

Executive Summary

This year, MWC 2026 was held in Barcelona, Spain, again beginning on March 3. Although I was unable to attend in person, two key themes stood out to me as I was following the various news reports and online coverage of the event: AI-native networks and NTN (Non-Terrestrial Networks).

AI-native networks refers to a vision in which networks, which have so far been designed, managed, and operated by humans, are monitored in real time by AI systems that autonomously and continuously optimize them.

On the NTN front, advances in communications infrastructure based on low Earth orbit (LEO) satellites were a major talking point. SpaceX's Starlink announced Starlink Mobile, outlining plans to commercially deploy a direct-to-satellite communication service for smartphones. Amazon, meanwhile, announced plans to accelerate the rollout of its LEO satellite constellation (Amazon Leo), presenting a vision geared toward integrating it with its cloud services. My overall impression from MWC 2026 was that satellite communications have moved beyond the experimental stage and are beginning to take shape as a communications platform on par with terrestrial networks.

Amid these shifts in the environment surrounding Internet infrastructure, this issue of the IIR takes a look at IJ's initiatives from three perspectives: security, time synchronization, and backbone networks.

Chapter 1 presents analyses focused on security trends observed by IJ's SOC in 2025. While conventional threats such as DDoS attacks, phishing, and ransomware continue to have a serious impact, 2025 saw a sharp rise in social engineering attacks based on user-initiated actions, as exemplified by ClickFix. While efforts to address these threats progress, the number of publicly disclosed vulnerabilities has also been increasing in recent years, and vulnerabilities are increasingly being exploited immediately after, or even before, they are disclosed, making it harder to prioritize responses using conventional assessment metrics alone. This article presents practical findings from IJ's SOC on how to identify and respond to high-risk events with limited resources, including with newer assessment metrics such as EPSS, LEV, and SSSVC.

Chapter 2 covers PTP (Precision Time Protocol), a high-precision time synchronization technology. Time synchronization underpins service quality and safety in fields such as telecommunications, broadcasting, finance, and electric power. Conventional PTP, however, was designed on the assumption of private, stable networks, and that design choice has limited its applicability over public networks. This article first outlines the fundamentals of PTP and the challenges it brings, and then discusses IJ's involvement in work on RPTP (Resilient PTP), presenting an approach that achieves practical levels of time synchronization accuracy over public networks.

Chapter 3 discusses the commercial deployment of IP over DWDM as part of the ongoing evolution of IJ's backbone in the face of continued traffic growth. The article covers interoperability testing between vendors under the 400ZR standard and details on work to verify compatibility with existing infrastructure. While the commercial deployment of IP over DWDM at IJ's new core site in Osaka brought various challenges to light, the overall finding was that it can be expected to deliver significant benefits in terms of cost reductions, shorter lead times, improved operational efficiency, and enhanced scalability.

This issue of the IIR covers pressing challenges facing Internet infrastructure technologies related to security, time synchronization, and backbone networks, along with initiatives being undertaken to address those challenges. Guided by our mission of supporting society through technology, we will continue build on our foundation of stable services and evolve to ensure we can meet the demands of this era of transformative change.



Naoshi Someya

Managing Executive Officer; Network Services Business Unit; Director, Cloud Division, IJ
Mr. Someya joined IJ in 1998 and was seconded shortly thereafter to IJ Technology (which was merged into IJ in 2010). At IJ Technology, he was involved in the launch of the systems integration (SI) business and worked on building numerous Internet systems as well as providing consulting services. In 2016, he transferred to IJ's Service Business Division, where he was responsible for medium-term strategy for the cloud business. In 2019, he became head of the cloud business. As of this fiscal year, he serves as editor-in-chief of the IIR, with his aim being to proactively deliver practical, cross-cutting technical insights from across IJ to readers..