INTERNET MULTIFEED CO., established in 1997, is offering the indispensable infrastructure for today’s internet society, like the multifeed service started at the same time as the establishment of the company, as a pioneer of Japan’s internet data center (IDC) business, the time information feed services to the public, and other services such as high quality IPv6 internet connection service “transix”, etc. Above all, the internet Interconnection (IX) service, “JPNAP”, offers an “Interconnection Meeting Place” for cooperating internet companies, such as ISP (Internet Service Providers), ICP (Internet Contents Providers), CATV and others to connect together, that boasts the highest amount of traffic in Japan, as well as being in the top class in the world. In a network to support “JAPNAP”, they have worked in collaborative development with NTT-AT to introduce the Optical Switch Unit, “NSW series”.

● The Increasing Importance of IX Service

The internet is built on the interconnections between ISP, ICP, CATV, etc. and these users exchange communication traffic through internet. It is the IX that performs the role of their physical interconnection point. The “JPNAP” IX Service of Internet Multifeed Co., was started with the opening of “JPNAP Tokyo” in 2001, to offer the connection service. “JAPNP Osaka” and “JPNAP Tokyo II” were additionally opened, giving consideration to improving customer convenience and developing redundancy for disaster occurrences. More and more companies of many kinds, including Japan’s large providers, have been joining the IX services. In addition, in 2012 we began offering Asia’s first 100Gbps interface service, with a steadily expanding traffic flow. The amount of traffic traversing the JPNAP’s network has been rapidly increasing, due to video delivery services and the spread of smartphone use. The traffic exceeds 500Gbps now at peak times, counting Tokyo I, II, and Osaka together. It literally has become the base of Japan’s internet infrastructure.

“Of course, failures also occur in IX equipment. Before we introduced the Optical Switches, when a breakdown occurred we had to perform the switching to backup equipment manually. This always took time, and resulted in our customers losing their connection to IX during that time.”

They went searching, thinking that surely there must be some technical way to solve this situation, and as a result they discovered NTT-AT’s Optical Switch.

“By introducing the Optical Switch, the switching work during a failure, was significantly reduced from the approximately 30 minutes before down to 10msec, enabling us to reduce the communication loss of our customers to the absolute minimum. Knowing that this device is an indispensable function to IX’s service, one by one we introduced them to all of our sites nationwide.”

● The Birth and Evolution of the NSW Series

The Optical Switch was first installed in the IX service in 2005, but in the midst of the progress of its step by step introduction, they already began to ask “Couldn’t this be made even easier to use?” With this in mind they approached NTT-AT about the idea of cooperative development.

“In light of the increase in the number of customers we are handling, the question of finding a way to more efficiently expand was broached. At that time, as we discussed together with NTT-AT about how to practically

Reliability and Expandability are indispensable in IX service. What is an “Optical Switch” and how can it reduce the restoration time in system failures from 30 minutes to 10msec?
realize this, the optical switch was developed as a module to make a product with high versatility that could efficiently be introduced to sites where it is needed."

Along with modular configuration, many other ideas for increasing convenience for the user, such as optical power level monitoring function and grouping operation, etc., were included. The "NSW Series" was born in this way as a crystallization of the knowhow of both companies.

After that, the introduction progressed smoothly, and their NW experienced both an improvement in reliability and operational improvement as well. The results demonstrated by the "NSW Series" paid off, but and as the needs of IX further increased they had to cope with additional problems. "Currently, there are more than 100 companies connected as users to our service. Among these customers are some who need to change over multiple optical switches simultaneously since they are handling multiple circuits logically bundled together. Because of these kind of needs, along with the increase in the number of customers connected, the task to handle customer's circuits with optical switch units and to make them change over simultaneously became the next topic."

So once again the two companies joined together, and developed the latest product, the "NSW-BU-02-L" that handles 8 optical switch units as one logical switch unit and realizes the grouped changeover of up to 64 ports.

"In the midst of various problems, we were once again able to create an environment in which we could work together in developing a product that enables us to efficiently handle many customers' circuits."

Looking back on the situation in that time of development, Mr. Yoshida reflects, "When we have done development with other companies, at the fastest pace it took from 1/2 to a whole year and we were not even able to cover all of our requirements. But in the development of the optical switch we moved at a really speedy pace, discussing technical issues together, and in 2 or 3 months we had a completed product, development and introduce it right away. That's really fast."

In this way, the progress of the optical switch has continued, and Mr. Yoshida had this to say about the situation after putting the devices into operation.

"Up until now we have used many kinds of equipment, but these optical switch units really don't break down. I think they are products with very high reliability. I definitely think that it would be good to see other businesses use this product."

Concerning the Outlook From Here On

Lastly, asked about its outlook for the future, "In IX service, 100Gbps interface service has recently opened up. This will mean more and more traffic from now on. And IX service will be required to have even more reliability. We believe that the optical switch is an indispensable function in this environment. Our company is introducing optical switches in the ports of all of our customers."

"Also, for IX of the future, it will not be enough to simply handle our customers' circuits; we will have to respond to their new needs, such as security, etc. For example, using an optical switch to switch to a third pathway, cleaning the packet, and returning it to the customer's communication connection, is just one of the many increasing scenarios where we feel that optical switches will be useful."

"Since the optical switch unit can be used at the physical layer which is the basis of a network, we expect that they will have application in a wide range of usage scenarios. We definitely want to continue to cooperate to challenge new technologies together."

Customer Profile

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Overview of Main Activities: Internet Interconnection Service "JPNAP" IPv6 internet connection service "Transix"
Established: September, 1997