FNT Whitepaper

Lessons from the Field: Case Studies that Showcase Top Telecom Infrastructure Practices

The telecom infrastructure is critical to maintaining efficient and reliable services. Dive into the real-life stories of how four industry leaders faced the complexities of modern infrastructure management head-on. By examining these examples, we shine a light on the best practices that drive operational excellence and enhanced service delivery.

CONTENT CERTIFIED
by Experts

In this Whitepaper

In today's fast-paced world of telecommunications, where consumer demands and technologies change at breakneck speed, managing and integrating vast telecommunications networks of information and resources is a requirement. Network operators across diverse industries are therefore focusing on three key areas: network documentation, comprehensive and holistic infrastructure management, and seamless integration of data and systems. By concentrating on these areas, they are positioning themselves to not only meet operational requirements, but also enhance efficiency, foster innovation, and gain critical competitive edge.

This white paper explores the role of these interconnected components through the lens of four revealing case studies. It details how real FNT customers adapted their infrastructure management methods to prioritize these elements, and as a result were able to successfully tackle their unique challenges and propel their businesses forward.

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Key Findings at a Glance

- **Consolidated network assets database creates transparency**
- **Automated processes improve operational efficiency and customer satisfaction**
- **Use of a comprehensive documentation system enables efficient network transformation**
- **Integration between systems facilitates reliable data exchange between partnering network operators**
- **Service impact reporting and root-cause analysis ensure reliable, high-quality services**
- **Structured reconciliation processes protect data quality**

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Introduction

The rapidly evolving connectivity landscape is top of mind for network operators. They are focused on building fiber optic networks, leveraging 5G rollout and planning for future service expansions. One important action they are taking in pursuit of these objectives is consolidating their infrastructure management. Whether transitioning from multiple systems to a unified platform or merging diverse network elements into a comprehensive system, network operators share a common necessity: infrastructure data must be moved, reconciled, and optimized.

Consolidating the network infrastructure significantly improves operational efficiency. In today's fast-paced environment, driven by new consumer demands and technological advancements, consolidation enables the agility needed to adapt to changing market conditions. This agility begins with a complete and accurate view of the network, end-to-end, including services. However, this can only be realized if network data is current and accurate. Inaccurate documentation that does not reflect the as-built state of the network is of little value and can be detrimental.

Many network operators struggle with documentation quality issues, for a variety of reasons.

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Multiple systems. Telecom environments often consist of various vendor and technology-specific management systems to operate multi-vendor and multi-technology network infrastructure. Many of these systems are outside the network domain, such as IT and data center infrastructure. Most of these systems are unsynchronized or only partially synchronized, leading to inconsistent information and poor data quality.

Lack of communication between systems. Systems must work together so that changes made anywhere in the infrastructure are available to all relevant systems. Siloed data causes inefficiencies and leads to unreliable data. For example, data in planning tools often deviates from as-built documentation over time due to ongoing planning and execution iterations. Without reliable data sharing, these inconsistencies cause delays, errors, costly rework, and profit loss.

Faulty or poor reconciliation processes. Checking and correcting data from the network is vital for keeping the data in an inventory system up to date and accurate. When multiple database tools are used, there is usually no data reconciliation between the network and the different management systems. Serious problems arise when planned and documented resources are not in sync with actual installed resources.

No structured change management processes. Documentation is not static and data changes over time, so it must dynamically update as changes occur in the network. Automation between executed planning tasks and the corresponding documentation update is needed but often missing.

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Case Studies

CASE STUDY 1

Transforming Telecommunications: A Provider's Journey to Enhanced Digital Infrastructure

In the dynamic landscape of telecommunications and entertainment services, staying at the forefront requires not just innovation in offerings but also in the infrastructure that supports them. One leading provider in Western Europe has set a remarkable standard by prioritizing high-quality digital experiences for its customers. Specializing in fixed and mobile broadband services as well as offering a comprehensive digital entertainment package for residential customers, this telecom giant also caters to the business market with connectivity, hosting, and security solutions.

However, with growth and technological advancements come challenges. One such challenge arose when the company decided to undertake the monumental task of country-wide replacement of legacy mobile RAN equipment with a new vendor. This endeavor necessitated meticulous documentation of current and future network states, a task made even more complex by the need to ensure that changes implemented on sites were accurately recorded and made available to all rollout partners.

Implementation of FNT Command

Enter FNT Command, a centralized, integrated system designed for the management of all network and service resources. Recognizing the need for a robust documentation tool capable of handling the substantial amount of data being exchanged daily during the network swap, the company turned to FNT Command, a solution they already trusted for managing its RAN network documentation and rollout.

FNT Command not only facilitated the transition from a previous network vendor, but also seamlessly integrated with the new vendor's element management system (EMS), streamlining the entire "closed loop" RAN rollout process – from planning to debarring.

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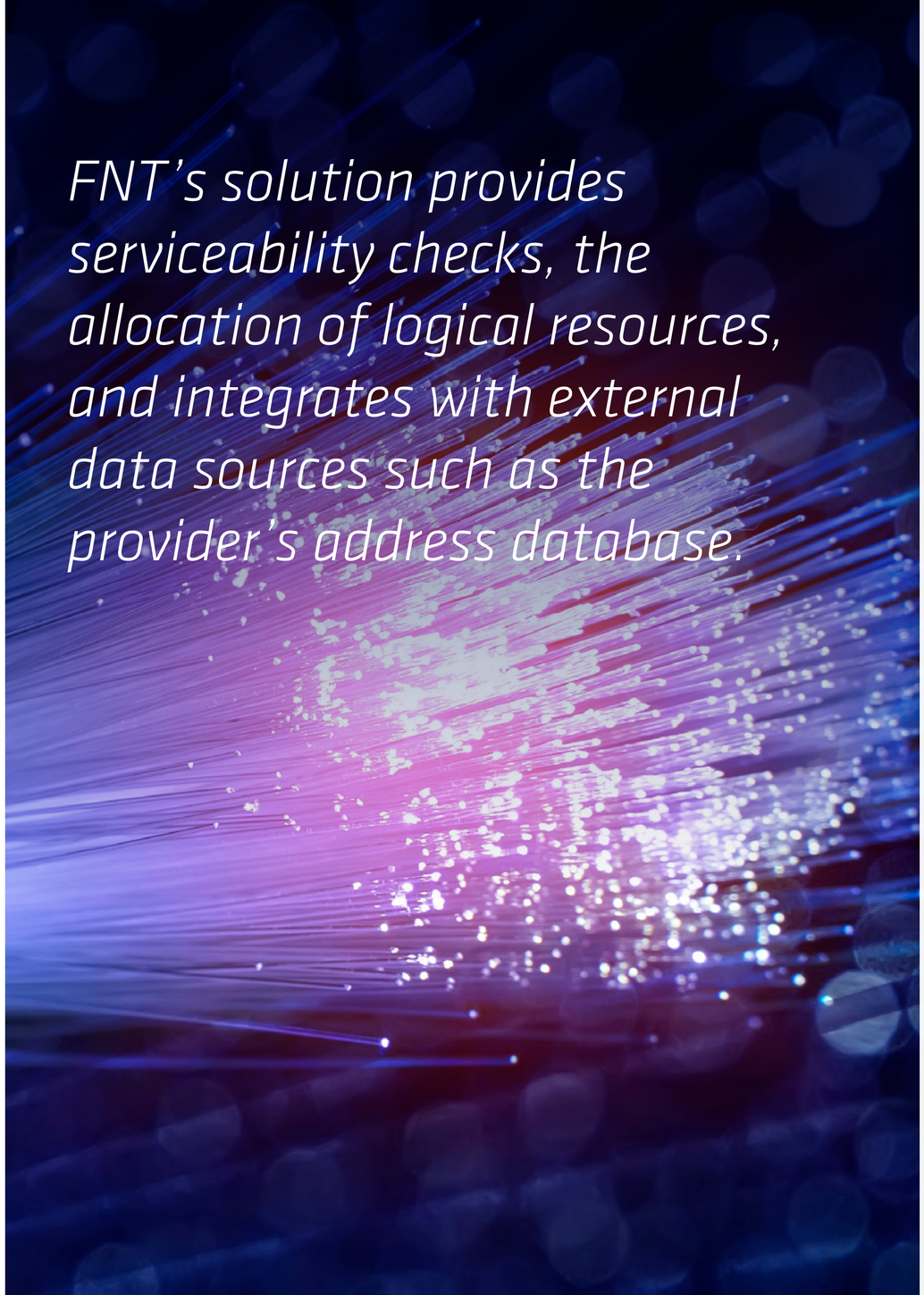
FNT's integration capabilities encompass the most modern 5G network, ensuring that the company's customers received unparalleled service quality. The RAN vendor swap project also included the replacement of the provider's RAN planning and coverage simulation tool. Despite the change, FNT's IntegrationCenter proved its flexibility by adapting to the new tool and ensuring that data exchange remained undisrupted.

As the company expanded its services into new business domains, FNT's solution evolved to cover fixed network infrastructure, particularly Fiber-to-the-Home (FTTH). FNT Command became the "single source of truth" for all network resources of the brand-new provider's FTTH network. The system provides serviceability checks, the allocation of logical resources, and integrates with external data sources such as the provider's address database.

The interface between FNT Command and address database proved to be particularly significant, as it enabled the correlation of address information with geographical zones and sites, a crucial aspect for FTTH deployment. This interface, albeit massive in scale, ensured that millions of entries and daily updates were seamlessly processed, laying the groundwork for efficient FTTH service delivery.



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Moreover, the integration with a provider's service provisioning layer allowed for seamless onboarding of new FTTH customers. This streamlined process, from service request to installation, enabled the company to serve its customers promptly and efficiently.

Now, customer account managers profit from a frontend application that requests all availability data from backend applications, including FNT Command. The integration has empowered the company to manage FTTH projects for customers throughout Belgium with unprecedented efficiency and reliability.

In summary, the partnership between this telecommunications leader and FNT exemplifies a commitment to innovation and excellence in infrastructure management. By leveraging FNT's advanced solutions, the company has not only overcome challenges but has also set new standards for service delivery in the telecommunications industry.

FTTH projects can be managed with unprecedented efficiency and reliability using FNT Command.

CASE STUDY 2

An Energy Company's Path to Fiber-Optic Excellence

A digital infrastructure provider, the result of a joint venture between a prominent European energy company and an industry-leading European fiber network provider headquartered in the Netherlands, has succeeded in building a modern fiber network in Germany. What pays into this success is that this company embraced a modern Telecom fiber and infrastructure management platform from FNT.

Background

From the earliest days of the joint venture, the digital infrastructure provider aimed to supply fiber-optic access to at least 500,000 households and businesses. To achieve this goal, the leading European energy company allowed use of its tunnel system in Berlin, covering over 700km, while the specialist supplier brought a wealth of expertise to the joint venture. Founded in 2000, the specialist supplier of fiber-optic connections and Ethernet services has extensive experience in building and operating large-scale fiber-optic networks across urban landscapes in the Netherlands, France, Belgium, and Germany.

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Implementation of FNT Command

Integral to this narrative is the strategic selection to implement FNT Command with FNT GeoMaps for its robust capabilities in functional mapping of passive and active network infrastructure, alongside seamless integration of telco services for Fiber to the Home (FTTH) deployments. Having won a contract for broadband expansion, the digital infrastructure provider needed a complete solution that would provide a holistic representation of the network. They selected FNT Command to document the infrastructure, supported by FNT IntegrationCenter to exchange data with several planning service providers involved in the rollout utilizing FNT's outside plant (OSP) interface.

The OSP interface proved instrumental in streamlining broadband expansion efforts. FNT Command documents fiber-optic routes, FTTH, and the core network to provide telecom managers with unparalleled visibility and control over network planning and deployment processes. Planning is carried out externally with partners, who are free to use their own planning software. The data is imported into FNT Command via the OSP interface either after approval of the planned network or after its construction. The ability to migrate the detailed planning of the external planning offices into Command is instrumental to successfully executing the fiber expansions.

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Additionally, FNT GeoMaps, which provides a geo-referenced display of routes and nodes on maps, is used to help determine which fiber optic routes they can build. This ensures the best routes are selected and teams on the ground are properly prepared. Together, the FNT solution forms a complete solution that delivers a much-needed holistic representation of the network. Finally, the SaaS model offered by FNT Software, operating on Microsoft Azure, provided the flexibility and scalability needed for a start-up with no CAPEX required.

Overall, this strategic venture between a leading European energy producer and a pioneering fiber network provider, facilitated by the innovative solutions of FNT Software, highlights the power of collaboration, vision, and technological innovation within the telecommunications industry.

CASE STUDY 3

Revolutionizing Connectivity with a Unified Approach to Fiber Optic Management

In the heart of Bavaria, the region's premier fiber optic provider has forged a reputation for its cutting-edge infrastructure and top-notch service. However, with the evolving landscape of connectivity demands, this provider faced a pivotal challenge: to seamlessly integrate its expansive network infrastructure into a unified system to meet the burgeoning needs of its customers as streaming surges and traffic doubles.

The first order of business began with a vision to consolidate this provider's sprawling network infrastructure into a single, cohesive platform. Recognizing the imperative to stay ahead of the curve, they embarked on the monumental task of migrating its backbone infrastructure data into FNT Command. This marked the genesis of a transformative process aimed at achieving an end-to-end view of customer services for both operations and provisioning.

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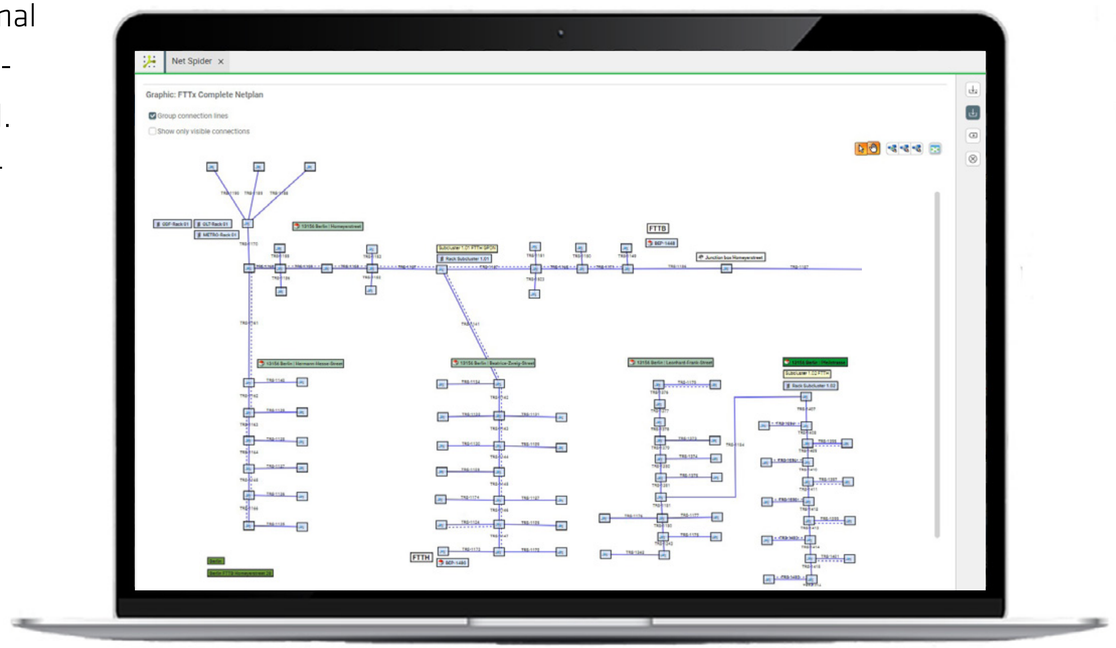
One of the paramount objectives was to streamline the management of their FTTx network, laying the groundwork for future service expansions. FNT Command was the ideal solution to merge the diverse network domains into a singular, comprehensive system. No longer burdened by the inefficiencies of disparate software, this provider embraced the power of centralized network inventory management, unlocking newfound agility and cost-effectiveness.

Yet, the road to success was not without its challenges. The greatest hurdle faced was the need to automate processes and workflows, reducing manual intervention to enhance operational efficiency. Unsurprisingly, the legacy systems lacked the inventory and automation capabilities that FNT Command offered. Through FNT Command, this provider can now streamline processes and unify data from other applications as well.

One of the standout achievements of this integration was the documentation of their Gigabit Passive Optical Network (G.PON), encompassing a vast network spanning thousands of streets and buildings across Bavaria. With meticulous attention to detail, FNT Command enabled this provider to catalog over 10,000 streets, 125,000 buildings, and a multitude of operating rooms and OLT racks. This comprehensive documentation laid the foundation for precise planning, seamless connectivity, and unparalleled visibility into their infrastructure.



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Through the lens of FNT Command, this provider was able to harness innovation and efficiency. The platform facilitated seamless planning, connectivity to new buildings, and real-time insights into hardware requirements. Moreover, it empowered this provider to swiftly respond to customer needs, ensuring minimal downtime and unparalleled service reliability. With FNT Command at their fingertips, their dedicated team could pinpoint potential outages, swiftly resolve issues, and deliver an exceptional customer experience.

By utilizing FNT Command, this provider has not only improved operations but has also redefined the benchmarks of excellence in connectivity services. With a unified platform at its helm, this provider is now poised to offer Bavaria seamless connectivity, unparalleled efficiency, and uncompromising reliability.

FNT Command facilitated seamless planning, connectivity to new buildings, and real-time insights into hardware requirements.

CASE STUDY 4

Enhancing Rail Connectivity by Integrating Advanced Telecommunications Network Management

A major Swiss rail company, renowned for its extensive railway infrastructure, encompasses not only traditional rail operations but also a sophisticated telecommunications network. This network is pivotal for efficient train traffic control to ensure punctual and safe travelling. To enhance the efficiency and transparency of its cable and telecommunications network management, the company integrated the FNT Command solution into its existing Operations Support System (OSS) environment.

Background

The company's Infrastructure division is tasked with maintaining the rail, energy, and telecommunications networks. The telecommunications network is substantial, featuring around 9.500 kilometers of optical cables, 4.500 kilometers of copper cables, and about 30.000 distribution points. These elements are essential for supporting the company's proprietary data network. Given

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the growing demands on infrastructure due to new services and resiliency requirements, the company required a robust cable management and network inventory tool.

Implementation of FNT Command Platform

To meet these demands, the company transitioned to the cloud-based FNT Command Platform. This platform offers comprehensive documentation for all fiber-optic cables running alongside railway tracks as well as detailed layout of fiber termination points. Additionally, technical plant rooms and active network elements, such as backbone nodes, are documented within the platform.

Evolution of FNT Command Implementation

Initially, the focus was on managing cable connections. Over time, the importance of integrating logical network data and connecting the network and hardware grew. The addition of the logical layer from the live network into FNT Command allowed for a comprehensive picture of both the physical and logical network aspects.

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Use Case: Service Impact Analysis and Safety Assurance

To uphold its high service quality standards, the company implemented a robust transport network, which serves as the communication medium for all critical applications, including train direction controls. The transport network's reliability is crucial as any disruptions could halt operations to prevent accidents. Despite the network's resilient design, physical layer vulnerabilities can exist, creating potential single points of failure (SPOF). These SPOFs can significantly disrupt network services if damaged. Redundancies are essential to ensure all signal connections function correctly.

The company aimed for instant service impact analysis in the event of accidental cable cuts or planned infrastructure maintenance. This analysis needed to identify affected logical circuits and services and assess the outage's potential extent.

Redundancies are essential to ensure all signal connections function correctly.

The FNT Command Platform has delivered following key functionalities:

- **Failure Simulation:** The platform allows for realistic simulation of failures in devices, fibers, routes, and cables. This capability helps in planning redundant capacity, optimizing availability, and enhancing rail safety.

- **Improved Maintenance Planning:** The ability to plan maintenance work more effectively minimizes disruption. The platform's tools and functions are designed to optimize planning processes, ensuring that any operational interruptions occur within a narrow window once a week, thus reducing downtime.

Achieving this required integrating all telecommunication resources into FNT Command and reconciling them using FNT ReconEngine from Network Management systems (NMS), ensuring the network's actual state matched the documentation. Advanced algorithms in FNT Command "stitched" WDM and MPLS transport domains together, facilitating cross-domain service impact analysis. This integration allowed for automatic network bottleneck detection and redundancy checks, enabling preemptive measures to enhance network resiliency.

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Use Case: Network Planning and Service Orchestration

FNT Command also plays a vital role in network planning and service orchestration. It provides accurate network topology data for designing and planning new MPLS services. The company uses FNT Command to generate diverse routing and automatically provision point-to-point MPLS services.

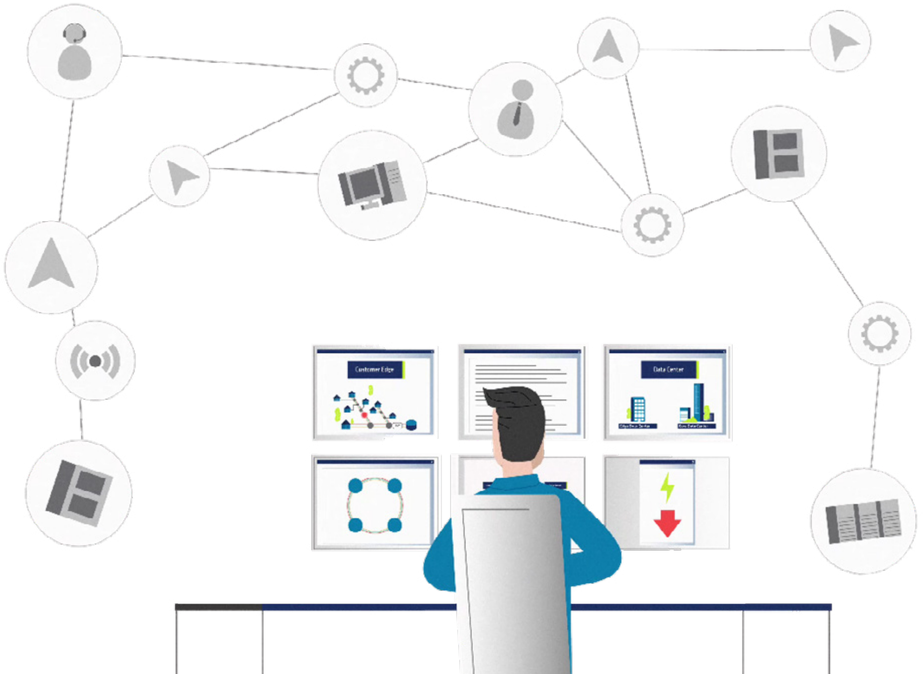
Furthermore, mobile network access terminals installed in carriages are tracked and managed as assets within the platform.

Impact on Reliability and Uptime

The FNT solution helps significantly enhance efficiency of network operations, which plays an important role in upholding the company's reputation as a leading railway operator. Continuous and proactive management of the network ensure high service standards and operational safety.

Conclusion

The integration of FNT Command into the company's OSS environment has enhanced the management of its telecommunications network and cable infrastructure. The platform's advanced features have fortified network resiliency, optimized maintenance planning, and supported robust network planning and service orchestration. These improvements are vital for the company's ongoing efforts to maintain its position as a market leader in railway operations.



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FNT's Recommendation

Telecommunications network performance directly impacts business success. FNT recommends service providers adapt four key success factors into their infrastructure management practices. When employed together, these factors form a comprehensive approach to managing modern telecommunications infrastructure.

1 A central data model

A centralized repository for documentation related to the network is the backbone of a telco provider's information infrastructure. All infrastructure data should be documented in such a repository, covering physical end-to-end connections, and assigning services to signal routes. Such a central database ensures that all relevant data is systematically recorded, easily accessible, and up to date, providing a single source of truth for informed decision-making and operational transparency.

The foundation of FNT's solution is a central data repository that manages all information holistically. It's a modern network management tool that centralizes all IT data, including physical, logical, and virtual layers, and data from multiple departments. It maps all physical assets, virtual components, applications, and services, including all physical and logical connections and dependencies. This comprehensive approach enables telecommunications providers to maintain detailed records of network infrastructure, customer data, and service configurations, which are essential for efficient network management and service delivery.

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2 Unified resource management

Delivering high quality services requires visibility into all dependencies, across all resources. Since infrastructure data crosses the data center, IT and telecommunications domains, unified resource management is needed to provide a holistic and consistent view of the infrastructure and eliminate data silos within an organization. Consolidating disparate resources into one cohesive system streamlines processes and optimizes asset utilization across the organization. For telcos, unified resource management enables efficient deployment of network resources, ensuring that capacity matches demand and that maintenance and upgrades are carried out with minimal disruption.

FNT provides complete visibility and transparency throughout the entire infrastructure, across complex and diverse technologies. It eliminates barriers to the sharing of critical information and enables a single, end-to-end view of the infrastructure. This reliable foundation of documented assets and connectivity resources allows infrastructure management teams to operate, analyze, plan, implement, change, document and monitor all technology activity more effectively.

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3 Integration between systems

In an environment where multiple systems, applications, and platforms must work together, the ability to integrate these components is essential. Eliminating silos and reducing redundancies fosters a more agile and responsive operational model. Seamless integration is required for managing complex networks that span multiple technologies and geographies, and for ensuring that all elements work together to deliver consistent and high-quality service to customers. Therefore, comprehensive integration tools and techniques that reduce the burden of connecting systems is key.

FNT's software is open and flexible, featuring an extensive connectivity layer that exchanges data with third-party systems. It offers a broad range of interfaces for bidirectional data exchange with other tools, automating data exchange with third party systems and simplifying data import from other systems. Its flexible integration framework, which includes open generative APIs, ELT tools, and reconciliation engine, extends usability of infrastructure information. Expansive interface functionalities streamline integrating relevant data into the FNT database via automated data exchange with third-party systems, including other relevant OSS/BSS/IT solutions. By providing a reliable means to update the data in a central database, FNT helps ensure critical inventory always reflects the as-built status of installed equipment.

4 Structured data migration and reconciliation processes

The data flowing through an organization must be reliably accurate. Ensuring data quality involves regular validation and verification processes to detect and rectify discrepancies, thereby maintaining the integrity of the information. High-quality data is the lifeblood of effective resource management, strategic planning, and operational excellence. Additionally, accurate data reconciliation is vital for maintaining service quality, managing customer relationships, and complying with regulatory requirements.

High-quality data is the lifeblood of effective resource management, strategic planning, and operational excellence.

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FNT software automates data reconciliation processes between the network and the different management systems in use to ensure data integrity. When changes planned in the software are executed, FNT automatically updates the central database with the new status. It is put through reconciliation processes to find and fix discrepancies between data from network devices and the OSS/BSS. This ensures that users throughout the organization have the same consistent view of the network. It does this via a high-performance reconciliation framework that automates reconciliation processes with management systems and other data sources.

Conclusion

These case studies highlight FNT Command's versatility and robustness in managing diverse telecommunications and infrastructure challenges, promoting innovation, efficiency, and reliability across various sectors.

If you would like to explore how FNT Command can help your organization through any of the methods described in these examples, we encourage you to **contact us** to learn more about our services and how we can help.

EXPLORE MORE

Looking for more real-world examples of how industry leaders are optimizing their telecom infrastructure? Our previous white paper, **Best Practices in Telecom Infrastructure Management,** dives deep into how six leading communication service providers adapted their infrastructure management methods to successfully achieve their desired results.

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About FNT Software

FNT Software, headquartered in Ellwangen (Jagst), Germany, simplifies the management of highly complex digital infrastructures in companies and public authorities with its FNT Command Platform. With the cloud-enabled "Software made in Germany", IT, telecommunications and data center infrastructures can be efficiently recorded as digital twins and documented across all levels from buildings to digital services. The software also offers open interfaces and numerous functions for planning, implementing and automating transformations and changes in an integrated manner. FNT's customers include more than 500 companies and government agencies worldwide, including more than half of the DAX-40 listed corporations. FNT* operates offices in several locations in Germany as well as in New York, Singapore and Timisoara and has an international partner system with market-leading IT service providers and system integrators.

*Refers to FNT Software GmbH, including its subsidiaries, and FNT Services GmbH.

Transparency Note:
Written by Experts | Authors: Outside author, FNT subject matter experts

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