Case study

How 1E and Tableau spun up a 5000-machine company in one week

"The experience of using Nomad has been fantastic. The ability to deploy over 4,000/5,000 machines quickly and efficiently, without having a massively robust network has been awesome."

Johnny Hua
Information Technology Manager, Tableau

The challenge

The Tableau Conference (TC) is a unique event. Tableau is world-famous for producing cutting edge software that allows customers to visualize and utilize their data. The TC functions on a number of levels, but primarily it is a place where thousands of Tableau's US customers come to hone and develop their data analysis skills.

The provision of such lessons – hundreds across multiple days – presents certain complexities for the organizers. While it is expedient to provide laptops for the attendees to work on, this means hiring thousands of laptops, and ensuring that each is ready and waiting for delegates, pre-loaded with the Tableau Conference desktop product.

The Tableau Conference 2016 was the largest in Tableau history by some way. Besides doubling the amount of hardware used (the 2015 event used only 2,500 laptops – 2016 utilized 5,000), it included a record-breaking attendance of around 12,000 delegates, who were provided with over 100 hands-on training sessions.

In addition, whereas previous events had all taken place in a single large venue, 2016's event saw Tableau descend on the city of Austin, Texas, with the training sessions variously scheduled across 7 venues of varying sizes (including the Austin Convention Centre and several large hotels).

From a technical standpoint, this added to the infrastructure challenges innate to any Tableau Conference.

"The Tableau desktop product is really fast and really easy to use," explains Chris Frickland, Event Infrastructure Manager for Tableau. "We have 5,000 laptops, and people trying to train on them every two hours, so you can imagine the scale if there's one

small problem or missing file. That's one of the largest challenges that we have – making sure everyone's running the same and correct version of Tableau, that all their files are there, that the trainer has the right files that they planned with, and that if a new product comes out, or if they update and change a file, that's reflected across the entire conference system."

There is also a daily analysis of the sessions, checking how many have been favourited by delegates, so they can try and ensure no one misses out on the most popular tutorials. Sometimes this means changing the venue, meaning the relevant software may have to be reallocated in the eleventh hour.

"Our planning has to be nimble and our solutions have to be efficient," says Frickland. "All of these rooms have to be able to be able to accept those changes, and be ready to really handle any class that we throw at it."

At other Tableau events, this need for responsiveness and agility meant one thing: boots on the ground, and lots of them.

"Doing it the old-fashioned way, the problem we ran across was going to each machine: you still have to have human intervention," says Johnny Hua, Information Technology Manager, Tableau. "Previously, it has been pretty much a case of just throwing man-hours at it. Having tons and tons of resources, people going in manually and touching all the machines, running scripts – hours and hours of that – and then going out to the tables and deploying the laptops."

Getting ready

The preparation process for the November event started about about a year and a half previously, when Tableau's event team made some site visits and started planning out the campus environment mapped out by the conference team.

It was around this time that the event technical team started to develop the crucial file distribution infrastructure solution for the conference. It was immediately apparent that the campus environment was going to require their building a different type of infrastructure.

"You don't typically have a network that goes building to building in a city like Austin, and we had to actually come in and build that out," explains Frickland. "What we've done here in Austin is, we've actually put up a number of Wi-Fi point-to-point shots all around the city. Every single venue here has been networked together."

The guiding intention and concept was to be in a position to treat the entire city like a single venue. It wasn't just that this involved wiring all these laptops together and getting it all functioning as a normal corporate office environment – there was a significant time factor to content with, too.

"Typically, an enterprise does not spin up 5,000 machines in a weekend, so that obviously puts a lot of stress on the infrastructure," explains SCCM guru Johan Arwidmark (Chief Technology Officer, TrueSec) flown in for the week by Tableau to help implement the solution. "As well as being able to come on site in short notice and get it all up and running."

Besides the Wi-Fi shots, the Tableau team worked closely with the engineering teams at each hotel, making use of their core wiring. "Between that we were able to talk to one laptop on one side of the city to another laptop on another side of the city and they can actually all call back to our server here at the Austin convention centre," adds Frickland.

> "The 1E Nomad solution was really a game changing piece of software. When we were solving this challenge of, how do we deploy five thousand laptops at a scale and speed that would meet our conference needs, we found there wasn't really any software solutions that could share the large amounts of files, data sets, or new installs of large programmes we use, at a speed and scale required by us, and also at a way that would not overly tax the network. The network we built can only support so much traffic, and pushing out one or two gig data files could take a while or stress that network."
>
> **Chris Frickland**
> Event Infrastructure Manager, Tableau

Nomad

Nomad slotted into this solution, ensuring that Tableau would not only make a success of Austin, but that their most challenging conference environment yet would end up equipped by the Tableau Conference's smoothest, most efficient, and dependable infrastructure to date.

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Key to meeting these needs was Nomad's capacity for self-throttling, which allowed the organizers to limit how fast the content was being transferred (ensuring the wider network wasn't disturbed), while its peer-to-peer technology further accelerated its speed and efficiency. "In Austin we have a whole room or a whole building that has a couple of thousand laptops and pushing that file out is taking minutes, whereas as part of our old infrastructure it would take hours."

Tableau Conference infrastructure manager Gail Miller was integral to the testing and selection process for 1E Nomad, which saw them consider alternative solutions such Chef and Puppet. "We chose Nomad due to the peer-to-peer functionality and the performance it could provide us at the conference," she explains. "We then did a test in LA with 500 laptops, installing Tableau Desktop, uninstalling Tableau Desktop, and then reinstalling a new version. We were able to do it within about three minutes on all the systems."

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Senior Project Manager, Tableau

Incredible benefits

The capacity to self-throttle, of course, meant that the file distribution process could be comfortably centralized and automated. The results, however, exceeded everyone's expectations.

"With the number of venues that we have here – we have about seven venues that are under management – we figured we would need 75 people to manage these machines manually," says Miller. "We had about 35 and quite honestly we probably could have done it with six, so we did overstaff."

"Now it's much easier," agrees Johnny Hua. "We have our vendors running out, lay down the laptops, plug them in, wait for our queue and turn them on. All we do is press the power button and walk away. And then everything comes under management. We automated the entire process, joining it to the domain, getting applications activated, getting it deployed, installing new editions and new versions of our software. We have plenty of ability to consistently and repeatedly deploy software or provide updated files. Anything, whatever you want, we can do it now."

"Nomad basically allows peer to peer distribution of the content," confirms Johan Arwidmark, "so that you don't overload a single file server or distribution point, because without the peer to peer solution you would have to have 40-50 servers spread out through the entire environment to be able to push out content that quickly. But by using peer to peer technology we have a single distribution point and can still leverage all that data."

ABOUT 1E

1E's mission is simple: to enable our customers to automate the full software lifecycle across their business. Through Software Lifecycle Automation employees become more productive, the business becomes more agile, and IT departments are more reactive to change. We empower our customers to remove unused software and unnecessary servers, and reduce network bandwidth while providing their users with the software they need, when they need it. As a result, our customers save millions on hardware, software, energy and people. To date, 1E solutions have generated over $2.6 billion of productivity improvements. This includes $1.6 billion in energy costs along and a reduction in CO2 emissions of 12.4 million tons.

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