



FNT

// simplify complexity

DIGITAL TWINS FOR DATA CENTERS:

HOW TO PICK THE RIGHT SOLUTION



IN THIS WHITE PAPER

In our white paper titled **Why You Need a Digital Twin of Your Data Centers** we explored in detail what digital twin-enhanced Data Center Management looks like, the value a Digital Twin adds to Data Center Management, and how it is uniquely capable of overcoming the complex challenges of our increasingly digital world.

This white paper focuses on what a modern DCIM solution looks like and why a Digital Twin is not just advantageous but essential for your business.

CONTENTS

Introduction	3
Features of a Modern Solution	3
Summarized Benefits of Data Center Management with a Digital Twin	4
Conclusion	5
FNT Command Platform	6
About FNT	7



Introduction

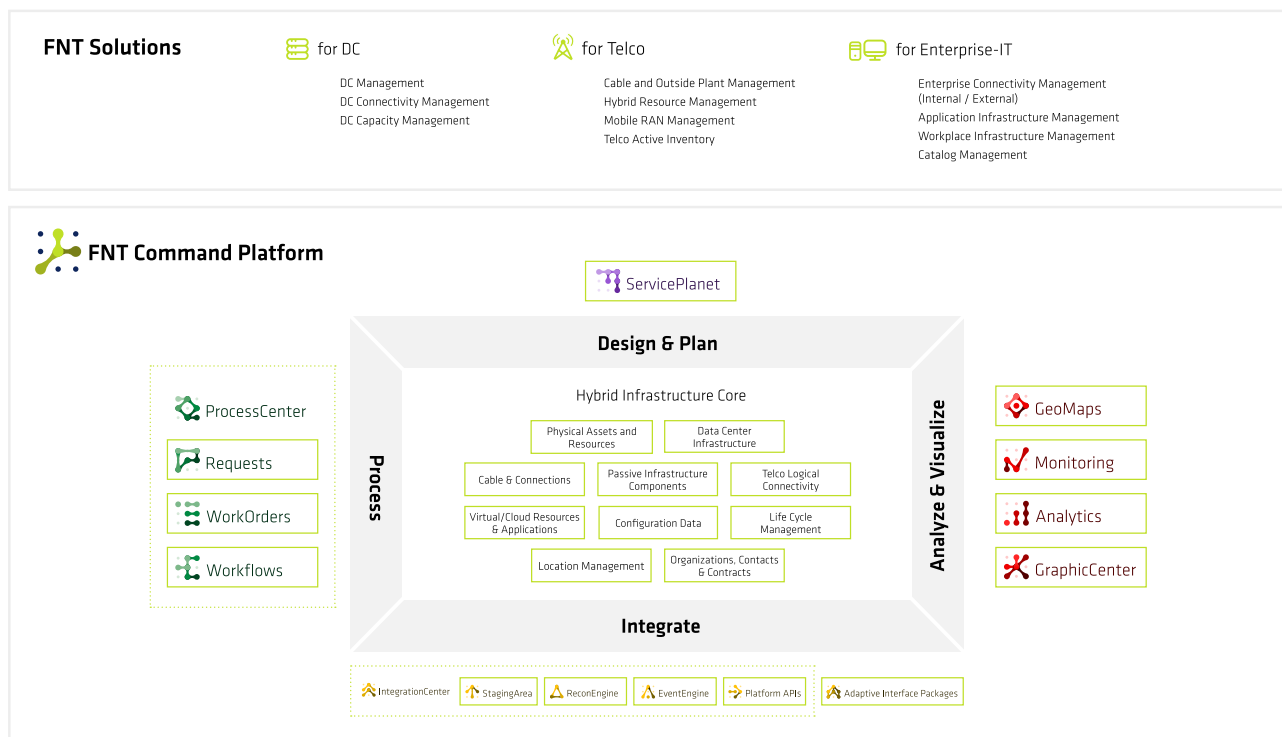
In the rapidly evolving digital landscape, data center operators are seeking ways to adapt and optimize their operations for increased efficiency, resilience, and security. A Digital Twin, a virtual counterpart of the physical data center, has emerged as a promising solution.

This paper explores why Digital Twins should be incorporated into Data Center Management strategies, arguing that they should be a strategic investment pillar that organizations can build their future operations management frameworks around. This includes discussions around how they can leverage Digital Twins to future-proof their operations and enhance their sustainable competitive advantages.

Features of a Modern Solution

The challenges and limitations of legacy Data Center Management solutions described in our white paper “Why You Need a Digital Twin of Data Centers” highlight the urgent need for modern Data Center Infrastructure Management (DCIM) solutions with Digital Twin capabilities. Such solutions are uniquely able to meet the complex demands of today's data centers and workflows, and the more cutting-edge, forward-looking Data Center Management solutions are already evolving to meet these demands in the following ways:

- **Digital Twin Implementation:** Creates a virtual replica of the physical data center (including assets and connectivity), allowing for simulation and analysis to be performed.
- **Design Authority Capability:** Allows a top-down visualization of infrastructure and available capacity as well as managing resources across the entire lifecycle from design to deployment and operations. Includes functionalities for resource utilization, available capacity, planning, design rules, asset lifecycle management, reporting, and more.
- **Managing Change Workflows:** Helps in managing ongoing changes that happen within a data center each day and the subsequent optimized utilization of resources that must occur.
- **Optimized Collaboration:** Provides consistent and up-to-date understanding across design, deployment, and operations groups. This includes Remote Situational Awareness: Provides knowledge of current and future states, aiding planning and knowledge transfer without having to visit site.
- **Decision Support:** Enables operators to ask questions and simulate What-if scenarios to unlock actionable insights quickly.
- **Power and Cooling Management:** Focuses on sustainability and careful power/cooling management to optimize Operational Expenditure (OPEX).
- **Resilience and Uptime Assurance:** Offers awareness of resiliency mechanisms, single point of failure analysis, and techniques to ensure overall data center uptime.
- **Comprehensive Data Center Management:** Highlights the necessity of a complete solution for effective management. This also has a dependency on integration with various systems such as BMS, PMS, IPS, HVAC, billing data, Fire Safety Systems, etc.
- **Security and Compliance:** Helps in maintaining stringent security protocols and compliance with industry standards and regulations.



Architecture of the FNT Software DCIM solution.

Summarized Benefits of Data Center Management with a Digital Twin

Offering a multitude of benefits, Digital Twins have become a cornerstone of modern Data Center Management.

As businesses are embracing digital transformation and the digital economy's reliance on various assets and resources, the integration of Digital Twins into data center operations stands as a significant step toward optimizing utilization of resources. This delivers huge savings in terms of operating costs, and it also plays a significant role in achieving sustainability objectives. Because a Digital Twin is a virtual representation of the data center infrastructure, it can help to understand and improve energy costs and efficiency by providing important insights about where energy is being expended and how much. This is important information that can be used to improve efficiency and performance and, ultimately, the bottom line.

Another benefit is the competitive advantage gained by leveraging a Digital Twin for Data Center Management. A Digital Twin helps achieve this in two ways. First by enabling the flexibility and agility needed to facilitate rapid adjustments in resource allocation to meet changing workloads and business needs. The ability to alter course as needed ensures data centers can adapt to evolving demands with ease, providing a competitive edge in today's dynamic digital landscape. Second, a Digital Twin positions data center operators to optimize efficiency and enhance scalability to place their organizations at the forefront of their industry. As such they will be able to respond effectively to evolving technology demands while simultaneously enhancing service quality and customer satisfaction.

Notably, one of the foundational benefits of Digital Twins is their capacity to streamline data center operations, enabling predictive maintenance and resource optimization. This, in turn, reduces downtime and operational costs, significantly enhancing overall efficiency.

Further, increased resilience empowers early issue detection and enhanced disaster recovery planning, which significantly reduces the potential for expensive downtime and data loss. This fortifies the data center's capacity to navigate unforeseen challenges and disruptions successfully.

In terms of strategic planning and decision-making, Digital Twins provide insightful forecasts of resource requirements and potential challenges, empowering organizations to make informed, forward-looking strategies. This proactive approach keeps entities ahead of evolving technology and business needs.

Data center security is another area where Digital Twins excel. They support early threat detection and improve incident response by continuously monitoring for vulnerabilities and anomalies. This contributes to a robust security posture and safeguards critical data and infrastructure from cyber threats and breaches.

Lastly, a Digital Twin ensures design and data consistency throughout the data center's lifecycles. This minimizes discrepancies, enhances operational reliability, and simplifies maintenance, streamlining Data Center Management from conception to operation.

PRACTICAL SAMPLES OF CORE VALUES AND BENEFITS

Optimize capacity usage

- See the current state of space, power and cooling usage and expected future state when planned changes are implemented
- Understand historical changes and future trends
- Keep track of your energy usage and optimize it
- Support consolidation and migration
- Avoid fragmentation and stranded capacities
- Eliminate ghost equipment

Reduced planning efforts

- Guided planning of infrastructure commissioning and decommissioning
- Plan changes and maintenance windows with impact analysis
- Capacity data available across all domains and technologies

Support for operations teams

- Accurate resources and capacity data at the fingertips
- Fulfill the service request correctly the first time
- Provide process driven control of manual tasks

Improve resilience and uptime

- Ensure redundancies
- Avoid Single Point of Failures
- Reduce risks of outages by planned changes
- Minimize audit risks including financial provisions
- Immediate impact analysis
- Prioritize and accelerate troubleshooting
- Increase first time fix rate
- Avoid SLA violations

Facilitate cross-departmental collaboration

- Accurate data across the various processes synchronized with network and assets
- Data sharing up to ERP, CRM, etc.
- No separate, downstream data cleaning efforts
- No costs for error recovery due to inaccurate data
- No additional effort for capacity reporting

Conclusion

As we navigate the shifting sands of Data Center Management, it is clear that modern Data Center Infrastructure Management (DCIM) solutions with Digital Twin capabilities are not just advantageous but essential. These advanced tools offer benefits that legacy systems simply can't compete with – benefits such as enhanced visibility, efficiency, flexibility, intelligence and predictive capabilities.

The Digital Twin, acting as a virtual replica of the physical data center, facilitates up-to-date awareness, analysis and management of all aspects of data center operations. This not only helps in identifying potential problems before they manifest into operational issues, but also allows for “what-if” analysis, aiding in strategic planning and long-term decision-making. The role of the Digital Twin extends to improving sustainability by optimizing power consumption and cooling requirements, crucial in an era where environmental responsibility is of paramount importance.

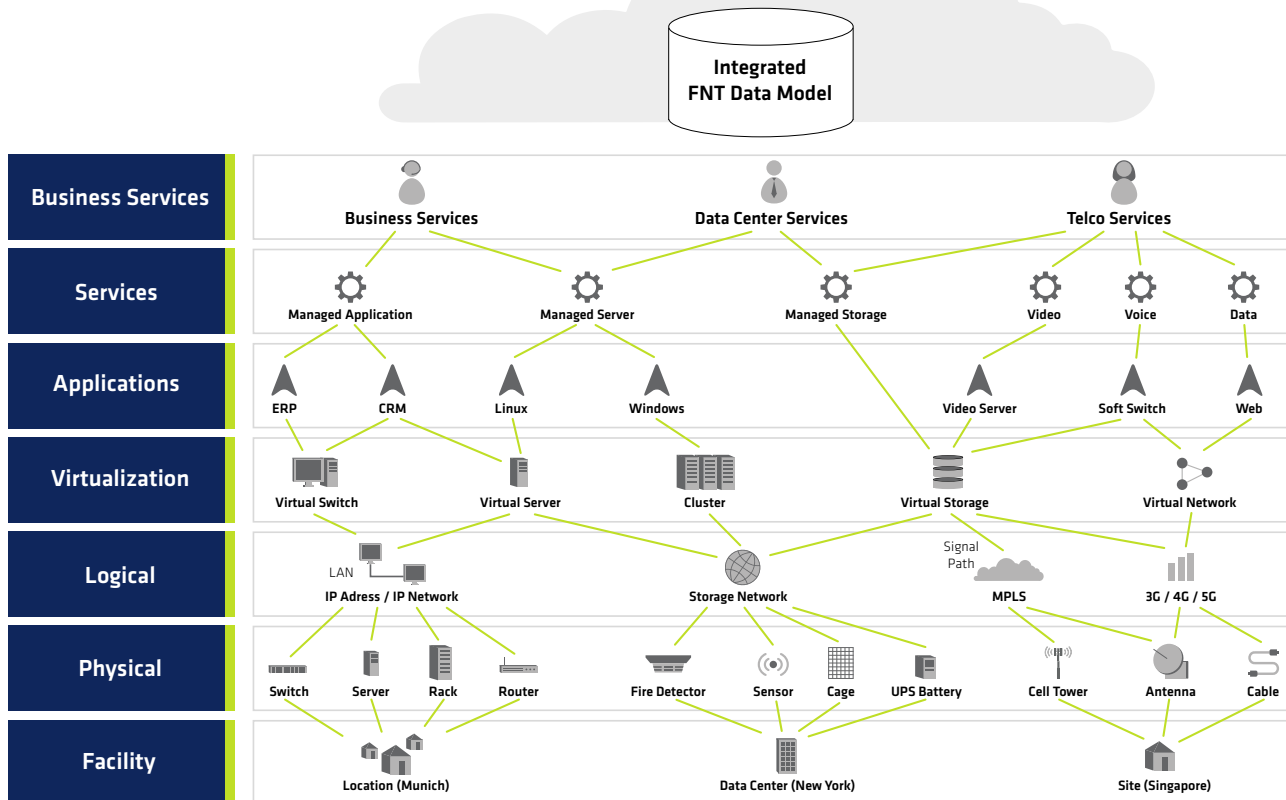
For data center operators navigating the complexities of the digital age, the recommendation is clear: Investment in a comprehensive, modern DCIM solution like the one provided by FNT Solutions, is a strategic imperative. Not only will this lead to immediate benefits in operational efficiency and resource utilization, but the long-term benefits are equally compelling. These include increased flexibility to adapt to the rapidly evolving technological landscapes, improved return on investment (ROI) by reducing both CAPEX and OPEX and increased resilience to deliver a significant competitive advantage opportunity.

Thank you for taking the time to read this white paper and explore the complex, yet fascinating world of Data Center Management (DCM). Our hope is that this material has not only enlightened you on the critical role and value of Data Center Infrastructure Management (DCIM) using Digital Twins, but also inspired you to envision how these concepts and technologies can revolutionize your operations.

We understand that embarking on a transformation journey like this can seem daunting. Yet, in a world marked by constant technological evolution, transformation is not merely an option—it's a necessity. Let us help you navigate this journey with confidence. FNT Solutions' extensive experience and comprehensive suite of tools and services are designed to facilitate seamless transitions, minimizing disruption while maximizing benefits.

If you find yourself contemplating how best to optimize your data center operations, we encourage you to **reach out to us**. Our aim is to work with you to build a robust, scalable and sustainable data center that delivers exceptional performance and cost-efficiency.

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.

© Copyright (C) FNT GmbH, 2023. All rights reserved. The content of this document is subject to copyright law. Changes, abridgments, and additions require the prior written consent of FNT GmbH, Ellwangen, Germany. Reproduction is only permitted provided that this copyright notice is retained on the reproduced document. Any publication or translation requires the prior written consent of FNT GmbH, Ellwangen, Germany.