Managing Lawful & Location Intercept Costs in a Data-Driven World

Driving Efficiency in Multi-generation, Multi-vendor, Multi-jurisdiction Networks

SS8® *Securing Societies Always*

Executive Summary

There is a great need for advanced, reliable, easy-to-use, and cost effective lawful and location intelligence solutions. Yet several factors affect how quickly and affordably communications service providers (CSPs), law enforcement agencies (LEAs), and government intelligence agencies can upgrade their solutions.

One key factor is the exponential growth of data volumes in 5G networks. While CSPs seek to leverage the new opportunities of 5G, they face increased operational costs to extract, transmit, and analyze digital communication data in support of emergency services or criminal investigations.

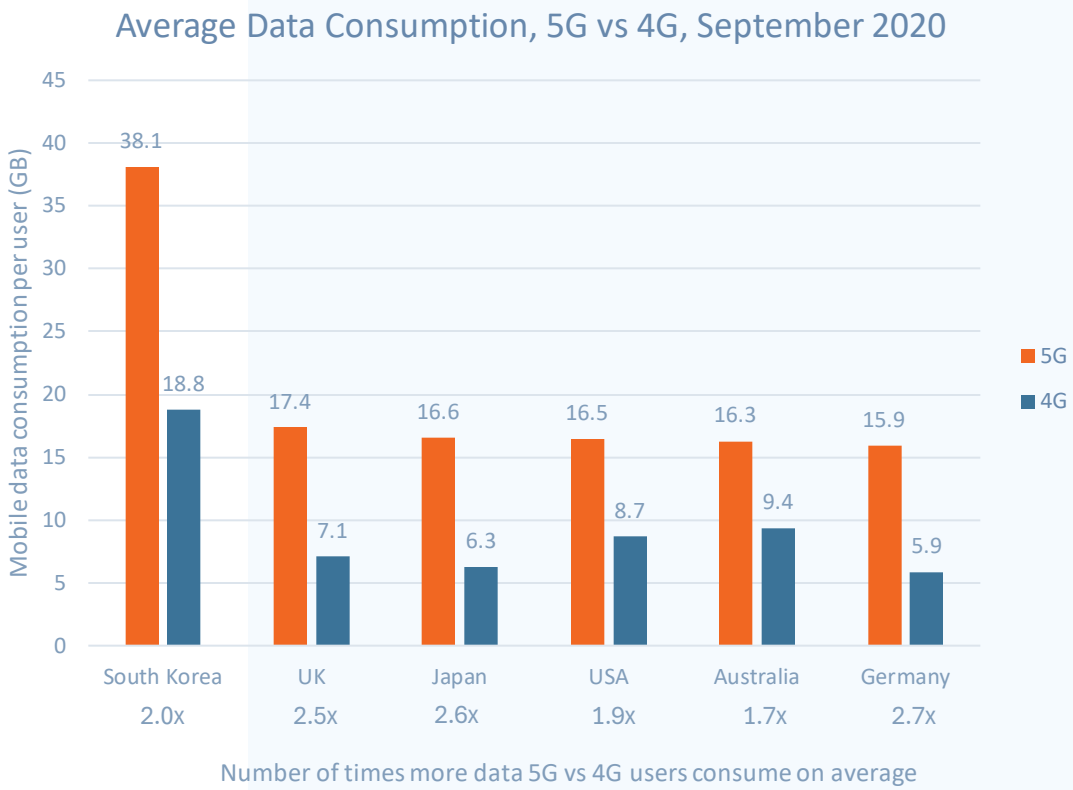
Additionally, CSPs remain heavily invested in older network generations and require mediation and interception platforms to function within these legacy architectures. Over time, the various lawful mediation solutions deployed can become expensive to integrate, may struggle with interoperability, and often involve multiple vendors. The result can be wasted time and resources, potentially hindering investigations.

This whitepaper examines the challenges faced by CSPs and Intelligence Agencies and discusses ways to streamline expenses and improve investigation results.

Challenges of Data Increases

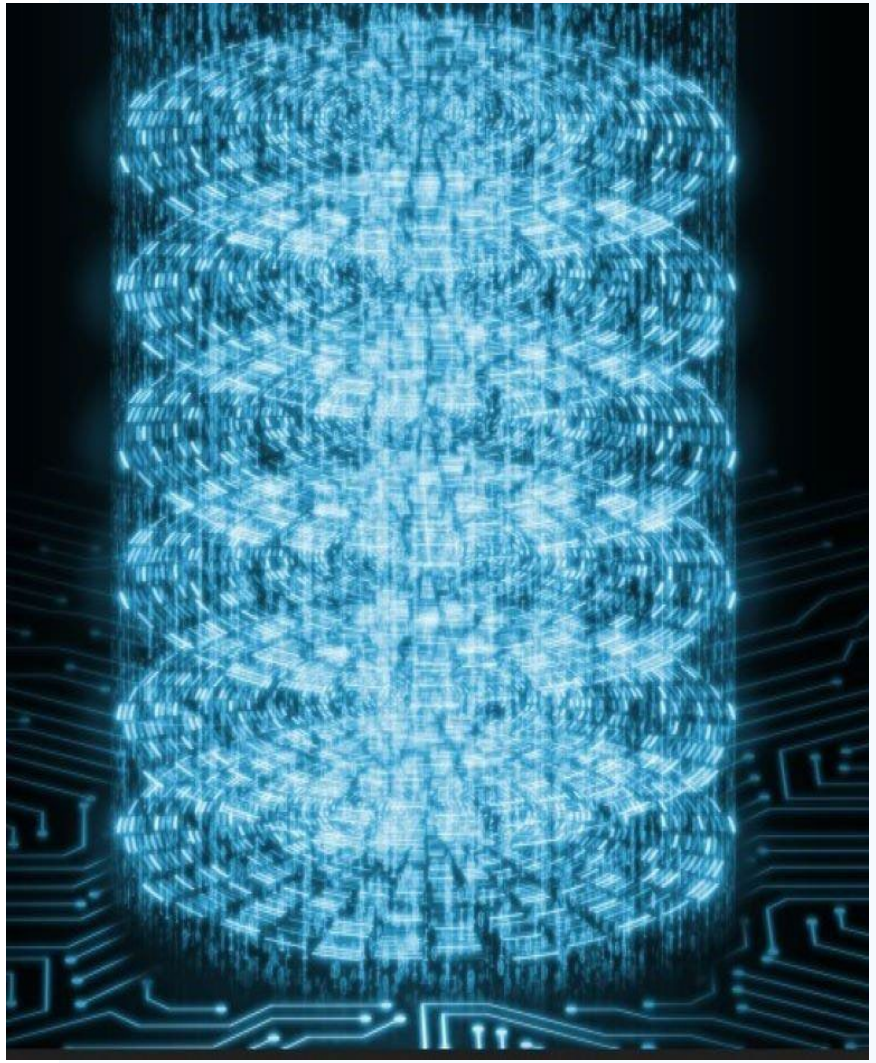
In North America and other regions worldwide, 5G is fueling significant growth in data usage, with subscribers expected to use an average of 40 GB a month by 2027. In northeast Asia, where 5G average speeds are currently some of the highest in the world (433 Mbps), 5G subscribers use an average of 2-3 times more data than 4G subscribers. This increase is driven by online gaming, web browsing, and high-resolution video streaming applications, which all require increased uplink capacity and more cloud storage.

This means that when LEAs request data for a suspect of interest (SoI), the communication data is co-mingled with other types of traffic, creating massive data flows per SoI. Unfortunately, much of this data is of little use to investigators. SS8 estimates that as much as 80% of that traffic is high-volume, low-value content like on-demand video from Netflix, Hulu, and other streaming services. In a typical raw mediation feed, this can obscure valuable information sought by investigators, resulting in bloated databases with limited actionable intelligence.



Challenges of Data Increases

As data volume increases, so do the costs and complexities of transmitting, analyzing, and retaining it. Encrypted data hand-over links are expensive, and compliance with redundancy and availability regulations adds further costs. Some jurisdictions require at least a 1GB link, TLS security, secure communications terminals and email, government-grade encryption, and dedicated IPsec tunnels to secure data. Providers often have multiple secure links, and government agencies using the data must maintain corresponding infrastructure. Each link can cost up to $20,000.

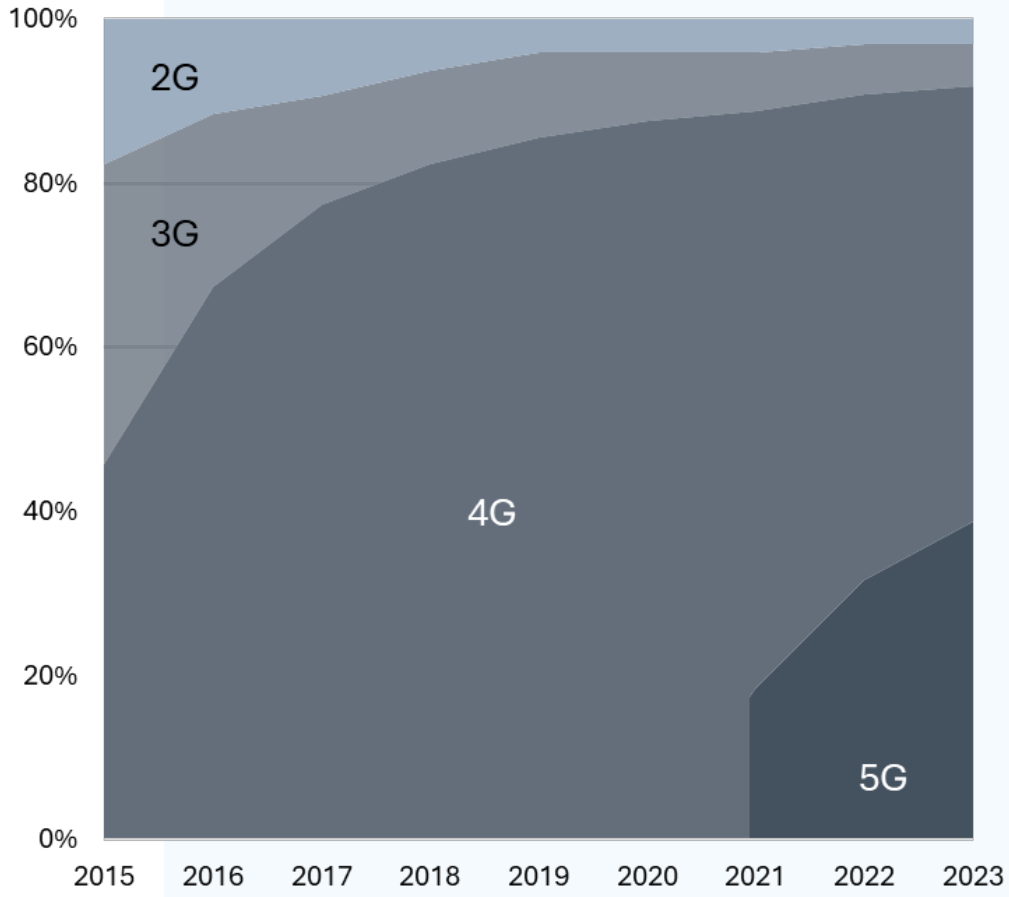


Multigenerational Network Costs

In 2022, it was projected that 53% of countries in the world would have deployed 5G services by the end of last year. The migration to 5G standalone inevitably increases infrastructure costs for CSPs and then continually increases infrastructure spend as they cope with growing traffic. CSPs looking to offset expenses are hoping to sunset legacy network services to free up spectrum and minimize maintenance expenses.

In the U.S., CSPs finally phased out the 20-year-old 3G technology in 2022, but this isn't the case worldwide. About 5% of the world's population still relies on 3G services for day-to-day activities and about 2% still relies on 2G.

Lawful interception platforms are designed based on 3GPP standards, with each network generation having specific requirements. Consequently, lawful interception and monitoring center technology must support each generation a CSP operates. While critical for LEAs, lawful interception technology and compliance carries significant costs for CSPs.



Challenges of Multi-Vendor Environments

National Regulations

For CSPs and LEAs, supporting multiple network generations and their accompanying legal and regulatory frameworks can result in having multiple lawful intelligence vendors. This scenario escalates operational complexity, as each vendor introduces distinct methodologies, disparate security policies, and varying operational priorities. The financial implications of managing this multiplicity of vendors are substantial, encompassing capital expenditures (CapEx), software licensing fees, and significant allocation of network team resources.

Challenges of Multi-Vendor Environments

Impact of Government Funding & Management

In some regions of the world, CSPs often serve as the de facto end-to-end suppliers of lawful and location intelligence. This situation may arise due to government-enforced funding models or a lack of administrative or operational resources. However, it can escalate costs for all stakeholders involved. For instance, when multiple providers within a jurisdiction support not only mediation but monitoring and analysis, they often select different vendors. This increases the overall capital and operational costs for the government funding these projects.

Analysts in this example must then utilize multiple tools to provision SOIs for location intelligence or lawful interception data. This results in a fragmented ecosystem with no cohesive strategy for the deployed platforms. Analysts must manage, maintain, and train on multiple environments, which compounds the complexity of network operations and the requirements for a fully capable and modern interception platform. This leads to higher costs and operational inefficiencies, burdening both CSPs and LEAs with the task of integrating and synchronizing disparate systems and processes.

SS8 Solutions

SS8's mission is to provide advanced lawful and location intercept solutions, aiding LEAs in solving crimes and preventing terrorism, while ensuring CSPs achieve cost-effective regulatory compliance across all network generations. Our cloud-native platforms, compliant with ETSI, 3GPP, and other standards, enable seamless integration of individual components or an end-to-end solution that consolidates costs.

Xcipio®

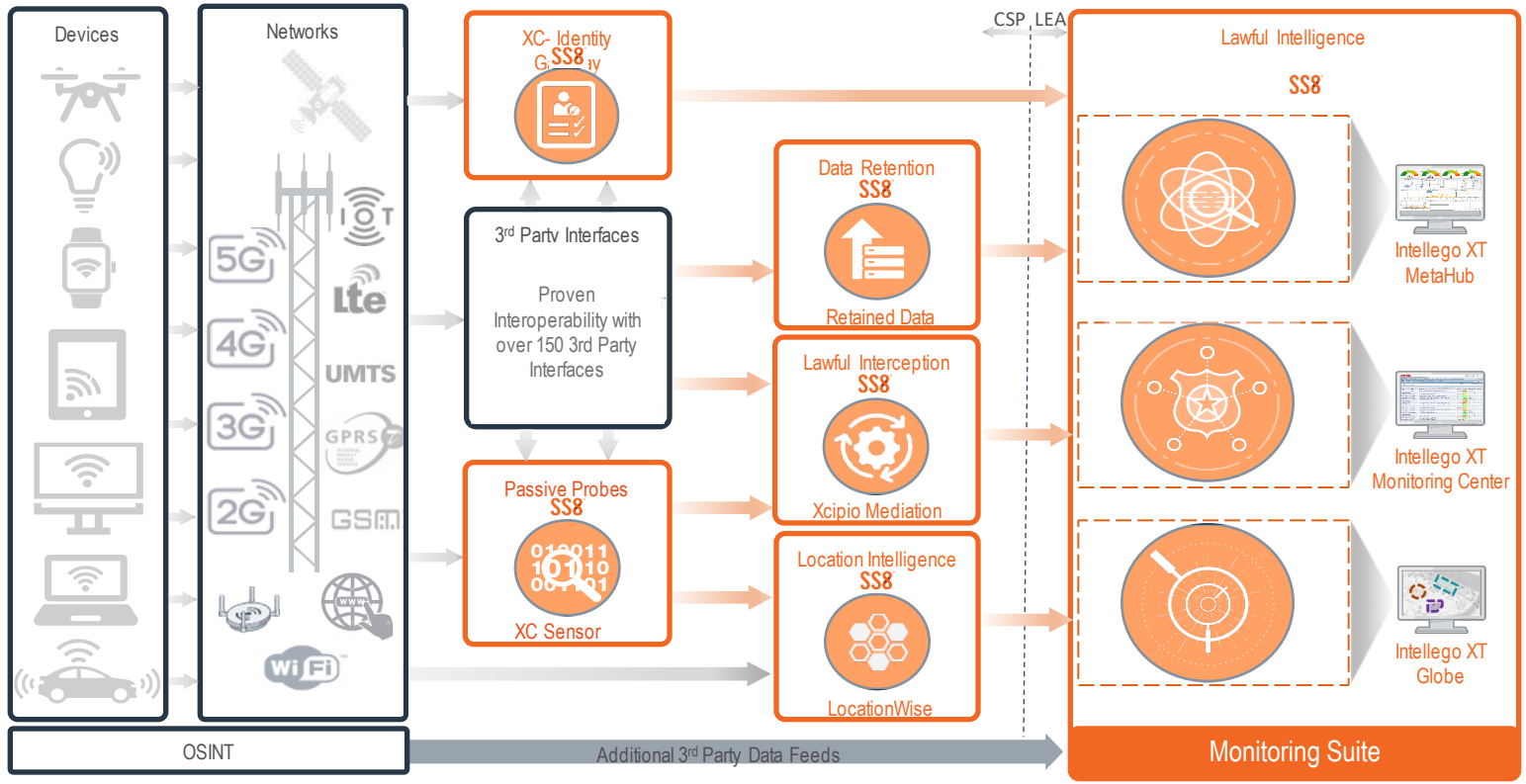
Xcipio ensures CSPs not only meet regulatory compliance but also provide the most accurate data to intelligence agencies in real time.

Intellego® XT

Intellego XT provides superior data monitoring, fusion and analysis solutions to help Law Enforcement and Intelligence Agencies investigate crime.

LocationWise

LocationWise delivers high-accuracy network location accuracy to support emergency services, law enforcement, and mobile operators.



SS8 Solutions

Xcipio Intelligent Content Filtering:

- Optimizes intercepted data by filtering high-volume, low-value content.
- Utilizes Packet Header Information Reporting (PHIR) to analyze and categorize data payloads like streaming video, which can be excluded from analytics or reviewed later.
- Provides metadata summaries to avoid obscuring critical evidence, enhancing efficiency.
- Supports various decoding rates, including advanced codecs like IVAS, to ensure high-quality audio data for LEAs.
- Tailored to specific LEA system requirements for optimal performance.

Umbrella Mediation:

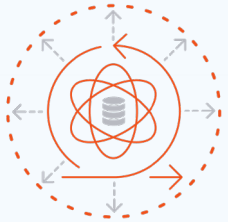
- Simplifies CSP operations by eliminating the need for diverse mediation skill sets, reducing training requirements.
- API integration unifies legacy and bespoke solutions, streamlining multi-vendor architectures and allowing strategic hardware and software upgrades.

Intellego XT:

- Ingests and processes petabytes of data in any format, offering powerful mapping and visualization tools for analysts.
- MetaHub enhances encrypted data insights and fusion capabilities, enriching investigations.
- Globe component provides accurate location and advanced mapping for tracking devices and suspects.

Intelligent Content Filtering

Umbrella Mediation



API Integration

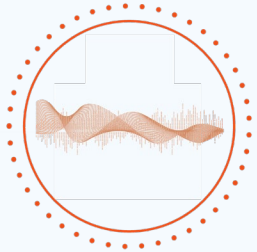
Streamlined Architecture

SS8 Solutions

Benefits:

- Cost Savings: Single platform reduces training expenses and automates processes such as e-evidence preservation and warrant management, minimizing costs and the risk of tampering or corruption.
- Ingests and processes petabytes of data in any format, offering powerful mapping and visualization tools for analysts.
- Advanced Features: voice-to-text transcription, voice fingerprinting, 3D location, geofencing, real-time mediation, and more simplify data management for CSPs and LEAs.
- Scalability and Flexibility:
  - Cloud-native architecture means a monolithic architecture is no longer necessary, allowing horizontal scaling using COTS hardware as needs arise.
  - Standardized interfaces allow independent deployment of components as containerized microservices, integrating SS8's functionality with existing tools.

As technology, data complexity, and intercept regulations evolve, SS8 leads the way in integrating these components, ensuring compliance, protecting privacy, and saving lives.



Full Spectrum Audio

Powerful Data Ingest & Fusion

Accurate Location & Mapping

Cloud-native, Standardized

About the Authors

David Anstiss is Director of Solution Engineering at SS8 Networks. He has been with SS8 since 2015 and has significant experience in critical network architecture technology and advanced data analytics. He currently works as part of the Technical CTO Group under the leadership of Dr. Cemal Dikmen and is responsible for leading engagement with both intelligence agencies and Communication Service Providers (CSPs) around the world. He has been instrumental in helping them transition to 5G, defining system requirements to meet regulatory compliance. As a member of ETSI, he represents SS8 to ensure the adoption of cloud-native infrastructure is met with industry best practices and to guarantee that compliance of lawful interception is maintained. Learn more about David on his LinkedIn profile: https://www.linkedin.com/in/david-anstiss/.

Rory Quann is Head of International Sales at SS8 Networks and brings with him over 10 years of experience in the Lawful Interception and Data Analysis industry. Prior to joining SS8 in 2013, Rory worked for BAE System Applied Intelligence where he was focused on large scale Government deployments of Intelligence Solutions. Rory has held multiple positions in the Lawful Intelligence space ranging from Deployment Engineer, System Consultant, and Sales Engineer focusing on Country-wide Passive deployments. Rory is a Certified Microsoft MCSA Engineer and EMC Certified deployment Engineer. Learn more about Rory on his LinkedIn profile: https://www.linkedin.com/in/roryquann/.

About SS8 Networks, Inc.

As a leader in Lawful and Location Intelligence, SS8's goal is to help make societies safer. Our commitment is to extract and analyze the critical intelligence needed by law enforcement, intelligence agencies, and emergency services so they have the best information possible with real-time visibility. We help mobile network operators to achieve regulatory compliance with minimum disruption, time and cost.

Intellego® XT monitoring and data analytics portfolio is optimized for Law Enforcement Agency's to capture, analyze and visualize complex data sets for criminal investigations in real-time.

LocationWise delivers the highest audited network location accuracy worldwide, providing active and passive location intelligence for law enforcement, emergency services and mobile network operators' requirements.

Xcipio® mediation platform meets the very high demands of 5G volumes of intercepts and provides the ability to transcode (convert) between lawful intercept handover versions, and standard families.

For more information regarding SS8's mediation and interception products, please visit **www.ss8.com** or email us at **info@ss8.com**. Additionally, you can follow us on Twitter at @SS8 or on LinkedIn at **https://www.linkedin.com/company/ss8/**.

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Resources

1. Wikimedia Foundation. (2024, March 14). *Lawful interception*. Wikipedia. https://en.wikipedia.org/wiki/Lawful_interception

2. Lipscombe, P. (2022, November 28). *Why telcos are switching off legacy networks, and what it means for 5G*. All Content RSS. https://www.datacenterdynamics.com/en/analysis/why-telcos-are-switching-off-legacy-networks-and-what-it-means-for-5g/

3. *Mobile Network Coverage*. Facts and Figures 2023. (n.d.). https://www.itu.int/itu-d/reports/statistics/2023/10/10/ff23-mobile-network-coverage/

4. Wikimedia Foundation. (2024b, May 5). *Mass surveillance in the United States*. Wikipedia. https://en.wikipedia.org/wiki/Mass_surveillance_in_the_United_States

5. Grijpink, F., Menard, A., Sigurdsson, H., & Vucevic, N. (2018a, February 23). *The road to 5G: The inevitable growth of infrastructure cost*. McKinsey & Company. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/the-road-to-5g-the-inevitable-growth-of-infrastructure-cost

6. Veyseh, Dr. M. (2023, January 2). *A 5G forecast for 2023*. Electronic Products & Technology. https://www.ept.ca/features/a-5g-forecast-for-2023/

7. Taylor, P. (2024, January 26). *Topic: 5G*. Statista. https://www.statista.com/topics/3447/5g/#topicOverview

8. Rizzato, F. (2020). 5G users on average consume up to 2.7x more mobile data compared to 4G users | opensignal. Opensignal. https://www.opensignal.com/2020/10/21/5g-users-on-average-consume-up-to-27x-more-mobile-data-compared-to-4g-users