



Network Services Report – Verilan Event Services
802 Plenary
Estrel, Berlin, Germany
July 10-14, 2017

Verilan provided network infrastructure services to the IEEE's July, 2017 802 plenary at the Estrel Hotel, in Berlin, Germany.

External Connectivity, Routers, Core Switching

The hotel provided 100Mbit of available download capacity and 500Mbit of available upload capacity during the conference.

We had 8 external IP's readied for an 8-way failover across 8 ports on two different routers. Dual Cisco Gigabit switches were interconnected and set for failover to the routers as well.

Infrastructure, Internal Connectivity, Servers

Physical layer connectivity was a mix of multimode fiber and Cat5. There were seven separate wiring closets to coordinate, as well as a link-aggregated connection to the servers in the Strassburg office.

Where possible in the hotel, we link-aggregated available ports between wiring closets in Port Channels (bonding) to increase throughput and reduce latency between areas of the hotel. This seemed especially useful in the larger meeting rooms and with access to the FTP server.

All servers are actually VMWare virtual machines running on a local VMWare host. There are local full backups of the VMs, full backups on a secondary server, an external hard drive with a backup of the Vms and offsite access to another pre-conference backup. Snapshots run periodically and synch data from the VMs during operation. Re-activation of a failed VM from a backup or snapshot is on the order of 5-10 minutes, with a potential loss of ~10-15 minutes of change data.

Access Points

Wireless Access Points with A/B/G/N capability were deployed throughout Germany's largest hotel and its meeting rooms.

Wired Cafe

Almost no one used a wired connection at the meeting, but they were available in the wired cafe area of the meeting, by the registration desk. They typically provided 102 Mbps download and 500Mbps upload speeds. Wireless APs provide the connectivity and most just used the connection area as desk space.

Help Desk

We ran the "Network Operations Center" from the network help desk during this conference, as we had for the previous plenary, from 8-5 daily. It meant that more Verilan personnel were present and visible and seemed to help get us better feedback about the network from attendees.

Outages/Issues

There were no outages on the equipment side at all during the session, but we did have two reports of the room network transmissions being powerful enough to list themselves as “top option” in people’s wireless settings. This caused some attendees to switch back to the rooms networks when that network appeared more powerful. This seemed to be an issue in ballroom space and on 2nd floor spaces, closer to the rooms network. The hotel APs are transmitting at *very* high power, which seems to be typical for hotels.

Increasing the power on the AP’s in the ballrooms and the floor 2 or higher meeting rooms fixed this issue very nicely. Previous Verilan-run meetings had the hotels disable their wireless APs entirely, but this isn’t an option in the Estrel. Internet of Things devices such as electrical usage monitors, water flow meters, security devices, fire detection, etc. are relying on the Estrel’s wireless infrastructure and can’t have the hotel’s access points disabled or attenuated. So, more than at other conferences, there was more more adjusting of signal strength on the Verilan APs to be the “preferred” connection in meeting rooms. This was balanced by the desired to limit the amplitude on the APs enough to reduce total physical layer congestion and maintain throughput speeds. Having the APs tuned to a power level just high enough to be the preferred connection in all meeting spaces is the goal for locations where other signals are in competition.

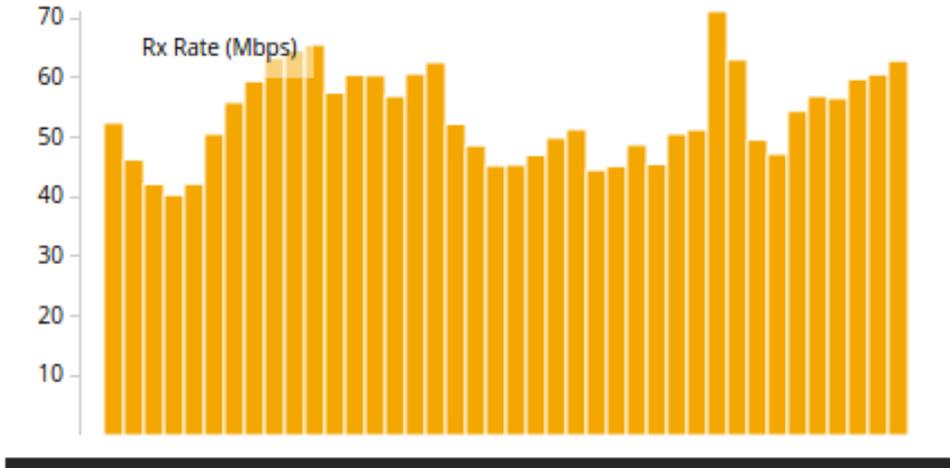
We fielded about 20 support requests all week, many of which centered around making sure attendance tool access was working correctly, getting power converter plugs and managing FTP permissions. See the note at the end of the report for our attendance tool comments and suggestions.

Network Usage

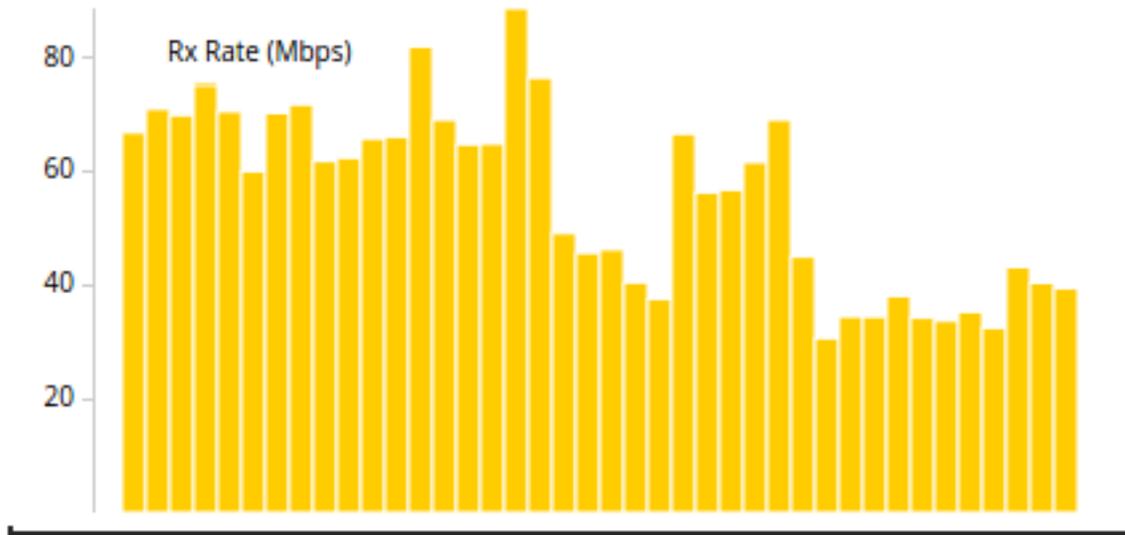
With nearly 2800 unique MACs connecting to the network over the week, that comes to about three devices per person, plus some infrastructure equipment.

Usage peaked on Tuesday, July 10th, at a sustained rate of 85Mbit down for about 2 hours in the mid-day, but generally stayed in the 70Mbits of downstream traffic range for most of the daytime hours of the conference, tapering off to about 20Mbits in the late night and early morning hours.

Typical Daily Download Traffic (~45-70Mbps)



Highly active traffic on Tuesday, July 11th, 2017 (~85Mbit peak)



Note: Attendance tool

Support of the attendance tool itself isn't a part of Verilan's services, but *access* to the Attendance tool is the question we got the most at the support desk this week. Modern VPN software and web browsers do their best to cache IP information for a system. The IEEE attendance tool appears to be making a call to the browser to provide up-to-date IP address information and that doesn't always seem to be the case.

The best solution for those having trouble logging into the attendance tool, but definitely on the Verilan network and not using a VPN, was to use a **different browser** or a **secondary device** which hadn't ever run VPN software, or could be more easily cleared of cache and restarted on the Verilan network.

Otherwise, there are fairly involved methods for clearing all cached IP information, which varies widely by browser and OS. On the IEEE website side, it might be a good idea to investigate if the call made by the Attendance Tool for "get reported requester IP" can be extended or replaced by a call for something like "have browser refresh current IP and report back that result." I don't know if that's an available mechanism, nor do I have any confidence that is something that all browsers or operating systems implement or allow, but it may be worth looking into.

Finally, having the attendance tool orientation materials for newcomers at the network support desk helped immensely in the latter half of the week.