructure has become much easier to manage
- Previously unseen reliability levels, with switch configuration reduced from days to less than one hour
- State-of-the-art platform drives continuous innovation with twice-yearly rebuild from the start

Challenge

Although the word "unique" gets woefully overused, in the case of DreamHack no other adjective comes even close. The world's largest digital festival and LAN party[1], DreamHack presents network traffic and bring-your-own-device (BYOD) challenges that would keep even the most confident CIO awake at night. Not that the audience worries about sleep. For those attending DreamHack, the event is about pursuing the ultimate adrenaline rush.

Twice a year over 20,000 gamers, programmers, and designers descend on the Swedish city of Jönköping for the three-day event. With many looking to connect personal devices and in some cases servers, the purpose-built DreamHack network is tested to its limits as the attendees compete, download, and share a vast variety of multimedia content.

The event is plug-and-play in the extreme, made possible by a LAN that runs at 10Gbps under normal conditions and ramps up to a blistering 40Gbps at the edge. Sitting in the network operations center feels surreal. At the height of the online event, traffic patterns could easily be mistaken for a denial of service attack, such is the magnitude of hits it attracts.

DreamHack started life as an informal gathering of high school students in the early 1990s. In 2011, an amazing 13,292 connected devices were registered and the world Internet connection record was broken when a link between TeliaSonera and DreamHack smashed the 120Gbps speed barrier. Today, DreamHack is thriving and recognized internationally for pushing the boundaries of technological and digital creativity.

Behind this constant quest for ever-higher speed and performance is a 30-strong engineering team, supported by a handful of carefully selected technology partners. Cisco was invited to join the LAN party as the new network provider in 2006.

[1] Guinness Book of Records

"Since upgrading to the Cisco ASR 9000, we've had no major outages. Performance has been 100 percent."

Karl Andersson
Team Leader
DreamHack Network

"There's no permanent network infrastructure at the venue," says Karl Andersson, team leader for the DreamHack Network. "In effect, we get to build on a greenfield site every six months. It's a process that becomes more streamlined every year, thanks to advances in Cisco Borderless Network architecture."

Solution

Planning for the summer and winter events begins two months in advance, with virtual meetings every fortnight as the team explores ideas for improvement on the network's previous incarnation. "We get together with Cisco and start with a blank piece of paper," says Andersson, "which makes it possible to identify and address issues from the last event and constantly challenge ourselves to go further and faster."

Increasingly those discussions center around the Cisco® vision of the Internet of Everything (the coming together of people, devices, appliances, information, and processes), making connectivity more relevant and powerful than ever before. And there's a realization that that can only be achieved through networks with open interfaces and inbuilt intelligence. Exactly like DreamHack, in fact.

So DreamHack makes a fascinating use case, not least because it's dealing with the same conundrum that many commercial organizations wrestle with: how to create a highly collaborative platform that is also always safe.

With twin Cisco ASR 9000 Series Routers at its core, the DreamHack LAN is typically built in five 16-hour days with some 3000 man-hours of effort. It's then managed and supported with assistance from service provider TeliaSonera throughout the three-day festival. Finally, it's torn down in 24 hours, packed up, and flown back to the Cisco Amsterdam office, where its component parts are safely stored for next time.

Each Cisco ASR 9000 Series Router is capable of handling up to 96Tbps of gaming traffic, which travels across Cisco ME 3800X Series Carrier Ethernet Switch Routers and 30 Cisco Catalyst® 3750 Series Switches to 450 Cisco Catalyst 2950 Series Switches serving 142 high-octane gaming tables spread across three halls at the Elmia Exhibition Center. In total, this super-fast mobile Internet highway comprises 42km of cabling, 35 Unified IP Phones, and 100 Cisco Aironet® 1142 Series Wireless Access Points.

"When we changed the table switches to Cisco," says Rok Podgrajsek, group leader of the DreamHack core network team, "reliability immediately improved, and we didn't need to replace as many switches as before. Now we spot a problem and fix it, often before receiving an alert. And everything is completely invisible to the players." Finally, DreamHack can also take advantage of feature-rich voice communications using the Cisco Unified IP Phone 7911G.

Results

Although DreamHack has always pushed the boundaries of speed and capacity, it affords the rare opportunity to step back twice a year and evolve the infrastructure from the start, resulting in a regular stream of innovation. "Usually, you invest in a network for 10 or 15 years and have to live with the consequences of your decisions for a long time," says Andersson. "Here it's the exact opposite. We always rip everything out and go back to the drawing board. That's the magic of DreamHack."

Operations have been greatly simplified. For example, the time it takes to configure the 450 individual table switches has been cut from days to just one hour, thanks to the profiling capability inherent in the Cisco Borderless Network architecture, and software developed in-house by the DreamHack network team. Once the switches are set out in the halls, they're configured and managed remotely.

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Rok Podgrajsek
Group Leader
DreamHack Core Network Team

Previously, a fault would take a table out of action while replacement hardware was configured and cabled in. Now, in the unlikely event that a switch fails, the network team executes a hot swap. The correct configuration is loaded from a centrally-stored template and transmitted direct to the new switch, which is up and running in minutes.

Indeed, the appeal of being a DreamHack engineer is getting to do things that would be impossible on a typical enterprise network. And that's welcomed by Cisco because DreamHack continually pushes product development in new directions. "It's important to us that everyone in the network group gets as close to the technology as possible," says Podgrajsek. "And, because we have constant dialogue with Cisco, our team members get to learn about new technologies and enjoy hands-on experience of the equipment."

One of those advances, the Cisco ASR 9000 Series Router, has given the digital festival greater uptime than ever before. "It's very reliable and easy to manage. Past events would incur two major outages on average," says Andersson. "Since upgrading to the Cisco ASR 9000, we've had no major outages. Performance has been 100 percent."

Next Steps

So, what's next for these networking high-flyers? Plans under consideration include improving wireless connectivity by introducing self-healing technologies such as Cisco CleanAir. "Our goal is to automate as much of the network as possible," says Andersson. "We're closely watching what Cisco does in the software development space. For example, having one application programming interface that allows you to connect everything opens up a whole new world of potential." Innovation never stops for the DreamHack team.

For More Information

To learn more about the Cisco architectures and solutions described in this case study, please go to: www.cisco.com/go/borderless

For further information on DreamHack, please go to www.dreamhack.se

Product List

Routing and switching

- Cisco ASR 9000 Series Aggregation Services Routers
- Cisco Catalyst 2950 and 3750 Series Switches
- Cisco ME 3800X Series Carrier Ethernet Switch Routers

Voice and IP Communications

- Cisco Unified IP Phone 7911G

Wireless

- Cisco Aironet 1142 Series Wireless Access Points

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