FNT

// simplify complexity

# OPTIMIZED NETWORK INVENTORY:

## HOW TO TRANSFORM NETWORK ASSET AND RESOURCE MANAGEMENT

## IN THIS WHITE PAPER

Given the strategic importance of network inventory, it gets surprisingly little attention. How service providers manage their network assets and resources matters, as this will influence the performance of the entire network. This white paper explores in detail what a modern inventory solution looks like and the tangible business benefits delivered from using one.

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## Introduction

In the rapidly evolving fields of telecommunications and technology, service providers and network operators are constantly seeking ways to gain or maintain a competitive edge. As one of the most fundamental, but often overlooked, components of an operator's network management tool-kit, network inventory is a key to that competitive edge – driving efficiencies and cost savings.

Inventory management has traditionally been seen as a necessary but mundane task, frequently relegated to a secondary priority or a too-hard basket. However, in the same way that GPS has revolutionized navigation, modern network inventory solutions can transform the way service providers manage their network assets and resources.

Network inventory management subtly, yet crucially, influences the performance of the entire network operations system stack. It is integral to the seamless operation of modern telecommunications, from the accurate provisioning of services to the efficient utilization and allocation of resources. As the world continues to leverage communications technologies to evolve, such as embracing emerging technologies like augmented reality and artificial intelligence, network inventory solutions help to enhance customer experiences and drive business growth more than ever. This paper explores why network inventory solutions should not be an afterthought, but rather a strategic investment pillar that service providers can build their future operations management stacks around. This includes discussions around how they can leverage network inventory tools to future-proof their operations and enhance their sustainable competitive advantages.

# Features of a Modern Inventory Solution

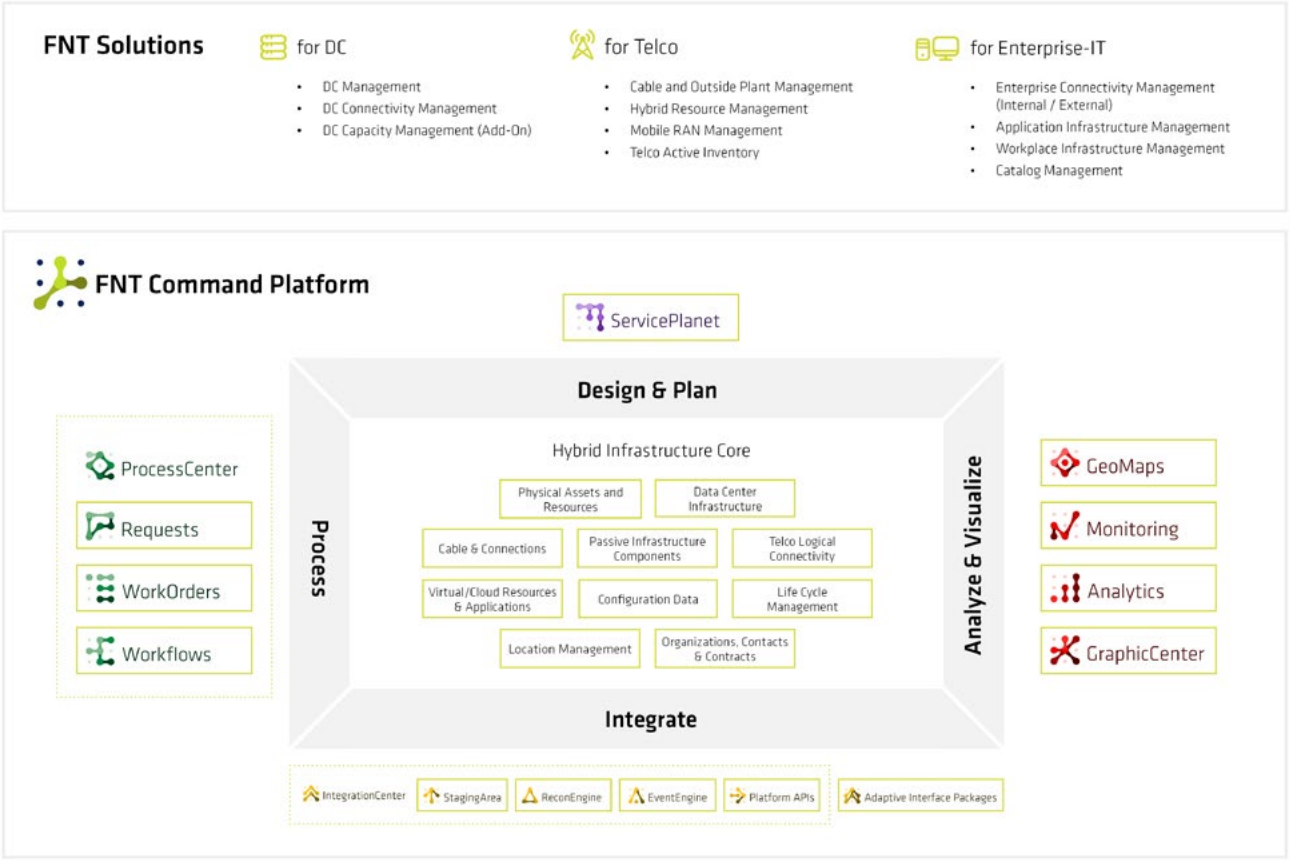
The challenges and limitations of legacy inventory solutions described in our white paper **The Power of Network Inventory Solutions** highlight the urgent need for modern inventory solutions that can meet the complex demands of today's networks and workflows. More cutting-edge, forward-looking inventory solutions are already evolving to meet these demands in the following ways:

- Traditional workflows are all still supported. However, the way they're supported is changing fundamentally and it's all driven by the need for dynamic inventory:
  - Resource allocation for virtualized networks that are constantly evolving
  - Asset lifecycles that can be long-lasting or transitory
  - Service activations and changes like bandwidth on demand (BOD) that can be made by clients on an as-needed or ad-hoc basis
  - Network and service health that can be modified dynamically by flexing capacity and link utilization or re-routing traffic
- To improve operational efficiency, Closed-Loop Automations are often built around the traditional workflows indicated above
- Solutions must flexibly adapt to not only manage traditional network resources like physical network devices, passive network infrastructure such as cables, network exchanges and communications rooms anymore, but also manage any modern hybrid infrastructure of any size or scale that includes:
  - Data Center Infrastructure Management (DCIM)
  - Power network management
  - Environmental management (HVAC - Heating, Ventilation and Air Conditioning), CRAC / CRAH (Computer Room Air Conditioning / Handling), building management systems (BMS)
  - Cloud and virtualized network infrastructure including VNFs or CNFs (virtualized or cloud-native network functions)
  - Cellular communications sites that include front-haul fiber, mobile-edge compute (MEC) and cloud-hosted infrastructure models like 5G
- Enterprise solutions including private networks and infrastructure that could include smart city devices, sensor networks, production digital twins and enterprise IT management
- Increased awareness of power utilization. Sustainability and energy reduction are now an essential element of network planning and capital investment. Outages to power supply by energy providers often make up a large proportion of communications network outages. As a result of these factors, it's important to have an accurate and up-to-date understanding of the power network / infrastructure that's feeding the communications networks
- Comprehensive integration tools and techniques that reduce the burden of connecting new and legacy solutions under end-to-end inventory management. This includes flexible integration frameworks, user interfaces and generative APIs
- Powerful analytics and insight generation is required across all workflows and all infrastructure, regardless of the original, disparate sources of information

In order to deliver on these requirements, a modern network inventory solution should have, at a minimum, the following features:

- Wide-ranging out-of-the-box capabilities. A standardized software solution with extensive configuration options over the user interface that can be extended to all infrastructure areas as required is desirable. It can be used quickly, can be individually adapted for specific needs, and lowers the cost of implementation.
- Seamless integration of different autodiscovery systems. The connection of different autodiscovery solutions and import functions is important to easily import and consolidate existing infrastructure data from other systems into the new one.
- Broad interface functionalities. Automated data exchange with third-party systems, including other relevant OSS/BSS/IT solutions, is essential to expose the network inventory data to any application that needs it. Software with an extensive connectivity layer that exchanges data with third-party systems, open APIs, ETL technologies, and pre-packaged interfaces extend usability of infrastructure information.
- Extensive component library. All relevant IT and telecommunications infrastructure components should be stored as objects, along with logical relationships, to facilitate initial setup, additions, and changes, including validation rules to support mapping of configurations and infrastructures. With an always up-to-date and robust component library, changes can be planned visually and implemented without detailed technical knowledge.

- Strong visualization, reporting and analytics capabilities. The network encompasses a huge amount of data, relationships, and dependencies. Graphical visualization and presentation of infrastructure and service data makes it possible to recognize patterns within the data, visualize structures, and gain a better understanding of dependencies, all of which make it easier to cull insights and drive better decision making.
- Vendor-agnostic, uniform data model. All types of resources in the network infrastructure must be represented, irrespective of vendor and technology. This is a mandatory prerequisite given today's technological diversity. What's needed is a comprehensive data model that serves as the foundation for the network documentation. It should cross data center, IT and telecommunications domains to effectively eliminate data silos within an organization.




Architecture diagram of the FNT Software network inventory solution. It supports legacy needs, modern functionality and dynamic workflows as well as the extended capabilities of power, DCIM and Enterprise IT infrastructure management.

It's also important to note that not only the technological features and functions impact the usefulness of modern network inventory solutions. Solutions should also evolve to support people and process factors such as:

- Transformations that facilitate a service provider's transition to modern technologies and methods
- Multi-domain and cross-domain stitching of data to increase cross-linking and richness of end-to-end insights (e.g., root-cause analysis)
- Near-real-time discovery and reconciliation of data to ensure up-to-date situational awareness exists
- Automated workflows to reduce repetitive activities and allow human resources to focus on high-value tasks
- Powerful analytics and insights that enable service providers to make rapid, data-driven decisions
- Flexible data modelling that enables each service provider to mimic by configuration any type of network, device, connection type, or overlay network type

Choosing the right solutions and implementers for your particular network, systems and workforce can be challenging. This evaluation must consider the best-fit needs of each organization. It's akin to selecting the right maps and functionality for your specific GPS needs. For example, the level of accuracy needed from a GPS receiver for surveying purposes is much higher than for a vehicle navigation solution. The same is true when evaluating the right network inventory solution for your needs.

# Examples of Transformation Successes

Network inventory management solutions have proven to be valuable tools for service providers, enabling them to improve their operations and provide better services to their customers. Progressive service providers and network operators are achieving operational benefits that are as pronounced as drivers who have switched from physical maps to GPS and the adaptive vehicle routing algorithms they include.

Combining telco, power, data center and enterprise infrastructure management into FNT's consolidated solution has opened up possibilities that network operators have struggled to ever assemble before.

FNT has been used across each of the following service provider and network operator models:

- **Traditional Networks** – when you manage traditional physical networks where change happens relatively infrequently.
- **Dynamic Inventory** – when you have more logical and virtual infrastructure to manage as well as services, applications and virtualization. When you need up-to-date inventory to support orchestration, fault-fix and automation in near-real-time.
- **Cloudification and Virtualization** – when you manage infrastructure that combines "cloud" (public, private or hybrid cloud), data center and virtualized resources.
- **Sustainability** – when you're committed to sustainability objectives and energy cost reduction in addition to managing your communications network.
- **Radio / Cellular Infrastructure** – when you manage a cellular communications network and its unique operational considerations such as spectrum, edge network sites (and all related processes such as site acquisition, power management, lease management and much more), radio coverage, tower real-estate and infrastructure that supports your radio access network (RAN).
- **Data Center Infrastructure** – when you need to manage data centers or communications rooms that include communications, compute, storage, power, heating and cooling, customer space allocation and related infrastructure.
- **Enterprise / IT** – when you manage private networks (IT / 5G / WiFi) for Enterprise customers, and also offer to manage their related business and communications infrastructure such as sensor networks, production digital twins and operational processes / resources / technologies, etc.

## PRACTICAL SAMPLES OF CORE VALUES, SAVINGS AND BENEFITS

### Accelerate Provisioning Time

- Accurate resources and capacity data to automate orchestration and provisioning use cases
- Fulfill the service request correctly the first time
- Provide process driven control of manual tasks

### Ensure Business Continuity

- Increase resilience and ensure redundancies
- Avoid Single Point of Failures
- Reduce risks of outages by planned changes
- Minimize audit risks including financial provisions

### Savings in Planning Use Cases

- Guided planning of infrastructure, rollouts and provisioning resources down to cable patches and splices
- Plan changes and maintenance windows with impact analysis
- Optimize resource utilization
- Capacity data available across all domains and technologies

### Optimize Service Assurance

- Immediate impact analysis
- Prioritize and accelerate trouble-shooting and repair
- Increase first time fix rate
- Avoid SLA violations

### Cross-Domain Savings

- Accurate data across the various processes synchronized with network and assets
- Data sharing up to ERP, CRM, etc.
- No seperate, downstream data cleaning efforts
- No costs for error recovery due to inaccurate data
- No additional effort for capacity reporting
- Eliminate ghost equipment cost, optimize usage
- Consolidate legacy inventory tools

### Improve Field Service + Manage Partners

- Automate work order creation
- Minimize truck rolls
- Structured, process driven subcontractor management

## Summarized Benefits of an Optimized Inventory

As described, a modern network inventory management can provide an equivalent level of benefit uplift to service providers as drivers who have migrated from paper-based maps to GPS for navigating their road network.

These benefits include improved real-time visibility of network assets and resources, faster and more accurate provisioning of services, improved network performance and reliability, enhanced security and compliance, and the ability to make insightful data-driven decisions.

An optimized inventory solution can also provide cost savings through various mechanisms that include better asset utilization, reduced downtime, faster service turn-up and efficient resource allocation.

For some service providers and network operators, network inventory solutions are merely an afterthought once significant investment has already been committed to building more advanced networks. However, to truly reap the benefits of investing in modern network infrastructure, careful thought also needs to be given to whether the existing network inventory management can deliver a competitive edge.

While few people truly know why, the importance of network inventory management for service providers cannot be overstated. Optimized inventory solutions can provide such significant speed, cost and efficiency benefits that they can represent a strategic advantage for service providers in today's competitive and rapidly changing telecommunications landscape.

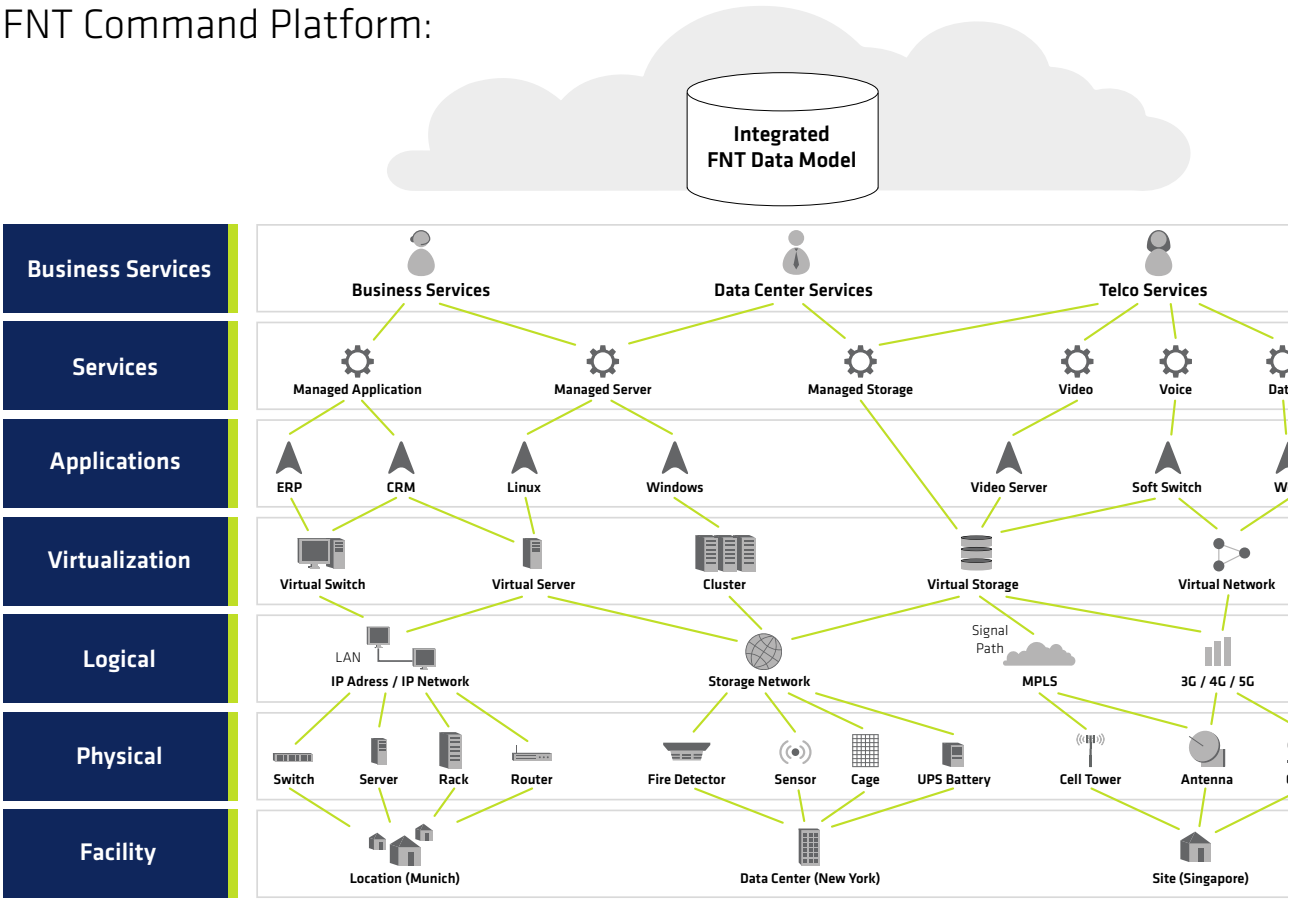
Looking further into the future, stay ahead of the curve by continuing to explore how network inventory solutions can also enhance emerging technologies such as augmented reality and artificial intelligence / machine learning (AI/ML) to deliver truly differentiated customer experiences.

Thank you for reading our white paper on how to assess a modern network inventory solution. At FNT Software, we understand the challenges that service providers and network operators face in managing their network inventory, and we have the expertise and solutions to help.

If you are looking to optimize your network inventory management and achieve the benefits outlined in this white paper, we encourage you to **contact us** to learn more about our services and how we can help.

Don't let legacy network inventory solutions hold you back. Contact FNT Software today and let us help you navigate your modern network landscape with confidence.

# FNT Command Platform:




Transparency across all levels: the FNT data model

## FNT COMMAND PLATFORM – HIGHLIGHTS AT A GLANCE

- **Documentation, planning, and management of IT, data center, and network infrastructure** combined in a single tool
- **A central data model** to map all physical assets, virtual components, applications, and services – including all physical/logical connections and dependencies
- **100% transparency** – from physical equipment to services
- **Comprehensive component library** of over 70,000 components from many different vendors in a realistic depiction, together with all their technical parameters
- **Interface functionalities** for automated data exchange with third party systems and simple data import from any other system
- **Integrated process management** for efficient management and monitoring of planned changes to the infrastructure – including sending work orders to service providers
- **Comprehensive options for data visualization and analysis** allow faster, knowledge-based decisions
- **Cloud-ready** – can be deployed in the public cloud, private cloud, or hybrid cloud
- **Available as a SaaS model** for maximum flexibility in terms of timescale and costs
- **Web-based application with a modern user interface based on HTML5 technology** for the best possible user experience


## About FNT

FNT GmbH, 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, London, Singapore and Timisoara and has an international partner system with market-leading IT service providers and system integrators.



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