Friesland College Improves Network Performance via Visibility and Analytics with the Aruba 8400 Switch

Sponsored by: Aruba, a Hewlett Packard Enterprise company
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Overview

Friesland College is a vocational education institute based in the Dutch province of Friesland and serves more than 10,000 students across more than 200 professional courses in areas ranging from construction and transportation to life sciences and business services. To support its students and 1,300 instructors and employees, the college maintains a campus network linking its main training center in Leeuwarden with 10 other branches across the Friesland province.

Two years ago, the college decided to replace its aging network infrastructure with a high-bandwidth, mobile-friendly private cloud solution to reflect its stature as a leading developer of new educational technologies. The goal was to give its students and faculty quick and reliable access to essential resources via their various personal devices, both from the classroom and across the various campuses.

According to Ronald Kollen, a consultant at Friesland College, the college evaluated various next-generation network solutions through a European tender before choosing to deploy the Aruba 8400 campus core and aggregation switch (Aruba 8400) as part of this network infrastructure upgrade. The college was particularly impressed with Aruba 8400’s programmability, automation, monitoring, and analytics capabilities. In addition, the college wanted to bring the benefits of software-defined networking (SDN) to its network infrastructure and viewed Aruba's breadth of SDN offerings as beneficial.

Kollen explained that while deployment of the Aruba 8400 switch is still relatively new, it not only has enabled Friesland College to give its students and faculty the dependable network performance they need but also has improved the productivity of the college’s employees. Beyond much-improved network performance, Kollen noted that the switch’s programmability, automation, and analytic capabilities help the college’s IT team identify and remedy network-related performance issues more effectively. As a result, the college’s employees can work more efficiently and the college itself is in a better position to offer real-time video-based learning courses that will constitute a growing share of its course offerings in the years to come.
To quantify the benefits from deploying the Aruba 8400 switch, IDC conducted several interviews with Kollen and asked a series of questions about the investment involved and the benefits realized in terms of cost savings and higher IT staff and employee productivity. Based on these interviews, IDC calculates that Friesland College will realize total benefits worth €397,677 ($493,119) over a projected three-year period, which would result in a three-year return on investment (ROI) of 166% and a payback period of 13 months.

Implementation

Until 2000, every building at Friesland College had its own network infrastructure and IT support. Subsequently, the college’s facilities were linked by a single network infrastructure and applications managed through a desktop system. Kollen noted that this IT environment grew to include 100 servers supporting 4,500 desktops, laptops, and tablets and several thousand personal devices used by students and faculty. Further, the college’s IT organization delivered management applications via the network for registering students, tracking student progress, and handling administrative and HR activities.

In addition to the network traffic these activities created, the college's rapidly increasing use of remote learning, streaming video, and popular applications such as Skype strained network capacity and led to performance issues. “To prevent students and faculty from becoming growingly vocal in their complaints,” said Kollen, “we needed to determine whether there was enough network capacity and how to deal with performance degradations because we didn’t have the tools to determine what was causing the problems.” Further, in line with its ongoing efforts to develop new pedagogical approaches, Kollen noted that Friesland College is growing its course offerings offsite and using new technologies such as video streaming, placing an increasing burden on its network infrastructure and lean IT staff.

Friesland College realized in 2016 that it needed a network upgrade and issued a request for proposal, including for network switch hardware. It chose to deploy the Aruba 8400 switch after evaluating vendor submissions and concluding that the programmability, automation, monitoring, analytics capabilities, and high throughput of the Aruba 8400 made it the right choice.

Friesland College started its network refresh in October 2017 and began preparing for the installation of the Aruba 8400 switch the same month. "We can only do refreshes on certain days, so it was spread out," said Kollen, "but we knew we had to finish by the first week of the new year." Shipments began to the college’s installation and security partner (SecureLink Netherlands) in November for testing. With the Aruba 8400, Aruba provides white-glove support, and Aruba flew in specialists from the United States to support the college. "It turns out we had no problems," Kollen said. "We started mounting the Aruba 8400 equipment on January 2 and were up and running with our website operating by the end of the day. The Aruba 8400 immediately allowed us to identify and resolve the problems we couldn’t pinpoint on the old system, and it has completely met my expectations for network performance."
Benefits

The Aruba 8400 core and aggregation switch is already enabling Friesland College to give its students and faculty the high levels of network performance they need — in the classroom, around the campus, and via remote access to courses and materials. Further, Kollen stated that the Aruba 8400 is already serving as the keystone for a robust network infrastructure with the capacity to handle escalating network traffic that offering a top-class education will entail.

The need for Friesland College to have network solutions in place to ensure performance is especially relevant given the direction in which higher education is heading. Kollen explained, "We are seeing more and more remote video-based teaching, and we think it's going to grow over the next few years. One of the reasons we chose the Aruba 8400 is because it supports a really big stream of data and gives us the tools to monitor performance." The Aruba 8400 switch enables seamless upgrades so that the college can scale up as more devices are added and bandwidth needs increase as network traffic increases.

Importantly, the Aruba 8400 is already helping Friesland College address persistent performance degradation issues that were plaguing its legacy network environment. Previously, the college's lean IT team found it challenging to free up the time necessary to address some issues. These performance problems were impacting students and employees, leaving the IT team struggling to keep up with persistent inquiries about application performance issues related to network degradation.

Kollen noted that students had been experiencing performance issues with Skype, their most popular means of video conversation. "It was a bad image for the college," he said. This problem has been corrected because the network is now more stable and performing faster. Kollen noted that the college can afford the reputational hit of a poor online experience for students. He noted the challenge of linking student satisfaction with online services to enrollment but said, "We need our students to be pleased with the facilities we offer because it's a key part of delivering a good quality of education."

Meanwhile, the productivity of employees, including instructors, suffered as Friesland College's legacy network experienced frequent performance degradation even at normal network traffic levels. Kollen said, "Before, our employees would be frustrated with our aging network because it would take so long to get started and do simple things on the network." He continued, "Now, there are no delays with our new network, so our employees are saving 10-15 minutes a day." Meanwhile, because the IT organization found it challenging to identify the proximate causes of network degradation, it was more challenging for Friesland College to effectively use video as a classroom learning tool.

According to Kollen, such performance-related issues have been nearly unheard of since the deployment of the Aruba 8400 and network infrastructure upgrade, enabling the college's faculty and staff to focus on teaching and supporting educational initiatives. He said, "Before, when we experienced performance degradations, we couldn't pinpoint it to one specific thing. That's all changed with the 8400. It's already meeting my expectations of improved network performance and solving the issues we couldn't pinpoint on the old system." Kollen estimated that the Aruba 8400 has saved the college hundreds of hours of productive time per week as network performance has improved and provided much-improved experiences for students and partners.
Further, Kollen noted that the programmability, automation, monitoring, and analytic capabilities of the Aruba 8400 are beneficial for the IT team in dealing with performance-related network issues. With the introduction of the 8400/8320 series, Aruba offers a microservice-style database-oriented operating system, ArubaOS-CX, that is designed to support cloud services and mobile-savvy users. The microservices-style operating system provides a greater degree of resiliency and availability than traditional campus switches because functions can be individually upgraded and restarted. The use of REST APIs and a built-in network analytics engine (NAE) provides high levels of automation and visibility. When combined with the database-oriented design, NAE enables rewind and playback of network state during critical events. The college’s IT staff leveraged NAE to monitor network, system, and application performance and used event correlation to analyze trends and spot anomalies that could lead to future problems. Kollen commented, "When we look at the graphics on the Aruba 8400, it is giving us a really good indication of what its load is and where possible issues are, even though there haven't been any."

Now the IT team is not only delivering improved network performance but also spending less time identifying the causes of performance degradation, freeing team members to focus on more strategic initiatives. In addition, the three-person help desk team is fielding far fewer tickets and calls about performance and resolving problems faster when they do occur. "Before, an administrator would have to set up monitoring tools in response to a ticket," Kolli said. "Much of the time the person didn't have enough historical data to pinpoint the problem or didn't know what configuration changes had been made in the switch. The Aruba 8400 takes a snapshot of the configuration changes over time and analyzes the statistics, so the person can see the effect of the change."

The switch’s ability to collect network data and automate tasks based on that data has also been a boon for the IT team. "Using network statistics and automation to improve network performance is one of the most powerful features of the 8400," Kollen said. "It can directly improve the user experience without even requiring IT involvement."

**Quantifying the Benefits**

By interviewing Kollen and asking questions about the impact of deploying the Aruba 8400 core and aggregation switch on network performance and IT staff time requirements, IDC quantified the benefits Friesland College expects to realize. IDC calculates that over three years, the college will achieve benefits worth an average of €169,518 ($210,202) per year in the areas shown in Figure 1.
**FIGURE 1**  
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**Average Annual Benefits**

Average annual benefits: €169,518 ($210,202)

- €10,861 ($13,468)  
- €2,380 ($2,951)  
- €156,277 ($193,783)

- User productivity benefits, network performance  
- Reduced network infrastructure costs  
- IT staff efficiencies

Source: IDC, 2018

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**Higher Employee Productivity**

Deployment of the Aruba 8400 switch has had a significant and immediate impact on employee productivity. Employees found it challenging to work when network congestion prevented their applications from loading in a timely fashion, and they were further hampered when other network-related issues caused performance degradation. Thus far the college’s network infrastructure refresh – of which the Aruba 8400 is a core component – has vastly reduced user complaints about network performance, demonstrating the positive impact on the ability of a user to work unimpeded by performance degradation. Based on Kollen’s estimate of the time the typical employee is saving, which was previously lost due to network latency and performance issues, IDC calculates that the college will realize employee productivity gains worth an annual average of €156,277 ($193,783) over three years.

**IT Staff Efficiencies**

Before the college’s network refresh and deployment of the Aruba 8400 switch, its IT team spent too much time handling network-related performance tickets and investigating the causes of degradation, typically without success. Now, because of the Aruba 8400’s programming, automation, monitoring, and analytical capabilities, the five IT staff members dedicated to the network are expected to save time worth an average of €1,322 ($1,639) per year over three years and provide substantially higher network performance to employees and students.
Meanwhile, improved network performance has also reduced the number of calls received by the college's three-person help desk and the time needed to handle the calls. Since the switch deployment, this team is saving time worth an annual average of €1,058 ($1,312) over three years. Further, the college has realized these network performance improvements without needing to spend much more help desk staff time isolating and resolving issues.

**Network-Related Cost Savings**

In addition to employee and IT staff productivity gains, Friesland College benefited from taking costs off its books related to its legacy network environment. In particular, it has been able to decommission its previous network switch infrastructure, thereby no longer paying maintenance fees on those switches. IDC calculates that the college will no longer pay an average of €10,861 ($13,468) per year over three years by deploying the Aruba 8400.

**Return on Investment**

From its interviews, IDC quantified the benefits and investment costs for Friesland College from using the Aruba 8400 switch over three years. IDC calculates that the college will invest a discounted total of €149,481 ($185,356) over three years, which will yield total discounted benefits worth €397,677 ($493,119) over the same time. From the analysis, IDC projects that Friesland College will realize a three-year ROI of 166% from its use of the Aruba switch solution, which will mean payback in 13 months (see Table 1).

**TABLE 1**

<table>
<thead>
<tr>
<th>Benefit (discounted)</th>
<th>€397,677 ($493,119)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment (discounted)</td>
<td>€149,481 ($185,356)</td>
</tr>
<tr>
<td>Net present value (NPV)</td>
<td>€248,196 ($307,763)</td>
</tr>
<tr>
<td>Return on investment (ROI)</td>
<td>166%</td>
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<tr>
<td>Payback period</td>
<td>13 months</td>
</tr>
<tr>
<td>Discount rate</td>
<td>12%</td>
</tr>
</tbody>
</table>

Source: IDC, 2018

**Methodology**

IDC conducted several interviews with Kollen to discuss Friesland College's investment in and use of the Aruba 8400 switch. IDC used these interviews to gather the information needed to quantify the benefits and investment associated with the institute's use of the Aruba 8400 and created an ROI analysis from the results.
IDC calculates the ROI and payback period in a three-step process:

- Measure the financial benefits directly resulting from the solution, including decreased IT infrastructure costs and increased IT staff and user productivity since deployment.
- Ascertain the total investment.
- Project the investment and benefit over three years and calculate the ROI and payback period. The ROI is the three-year net present value (NPV) divided by the investment. Payback period (expressed in months) is the time required to pay back the initial investment and establish a positive cash flow. To account for the time value of money, IDC bases the ROI and payback period calculations on a 12% discounted cash flow.
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