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7 Reasons to Use Hybrid Infrastructure Management Instead of Traditional Network Inventory Management

INFRASTRUCTURE IS AT THE HEART OF CURRENT AND NEXT-GEN NETWORK MANAGEMENT

When you hear the term "Network Inventory Management," what are your immediate thoughts? Does it conjure up any particular feelings or images? Of love or hate, of advantage or hindrance, necessity or encumbrance, relic or cutting-edge?

When you think about your Network Inventory Management (or NIM) specifically, are you confident that it can support your needs today, tomorrow and on into future years? Will it be able to adapt to the revolutionary changes that are already appearing in the networks, services and processes that you look after?

We know that network inventory solutions invoke many different sentiments in many different people. Understandably so. There's one thing we know for sure, that NIM is an essential component of any network operator's suite of OSS (Operational Support System) tools. That's true whether they're a service provider, utility, telco, TowerCo, CoLo or even enterprise network operator.

Network inventory management is essential for every one of those categories because of the many operational workflows that they facilitate, including:

Resource Management
Provides visibility and coordination of the physical and logical assets that make up a network's infrastructure. NIM supports planning activities by showing the available infrastructure, current utilization levels and remaining capacity of those resources. NIM assists as a network design tool, a network visibility tool and a network configuration tool to optimize the balance between capacity and capital expenditure.

Asset Lifecycle Management
Uniquely identifies and manages the entire lifecycle of every asset within a network - from order to install to maintain / repair to decommission / replace / replenish. As one of an operator's biggest capital investments and generator of income, financial management of these assets is essential. This includes management of depreciation, maintenance, warranties and useful life remaining, amongst other functionality. Network inventory solutions often work in conjunction with ERP (Enterprise Resource Planning) and WFM (Workforce Management) Solutions to reconcile data and manage asset lifecycles.

Service Activation and Orchestration
To fulfill orders placed by customers, the NIM helps by coordinating the allocation of resources to those customers. These resources could include devices, services, connections, applications, content, capacity, storage and much more.

Network and Service Assurance Management
Enables operators to track the health of their network equipment and its condition throughout the lifecycle of the asset. In addition to tracking the current health posture of all the components of the network, NIM also provides a view into the operational state of each part of the network (e. g. in-service, planned, in-maintenance, etc).

Predictive Maintenance
Operators use NIM to proactively identify issues before they become problems. By identifying these issues early, operators can reduce downtime and improve service quality.

INVENTORY MANAGEMENT IS CHANGING, ACROSS MANY AXES

Network inventory solutions have been available for many years. In fact, network inventory solutions were some of the earliest OSS in existence due to the impact they have on essential activities like those listed above. However, the world of network inventory is changing rapidly. Operators and their inventory solutions are now tasked with managing changing networks and waves of investment that includes:

- Cloudification / virtualization of networks
- Sustainability and energy reduction
- Increased use of radio / cellular networks
- Extension of the provider's network edge to increasingly incorporate private networks also

These investments and evolving network technologies are driving changing demands onto our network inventory solutions. They still need to support resource, asset lifecycle, activation and health scenarios, but in a much more modern way. NIMs need to support the more dynamic, virtualized, cloudified, radio-centric, power-optimized and expanded-reach networks of today and tomorrow.

Traditional NIMs might be able to support some of these new-age requirements, but few can accommodate every one of these facets. Existing solutions struggle to keep up with the speed and diversity of functionality required today, let alone catering for future functionality.

Organizations that are able to harness the force of these trends are gaining significant competitive advantage. Those that don't are sure to be left behind, being consigned to using work-arounds and inefficient workflows to cater to market expectations and product needs. Or worse, missing these waves of opportunity entirely.

AS INVENTORY MANAGEMENT CHANGES, THE ADVANTAGE GAP BROADENS

The vision and trends that are driving more cutting-edge, forward-looking inventory models are already becoming apparent:

- They are still needed to support all of the **traditional workflows** listed earlier – Resource, Asset Lifecycle, Service Activations and Network / Service Health Management. However, the way NIM supports these workflows is fundamentally changing. More specifically, the speed that NIM needs to support these workflows is changing because the networks they support are becoming far more dynamic. It's no longer sufficient to perform daily inventory updates because:
  - Virtualized network **resource allocations** often change far more quickly than once a day
  - Network **asset lifecycles** can be long or short – spun up and back down on demand
  - **Service activations** and client-led updates like bandwidth on demand (BoD) are utilizing resources on an as-needed basis, not on the set-and-forget basis of the past
  - **Network and service health** can be optimized dynamically by flexing capacity and link utilization or re-routing traffic
- And modern NIMs are not just for supporting traditional resources like physical network devices, network exchanges and communications rooms. They are now needed to support the resources that underpin **modern, hybrid infrastructure** that includes:
  - Data Centers and Data Center Infrastructure Management (DCIM), which includes power and environmental management (HVAC - Heating, Ventilation and Air Conditioning), CRAC / CRAH (Computer Room Air Conditioning / Handling), building management systems (BMS) and more
  - Cloud infrastructure and virtualized network objects like VNFs or CNFs (virtualized or cloud-native network functions)
  - Cell sites with modern architectural models like front-haul fiber, mobile-edge compute (MEC), cloud-hosted infrastructure models (5G)
  - Private networks and enterprise infrastructure that could include smart city devices, sensor networks, digital twin models and enterprise IT stacks

- With sustainability and energy reduction now at the forefront of network planning, having an accurate **understanding of power network / infrastructure** is essential. Having sophisticated awareness of power infrastructure also provides the extra benefit of being able to perform root-cause analysis (RCA) that relates to power infrastructure. Planned and unplanned power outages remain the cause of a large proportion of comms network outages in many places today, but root-cause diagnoses can be challenging without the right power inventory awareness.

NOT JUST NETWORK INVENTORY, BUT HYBRID INFRASTRUCTURE MANAGEMENT IS NOW THE COMPETITIVE ADVANTAGE

Traditional NIM solutions can support some of the features above. Some may even support the future demands of **active inventory** models. FNT Solutions allows clients to build a more comprehensive **Digital Twin of Hybrid Network Infrastructure** that includes all of:

- End-to-End networks that cover:
  - Backbone / core
  - Regional / metro / aggregation
  - Access
  - Provider Edge (PE), Customer Edge (CE) and even Private / Campus
- Inside Plant (ISP) and Outside Plant (OSP)
- Physical, logical, virtual and cloud-hosted resources
- Logical and virtual transport technologies such as DWDM, MPLS, IP and Ethernet
- Dynamic changes to infrastructure
- Power networks
- Data Center and comms room infrastructure (DCIM)
- Enterprise – IT infrastructure

In particular, the last three elements of a hybrid network infrastructure – power, DCIM and Enterprise / IT – are unique to the network inventory solution provided by FNT.

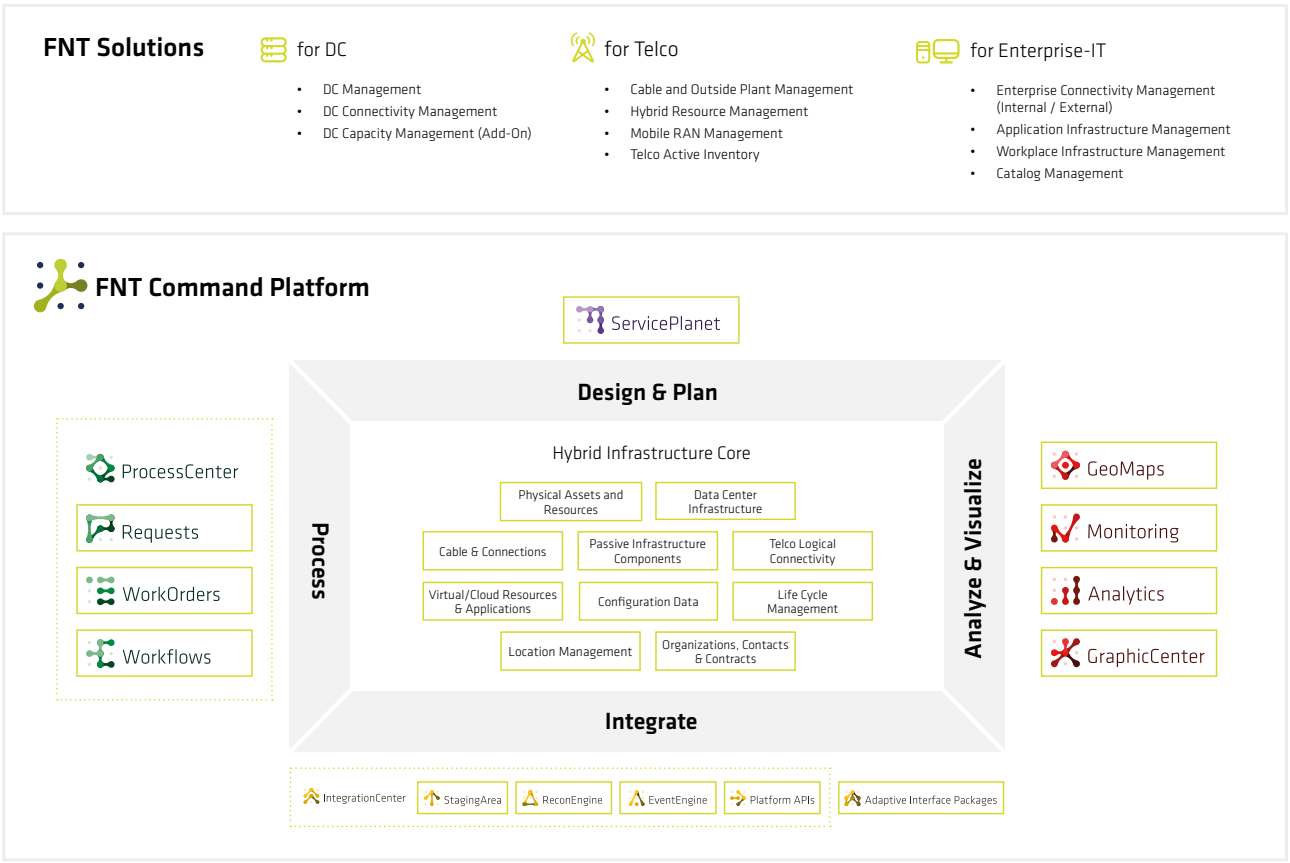

Figure 1 – FNT Hybrid Infrastructure Management

THE BENEFITS OF THE HYBRID INFRASTRUCTURE MANAGEMENT APPROACH

Clearly, the FNT Hybrid Infrastructure Management platform is packed full of features. In fact, the high-level architecture above shows just a tiny hint of the many functions and features offered. But that's not why FNT's solution is revolutionary. It's not even the many unique features that allow you to more comprehensively manage hybrid infrastructure that sets it apart.

It's the following seven benefits that deliver significant advantages to FNT's clients:

1. **Speed to market, speed to repair, speed to operate** – Having all of your hybrid infrastructure already pre-integrated, and at your command, speeds up every aspect of your network lifecycle – from plan to build to commission to handover to operate and maintain. The combined information is at your command for each and every stage of the lifecycle.

2. **Additional dimensions of scalability** – Modern IT architectures allow NIM providers to claim almost unlimited scalability. Only FNT allows you to scale across other infrastructure dimensions that go beyond the traditional telco core, dimensions such as environmental controls, energy optimization and reach into private networks to create more powerful managed service offers.

3. **Built-in data integrity controls** – The success of your NIM can only be as good as the quality of data that supports it. Hybrid-domain, multi-factor reconciliation helps to ensure data quality remains high in your FNT database. This allows FNT clients to stitch many different data sources together into a single coherent solution and identify exceptions from any of the cross-linked data points.

4. **Architected for future Immersive Experiences** – NIM solutions will play a critical role in providing data to Augmented Reality (AR) solutions. AR techniques are sure to revolutionize the way your workforce and clients interact with infrastructure in the not-too-distant future. To do so, NIMs will need to provide accurate asset geopositioning data in three dimensions, not just two (i. e., traditional map and topology representations). Not only does FNT already support asset information being collected in three dimensions, but it also already allows you to visualize your infrastructure in 3D.

5. **Increased operational efficiency** – In addition to the many operational functions provided by FNT, your hybrid infrastructure data (and the accuracy of it) is a fundamental starting point for building automations and algorithms. These are important to further optimize workflows across entire asset lifecycles. Furthermore, extensive APIs allow insight generation and automations to extend within the FNT suite as well as into third party applications.

6. **Advanced integration capabilities** – NIM performs a central role in any network management solution because other applications and workflows rely on the contained inventory data. As a result, advanced integration is essential. In addition to the APIs that you'd expect from any NIM solution, FNT provides the IntegrationCenter solution. FNT IntegrationCenter provides a comprehensive framework of tools, APIs and SDK (Software Development Kits) that allow customers, partners and system integrators to build interfaces and integrations that range from simple to highly sophisticated. Furthermore, FNT IntegrationCenter ensures that you have access to, and control over, your data at any time. This provides freedom to choose the right architecture and integration partner for your needs while avoiding vendor lock-in.

7. **Comprehensive situation awareness** – Your comms, power, data center and customer information aren't in separate silos that need to be joined together by data scientists. They're all combined within a single platform and a single data model (as shown below), letting you know exactly how all of your critical infrastructure connects, correlates and influences each other.

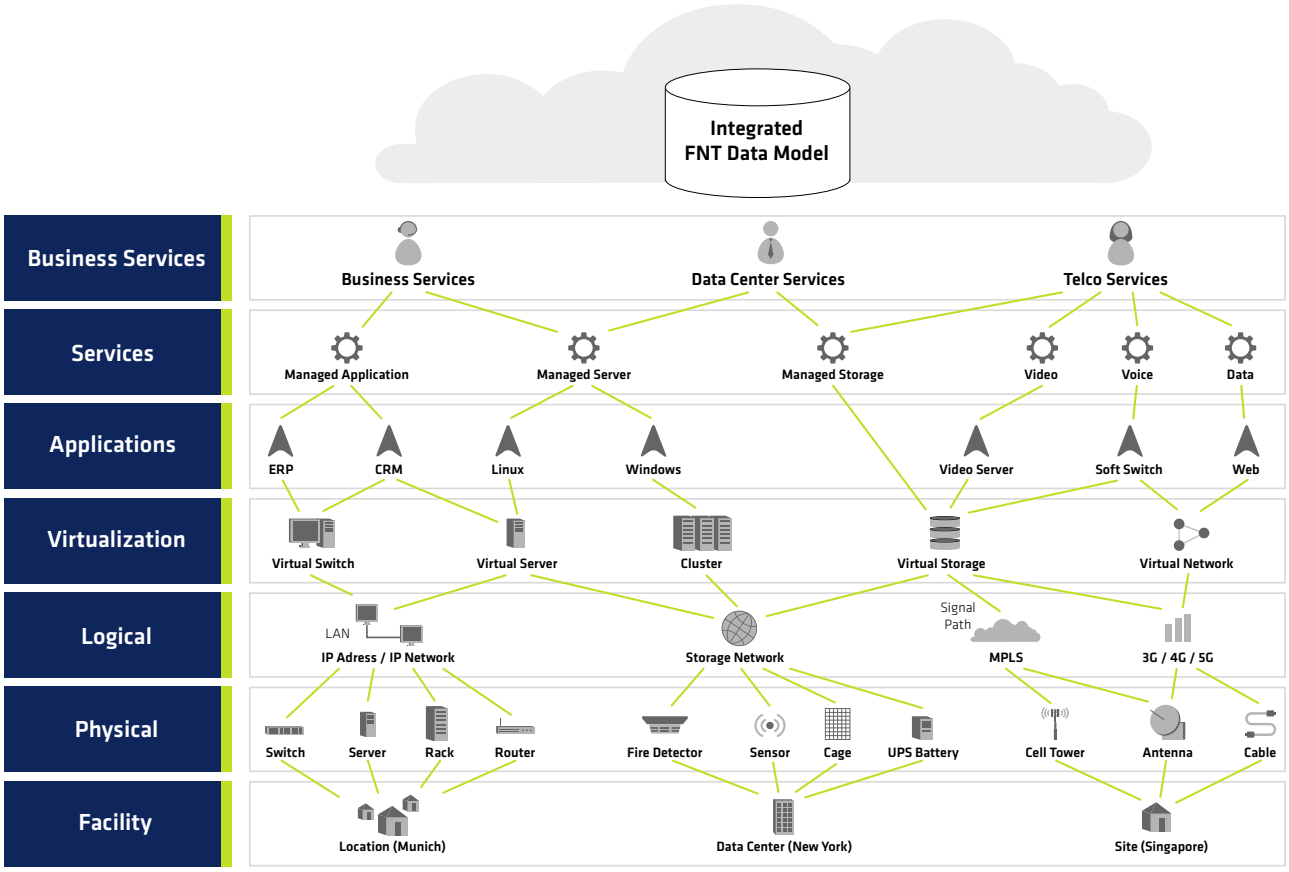

Figure 2 – FNT Consolidated Data Model (example)

The important consideration of the top-to-bottom layers of the data model above is that it connects all the way from your customers to your network infrastructure. It also connects across every domain of your network infrastructure, across all the various passive and active physical, logical and virtual telco, IT and data center resources. The connections already exist for root-cause, service impact, redundancy, business intelligence and so much more. There's no need for other integrations or derivations.

Naturally we believe strongly in the benefits derived from the FNT solution. But don't just take our word for it. Here are some results our customer have realized.

NetCom BW
Improved maintenance window planning with automatic what-if analysis. On average reduced planning time from a few days per case to less than one hour. With FNT Command they were able to standardize the management of all network resources, increase the quality of planning processes for passive and active network infrastructure expansions, increase efficiency for maintenance window planning dramatically, and achieve an immediate impact analysis in case of outages.

DLR (formely TelX)
FNT Command is one integrated solution for planning and documentation that consolidates data provided through different systems. This single source of truth database improved impact analysis by achieving 4x faster identification of incidents and their cause and helps achieve instant resolution to questions that previously took days to answer or could not be answered at all.

PUTTING HYBRID INFRASTRUCTURE MANAGEMENT INTO ACTION

Combining telco, power, data center and enterprise infrastructure management into one consolidated solution using an integrated data model opens up possibilities that network operators have long struggled to assemble. However, FNT also provides a flexible framework for managing your specific infrastructure to suit your unique styles of work. To adapt to new technologies and customer-specific needs, a flexible data model is provided, that can be extended by configuration. But it is not about the data model only. The API is self-extending to support the data model extensions automatically. Other platform functions such as the GUI or search and reporting functions are configurable as well.

FNT can be used in each of the following models:

Traditional Network Inventory
When you have a more traditional network based on physical network devices and where change happens relatively infrequently. This isn't just comms network devices, but could include other physical devices like smart city sensors, power equipment and much more.

Dynamic Inventory
When you have a lot more logical and virtual infrastructure to manage. The consolidated data model incorporates services, applications and virtualized inventory as well as more traditional physical components in the network. When you also need dynamic (e. g., event-driven) updates and accuracy within your inventory database because you need to support orchestration, fault-fix and automation across legacy and modern networks in near real time.

Cloudification and Virtualization
When you need to aggregate "cloud" (public, private or hybrid cloud), data center and virtualized resources into a consistent picture of the infrastructure you manage.

Sustainable Infrastructure Utilization
When you're committed to meeting your clients' essential communication service needs and sustainability objectives simultaneously. When you wish to decrease your energy utilization footprint to reduce costs but also decrease your impact on the environment. When the only way to manage your power utilization is to first manage the power infrastructure that feeds your active infrastructure.

Radio / Cellular Infrastructure
When you rely on radio technologies to deliver services to your clients and stakeholders. When you need to manage spectrum assets, edge network sites, optimize radio coverage (e. g., management of coverage-effecting attributes like azimuth, tilt, frequency bands and more), real-estate on towers and a combination of fixed and cloud infrastructure to support your radio access network (RAN).

Enterprise
When your reach and responsibility extends beyond the typical telco or utility provider edge (PE) of the network. When you help clients to manage their private networks (5G / WiFi) and related infrastructure such as sensor networks, digital twins that provide managers greater control of their operational processes / resources / technologies, etc as well as other IT and comms infrastructure. When your clients are dependent upon electronic services to support their modern e-business models and need to ensure all of their hybrid infrastructure is planned, documented, observed and managed seamlessly.

WHEN THE INFRASTRUCTURE YOU MANAGE EXTENDS BEYOND TRADITIONAL COMMUNICATIONS NETWORKS

FNT Solutions provides the only consolidated, hybrid infrastructure management solution on the market to connect all of your many infrastructure "dots." It provides the platform to support all your many needs. FNT provides you with an out-of-the-box, product-based solution with a very high level of possible self-configuration that allows you to adapt to almost any conceivable scenario needed by you, your various business units and your clients. You no longer need to ask questions like:

- How do I reduce my energy footprint
- How do I gain a single, coherent view of all my network, power, data center and enterprise IT infrastructure to unlock cross-domain insights quickly
- How can I deliver services to my clients faster when there are so many cross-domain dependencies to manage
- How do I optimize resource utilization to find the best balance between capital allocation, resource capacity / availability, revenue generation and timeliness / readiness for service
- How do I reduce risk and reduce impacts to service health by being able to quickly diagnose issues across all of my infrastructure dependencies
- How do I manage network transformations or changes in my network or plan maintenance windows to execute the changes in the field without impacting customer services or business
- How do I reduce the down-stream impacts such as unnecessary truck rolls by improving the reliability of data relating to all of my infrastructure

Since being founded in 1994, FNT Solutions has been used by 500+ customers and 25,000+ end users around the globe to provide accurate, reliable digital twins of all of their hybrid infrastructure.

Contact us to speak with one of our experts or schedule an introductory demo. Let us show you how FNT Solutions can connect all the dots of your hybrid infrastructure needs.

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