# THE COLEGIO GOETHE, ST. GEORGE'S COLLEGE AND BELGRANO DAY SCHOOL

Schools in Buenos Aires Upgrade Wi-Fi to Transform Digital Learning

RUCKUS an ARRIS company

CASE STUDY


## OVERVIEW

The Colegio Goethe, St. George's College and Belgrano Day School provide elementary, middle and secondary education to the entire community. They are located in the province of Buenos Aires in Argentina. An average of 1,200 people participate daily in its activities, some of whom provide instruction to students.

## REQUIREMENTS

- Solve Wi-Fi users' connection issues
- Improve network quality as a prerequisite for the BYOD model
- Make it possible for all students in the classroom to view a video at the same time
- Obtain a considerable amount of sustained simultaneous connections
- Make Internet access available in all areas of all schools
- Implement connection analysis tools to analyze data and find out what can be improved in the learning process

## SOLUTIONS

- Belgrano Day School: implemented 52 Ruckus Networks 802.11ac Wave 2 indoor access points with the Ruckus virtual SmartZone controller
- St. George's College: implemented 17 Ruckus 802.11ac Wave 2 indoor access points in classrooms in two buildings
- Colegio Goethe: implemented 18 Ruckus Networks 802.11ac Wave 2 indoor access points with the Ruckus virtual SmartZone controller. The initial project involved high school classrooms only

## BENEFITS

- Increased number of simultaneous users
- Users satisfied with their connectivity
- BYOD ready system as a result of adding a Wi-Fi network for the students' private devices
- High performance, reliable Wi-Fi network

## RUCKUS NETWORKS WI-FI ELEVATES CLASSROOM EXPERIENCE WITH UNINTERRUPTED ACCESS

Wi-Fi infrastructure in primary and secondary education in Argentina is currently undergoing a process of transformation, with a quantitative leap in classroom connectivity. Teachers cannot focus on teaching if they have to worry if their wireless connection is going to work when playing an interactive video for their students, or in a class given by video conference. For educational purposes, teachers want the school's Wi-Fi to not just work, but work well so they can avoid wasting time with connections that drop again and again. As such, Wi-Fi plays an important role in successful learning, both in the classroom and for access by teachers and students at any other time. Needs such as collaborative teaching, turning in assignments online and doing research mean that some private schools have made the necessary changes to their Wi-Fi infrastructure to be able to handle pedagogical platforms and 1:1 or BYOD (bring-your-own-device) models with the necessary quality. Some of the most highly-regarded Argentine schools have adopted the solution provided by Ruckus Networks, partnering with Mediatel, to take Wi-Fi to the next level with highly satisfactory results.

### CHALLENGE

The Colegio Goethe, St. George's College and Belgrano Day School each serve an average of 1,200 people including students and teachers, offering part-time and full-time classes. Founded between 1890 and 1912, their expansive campuses feature large spaces to provide elementary through secondary education, recreational spaces, assembly halls and dining halls.

All schools are now facing the challenge of transforming educational IT. Certain global educational trends have arisen based on technological capabilities. Currently, educational trends focus on interdisciplinary work involving collaborative, project-based learning, from various sources, active methodologies and complex assessments. The level of Internet use at schools varies depending on the user, access allowed and type of content. The following table shows this differentiation, for which certain Wi-Fi equipment are required depending on the connection access index.

Staff at St. George's College say that they normally had the promised bandwidth but that they rarely achieved the expected number of connections. Their goal was to upgrade the experience of cable or Wi-Fi connected users. According to Fabián Casas, ICT coordinator at this school, "For example, we wanted all the students in a classroom to be able to view audiovisual content at the same time, and for the teacher not to have to worry about connection problems." Casas also says that they have been using Wi-Fi since the first AP went on the market and says that "the importance

## LEVELS OF INTERNET USE IN K-12 EDUCATION

<table>
<tr><th></th><th>TEACHERS AND ADMINISTRATION</th><th>OCCASIONAL USE</th><th>EDUCATIONAL CONTENT PLATFORM</th><th>OPEN BYOD</th></tr>
<tr><td></td><td>• Student use not permitted</td><td>• Student access temporary or restricted<br>• Occasional pedagogical use</td><td>• 1:1 solution<br>• Uninterrupted Internet use in the classroom</td><td>• Free use by students<br>• Intensive incorporation of ICT pedagogical methods</td></tr>
<tr><td rowspan="3">Type of Content</td><td colspan="4">Web and documents</td></tr>
<tr><td></td><td colspan="3">Audiovisual content</td></tr>
<tr><td colspan="3"></td><td>Intensive social network use</td></tr>
<tr><td rowspan="2">Wi-Fi Equipment Required</td><td>• Residential Equipment<br>• Self-install professional equipment</td><td colspan="2">• Professional equipment<br>• Certified professional design and installation<br>• Management and monitoring platform</td><td>≈Min. 1 AP for every 2 classrooms + reinforcement in patios and SUM(1)</td></tr>
<tr><td></td><td>≈Min. 1 AP for every 4/6 classrooms(1)</td><td>≈Min. 1 AP for every 2/3 classrooms(1)</td><td></td></tr>
<tr><td>Internet Access Indicators(2)</td><td>• 6-10 Mbps per person<br>• Non-dedicated</td><td>• ≈40-60 Mbps per person<br>• 3-5 concurrent classrooms<br>• Non-dedicated</td><td>• ≈150-200 kbps per student<br>• Dedicated/provider redundancy/balancing</td><td>• ≈200-350 kbps per student<br>• Dedicated/provider redundancy/balancing</td></tr>
</table>

(1) Subject to network engineering analysis, signal propagation and capacity
(2) Bandwidths are for reference and may vary depending on the services required

of the Internet has evolved to the point that it is now an enormous part of our culture, and we must now educate on the Internet, living the Internet. With the network, the school was able to get back to its initial role: that of encouraging learning. In the near future, for example, the virtual reality environment will require users and developers to have new skills; this will involve new educational paths, new academic credentials, social skills and decisions that students will need to make about their future. This is why the school needs to handle these new challenges.

Apart from this, the Colegio Goethe had certain problems accessing Wi-Fi with school devices and problems with service quality that led them to evaluate various solutions. They also needed to improve their network quality so as to be able to implement a BYOD model.

Verónica Dietz, head of the IT department at Colegio Goethe says that the use of IT in education is in the midst of a full-scale revolution, specifically with regard to the use of the Internet. "IT tools are essential to an innovative education. We must provide network access in the classroom and this is typically in 1:1 formats where the school provides computers to students, or a BYOD system. This requires reliable Wi-Fi access."

At Belgrano Day School they have been incorporating the Internet using BYOD for over eight years and the decision to implement a new network was made by the education committee, unlike other schools at which the decision was made by the technology departments. This has to do with the school's culture, in which technology plays a central role in the instruction, due to the role the Internet plays in our lives, and the teachers use it as a teaching tool. They believe that school provides the opportunity in each person's life to make mistakes and learn from them, and they therefore do not prohibit the use of the Internet by their students. Instead, the school helps them learn how to use this tool.

The school was experiencing a lot of failures with their previous solution when more than ten users were connected at the same time in the same location. Francisco Lehmann, vice principal of Belgrano Day School, expressed the school's vision with regard to the free use of the Internet and the pros and cons of this approach. He says that "It would be easy to prohibit students from accessing the Internet but this would restrict their learning, since learning can happen at any time, not just in the classroom. That is why access to information must be available from any location, to take advantage of the spark of interest in learning that a student may have at any time. That is why, while we do have a content control platform, we do not restrict Internet use and despite having free access, we preserve and strengthen our personal relationships. He also says that this need was inherent, since their activities include international teleconferences, virtual subjects, and it is common to see students collaborating on group projects in the hallways.

## SOLUTION

These schools needed to improve their Internet connection and particularly needed sustained concurrent connections. Therefore, they required tailored solutions that provided a strong and consistent Wi-Fi signal for users' devices.

The Ruckus Networks solutions were implemented by its local partner, Mediatel, which developed a multi-client speed test system specially designed to test WLANs in educational settings. The test assesses the data transmission speed

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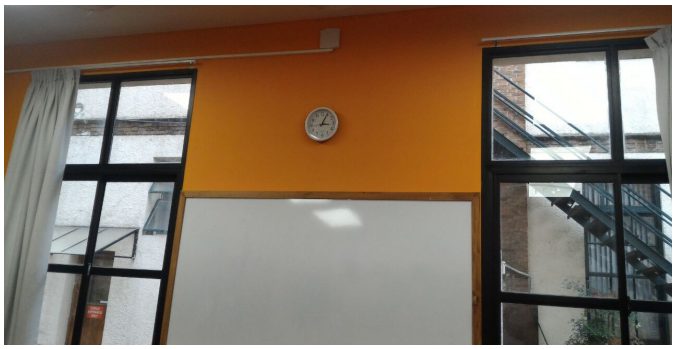

"The performance was definitely efficient but also the local support offered by Ruckus through its partner, Mediatel, was also a factor. We are very pleased because the equipment is well-configured and continuous monitoring is provided."

**VERÓNICA DIETZ**
Head of the IT Department at Colegio Goethe

of multiple clients simultaneously. This makes it possible to determine the level of service of the proposed WLAN, evaluate different AP brands and models (for example, those the schools originally had) and evaluate topologies and configurations. The tests conducted at the schools show that Ruckus outperforms the brands typically used in educational settings and the effectiveness of a deployment can be demonstrated before developing it.

According to Fabián Casas, "The technical characteristics of the Ruckus equipment and in particular its ability to handle multiple connections in the field tests provided by Mediatel in the diagnostics phase convinced us that this was the right solution to our problem." For St. George's College, the decisive factor in choosing Ruckus was the test run in the building that demonstrated how well it handled multiple users downloading video, which was their greatest challenge. Moreover, the architecture of the classrooms in their older buildings is rather unique. The unique architecture makes it impossible to install the APs in the ideal location. For this reason, the deciding factor was the ability to adapt the geometry of the signal based on the connections (BeamFlex), in addition to the client management tools (Ruckus ChannelFly, Airtime Fairness, etc.) and packet types (Ruckus SmartCast).

The Colegio Goethe has a very strong commitment to infrastructure quality and educational tools. With the previous system they lacked the proper diagnostic tools and it was difficult for them to identify the failure point. Verónica Dietz says that "Mediatel proposed running a multi-client traffic test comparing our antennae with those of Ruckus Networks, which showed that the problem was the Wi-Fi access. Having identified the problem we looked for the best solution for the school community." At this school, we ran a multi-client test. A speed test was run with 48 tablets and computers downloading data simultaneously. This simulates a situation in two classrooms with one access point. The same test was conducted with the existing access points and the Ruckus access points. According to Dietz, "The solution offered by Ruckus was clearly superior."

The implementation was completed in less than a month and the results, as far as coverage, speed and strength, were excellent, giving the school the high-quality Wi-Fi network it was looking for," says Francisco Lehmann.



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18-08-A