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Taku Hara of the Future Technology Design Department, TBS Television’s Media Technology Bureau

Company name:
Tokyo Broadcasting
Systems

Industry:
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Company website:
techdesignlab.net/X

Geographic region:
Tokyo, Japan

Tech Design X, Tokyo Broadcasting System’s R&D base, takes full advantage of NETGEAR’s AV over IP switches to create content for the future

ENHANCING CONTENT CREATION IN AN OPEN INNOVATION/R&D FACILITY

Tech Design X is an innovation space in Akasaka, Tokyo, operated by the Tokyo Broadcasting System (TBS) Group. It opened at the end of March 2023 as an R&D base that aims to create future content combining the latest technology and the best design without being constrained by the conventional broadcasting framework.

Tech Design X is staffed by the TBS Group’s technical and art staff. The space’s open atmosphere serves as a base for advanced and innovative initiatives such as remote program production, virtual production, camera tracking tests, and regular work such as Computer Graphics (CG) production and video editing.

Remote production connects a remote destination and a studio via an IP network. The studio can control the camera remotely and turn off the video, reducing the equipment and personnel required at the remote destination.

Virtual production involves shooting a composite scene in a studio of computer-generated (CG) images displayed on a large, high-definition LED screen in the background along with the live foreground image simultaneously. More realistic composite images can be realized than conventional chroma key compositing.

Tomomi Nagayama of the Future Technology Design Department of TBS Television’s Media Technology Bureau explains the background behind the launch of Tech Design X. “The TBS Group’s management vision for 2030 calls for the best time to expand content infinitely beyond the bounds of broadcasting. Our core value is creating content, and we will expand our ability to create content beyond terrestrial broadcasting. With this in mind, Tech Design X was created as an innovation space,” she said.

Tech Design X collaborates with the TBS Group and external companies, universities, other research/educational institutions, freelance engineers, creators, and students. In addition to demonstrating content production technology, the facility will be open to the public for events such as hackathons, technology experience sessions, and R&D results presentations. These facilities are connected by an IP network, allowing the transmission and control of video and audio data.





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Taku Hara of the Future Technology Design
Department of TBS Television’s Media Technology Bureau

To accomplish its ambitious programs, Tech Design X currently has two NETGEAR AV switches installed. The first switch, an M4250-40G8F-PoE+ (GSM4248P), was added when the facility opened in the spring of 2023. However, Taku Hara, who was involved in selecting network equipment, says, “At the selection stage, I didn’t even know the name NETGEAR.”

Tech Design X is sometimes used as a remote production studio utilizing NDI as the video transmission protocol. Since NETGEAR AV switches are pre-loaded with network settings (profiles) optimized for NDI, the team found that optimal settings for NDI can be made with a simple click.

“We looked at products from various manufacturers when selecting them, and I heard that NETGEAR had an ‘NDI Ready’ switch. No other manufacturer has a switch specifically designed for the video industry, and I felt that NETGEAR has a product that would meet our requirements,” remarked Hara.

They had previously used a switch made by another company for video transmission, but it was difficult to understand the switch’s operation status, which required command-line operation. “It was difficult to isolate the cause of the trouble,” he recalls. The NETGEAR AV switches are equipped with a web GUI oriented to AV installations that allows users to see the switch’s performance and traffic status at a glance.

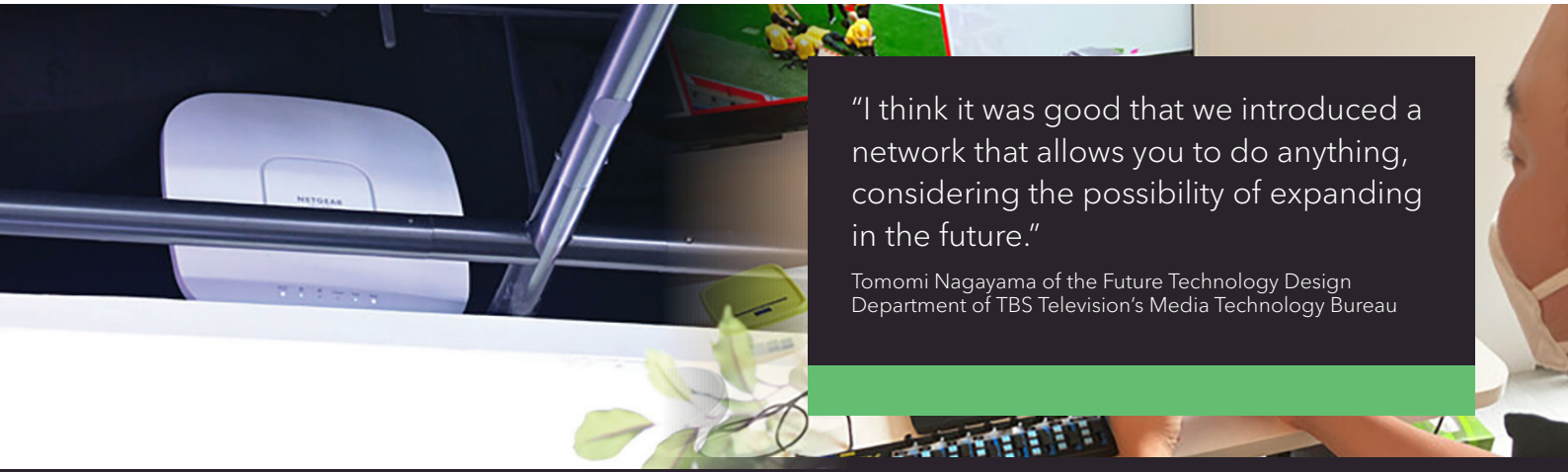


“If the video in a network transmission is corrupted, it can be caused by various factors, such as switches, networks, encoders, etc. However, I could not isolate the cause using the switch I had before. In the case of NETGEAR, you can easily check CPU usage and the number of packet losses on the management screen, so it is easy to isolate the cause. This will lead to trouble-solving and future improvements,” said Hara.

Incidentally, hearing from an acquaintance in the industry that “NETGEAR switches are hard to break” also encouraged the selection. “It’s not a quantitative evaluation at all, but that kind of reputation still leads to a sense of security,” Hara laughs.

The switch also supports PoE+ power with a 480W total budget and easily connects to NETGEAR WiFi access points, ceiling-mounted PTZ cameras, speakers, and more. “It is also important to note that (with PoE) there is no need to wire for the network and the power supply separately,” said Hara.





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Tomomi Nagayama of the Future Technology Design Department of TBS Television's Media Technology Bureau

LOOKING FORWARD TO FURTHER EXPANSION

The second switch used in the installation, an M4350-40X4C (XSM4344C) with 10G/Multi-Gig PoE++ capabilities, was added in February 2024. The addition of a multi-gigabit switch was made to help transfer the large amount of video data to the network attached storage (NAS) device in use.

NETGEAR also had recently announced that this model is one of two in the M4350 series that support SMPTE ST 2110 (the IP transmission standard for broadcast video equipment). Other requirements, such as the number of ports and PoE++ capacity, made this the perfect choice.

"The broadcasting industry is now in a transitional phase from video data over coaxial cable to uncompressed video transmission over IP networks," said Hara. "Even in Tech Design X, there is an expectation that experiments using SMPTE will grow in the future, and I thought that introducing this switch would be a wise investment."

To help with the growing demand for ultra-fast WiFi, Tech Design X also installed the NETGEAR WAX630E AXE7800 WiFi 6E access point. This tri-band device provides higher performance, lower latency, and faster data rates, and extends into the new 6 GHz band for expanded spectrum capacity.

Tech Design X is an R&D facility that always contributes to the research and development of unprecedented and innovative content production technology. Mr. Nagayama says, "I think it was good that we introduced a network that allows you to do anything, considering the possibility of expanding in the future."

Optical cables connect the Tech Design X network to other floors of the building, as well as to the TBS Broadcasting Center, a new building under construction, and Akasaka Sacas Square.

In the future, if support for SMPTE ST 2110 continues, it is also possible to transmit video from these locations via IP and operate programs and events with Tech Design X. Tech Design X and NETGEAR's ProAV switches are likely to play an essential role in bringing entertainment to the city of Akasaka.

