

College of Humanities and Sciences, Nihon University

Arista Networks

Case Study

Nihon University utilizes mGig-compatible ports and cloud management functions to ensure future scalability to accommodate changes in the education environment caused by COVID-19



Nihon University, College of Humanities and Sciences main building

Historic campus

Nihon University is one of the largest private universities in Japan, whose history can be traced back to the Nihon Law School founded in 1889. Its facilities and faculties are scattered in various locations across Japan; with the College of Humanities and Sciences covering a vast site in Setagaya, Tokyo and boasting a long history: its predecessor being the Faculty of Letters, Graduate School of Letters and Graduate School of Comprehensive Basic Sciences established in 1901.

The campus consists of multiple buildings with different years of construction and architectural styles. It was necessary to provide a certain level of network environment throughout the entire campus and to establish an ICT environment in which students and faculty members can access the network anytime, anywhere. The College of Humanities and Sciences Computer Center is in charge of the common infrastructure development; with wireless LAN currently available on all floors of all campus buildings. When the equipment in Building No.3, which was built about eight years ago, came up for renewal, the university decided to adopt Arista Networks (hereafter Arista) switches and wireless LAN access points after reviewing the various requirements.

Background of the adoption

First, the team tested the usability of the "Extensible Operating System (EOS®)", Arista's fully programmable, open and highly modular network operating system. They found that it could be used to adopt the industry standard CLI and run virtualized environments and containers. As a result, the team decided to adopt the Arista solution which minimizes the operational management burden and enables the university to test the usability prior to adoption.

Next, they initiated a study towards the replacement of wireless LAN equipment in Building No. 3, performing a comparison between "on-premise Wi-Fi manager" and "cloud-based Wi-Fi manager" as their new operations management environment. Professor Takayuki Kobayashi of the College of Humanities and Sciences Computer Center explains the background of this Wi-Fi infrastructure renewal: "Since introducing wireless LAN, we saw a significant increase in the number of users. This prompted us to start considering an upgrade to faster Wi-Fi 6 (IEEE 802.11ax)". He adds that various measures had been taken in the past to strike a balance between the increasingly sophisticated service levels and installation conditions. For instance, when they installed new

customer data

College of Humanities and Sciences, Nihon University https://www.chs.nihon-u.ac.jp/

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History

The Nihon University College of Humanities and Sciences is a comprehensive faculty with a long history. Its predecessor was the Faculty of Letters, Graduate School of Letters and Graduate School of Comprehensive Basic Sciences established in 1901 at the Nihon Law School, founded in 1889 (renamed Nihon University in 1903). Based on Nihon University a ducational philosophy which aims to cultivate the spirit of "independent creativity", the College of Humanities and Sciences promotes education and research characterized by the fusion of "humanities" and "sciences".

switches in Building No. 2, they were required to select a fanless model with high heat resistance limits because only a narrow piping space was available for the installation. In deploying wireless LAN across the building and ensuring both strong authentication and user convenience, the team introduced additional improvements such as allowing users to bypass authentication for access from devices with the required certificate installed, in addition to MAC address authentication and Web authentication.

Support for mGig (Multi-Gigabit Ethernet) also emerged as a new criterion in enabling Wi-Fi 6 for their network. This technology enables communications at speeds of "multi-gigabits" (2.5 Gbps and 5 Gbps), significantly faster than the conventional gigabit (1 Gbps) LAN. However, in order to deploy fast Wi-Fi 6, a matching performance is required for the wired uplink network. PoE (Power over Ethernet) is also needed to streamline the deployment of





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classrooms, lounges, cafeterias, libraries and other student facilities. With the introduction of Arista switches, the trunk line bandwidth between floors has been expanded to 20Gbps. There is also room for future expansion, as the system is designed to support communication speeds of up to 100Gbps by replacing transceivers and cables with compatible products.

University-specific efforts

Naturally, there are cost constraints when implementing a new system and efforts must be made to maximize cost-effectiveness. Assistant Professor Takaaki Ohkawauchi of the Computer Center explains the deployment of access points in classrooms and other locations: "There are several classroom sizes, and we cover small rooms with a single access point while larger rooms are generally covered with multiple access points deployed diagonally. In the previous wireless LAN system, connection was unavailable in lounges and some classrooms. In this renewal, we made sure to eliminate these 'no coverage areas' so that Wi-Fi can be accessed anywhere in the entire building." He adds, "The use of PCs and ICT tools on campus will continue to increase. We need to anticipate this and continue to enhance the infrastructure of



C-230 access point installed on the ceiling

the Computer Center to accommodate such growth in the future."

Assistant Professor Eriko Tanaka of the Computer Center comments on the future prospects: "All students should be able to access the network without any problems. We also hope to provide a system that will enable online viewing for students who were unable to attend classes for various reasons or wishing to review their classes." ***

The renewal of the wireless LAN system of the College of Humanities and Sciences coincided in timing with the global Covid-19 pandemic. The advantages offered by Arista include high-speed performance, which also encompasses future growth, superior operations management capabilities including cloud support, and industry-leading cost performance.

Capitalizing on these advantages, Arista successfully caters for the needs of the College of Humanities and Sciences, which is faced with the challenge of responding quickly to the Covid-19 pandemic and keeping up with the major irreversible transformation this brings to university education. It is expected that wireless access to richer content will be the norm on university campuses in the future - Arista will be ready to offer the scalability needed for this new environment.

Arista will continue to implement advanced features to accommodate a myriad of user needs and offer infrastructure products that will meet the advanced requirements of all university users.



unication Studies

access points. Professor Kobayashi says, "From the perspective of preventing leakage of student usage data and operations management information, a conventional 'closed network' was a safer option. However, amid the Covid-19 pandemic, we decided that operations management should be accessible onpremise as well as via the cloud." These decisions led to the full deployment of Arista switches and access points in Building No.3, as Arista supported mGig and remote management capabilities suitable for Wi-Fi 6, as well as offering superior cost performance.

Organic link between high school and university



Arista 7050SX switch in operation

The wireless LAN system of the Nihon University College of Humanities and Sciences uses Arista CloudVision® Wi-Fi to enable remote management via the cloud. Since wireless LAN has also been implemented in the affiliated high school, the team standardized the authentication platform so that high school students can bring their iPad devices to the university campus and use them seamlessly. It also took into account that the affiliated Nihon University Sakuragaoka High School is located adjacent to the university and that high school students visit the university campus regularly, including for the use of its cafeteria, etc. There are currently about 80 access points deployed in Building No.3, with around 270 access points deployed in total to provide wireless LAN access in



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