



IN THIS WHITE PAPER:

The data center market is being impacted by digital transformation and the shift to the cloud, with operators seeing their business models affected accordingly. Under pressure from hyperscalers and customers, colocation providers must respond to this new reality. Their business processes and technical systems need to be efficient and modern, fast and secure, transparent and flexible. Is that even possible? Colocation providers are not typically regarded as innovators, but in their role as enablers they must move with the times and be able to implement customized solutions quickly. In this white paper, find out how the colocation industry benefits from a digital platform that enables providers to meet tough customer demands and handle global competition.

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Innovation Beats Commodity

CUSTOMER FOCUS, CONNECTIVITY, AND MANAGEMENT – THREE SUCCESS FACTORS FOR COLOCATION OPERATORS

The colocation market is in a state of flux. Dynamic change is the only constant, with competition fierce and customer expectations rising. Operators need to set themselves apart from the competition, boost customer satisfaction, secure new income streams, and achieve greater cost efficiency – all at the same time. Many are extending their business models beyond retail customers to serve hyperscalers. New players, such as network operators, are entering the arena, consolidation is gathering pace, and

Space, power, and cooling are no longer enough to retain your customers and win new ones.

global competition is heating up. Space, power, and cooling are no longer enough to retain your customers

and win new ones. Stability and security are being joined by other key requirements: customer focus, compelling services, and a state-of-the-art data platform to handle management. All contribute to customer stickiness.

The traditional view that colocation and innovation don't go together no longer holds water. After all, most resources for hyperscale and hybrid IT are housed in colocation provider facilities. Without them, virtualization and edge computing would simply not be possible. The shift has been further accelerated by Covid-19. The data center segment developed above the average IT level over the course of the pandemic, according to the **analysts at IDC**, driven by the demand for digital platforms. The analysts predict that "companies will revive and accelerate hybrid infrastructure strategies and will look to colocation providers as integral partners for colocation and cloud interconnection."

Strong demand for IT solutions for remote working and for storing and analyzing large quantities of data has driven healthy growth in the colocation market for private and hybrid cloud services. **Analysts at Grand View Research** valued the global colocation market at \$44.4 billion in 2020, with a compound annual growth rate of over 13 percent

expected from 2021 to 2028. One reason is the increasing number of use cases. These range from electronic health records, IoT production, e-commerce, autonomous vehicles, and advanced robotics to the migration of enterprise applications to the cloud. The enablers here are customer-focused colocation services, which are offered flexibly and efficiently based on cutting-edge technology.

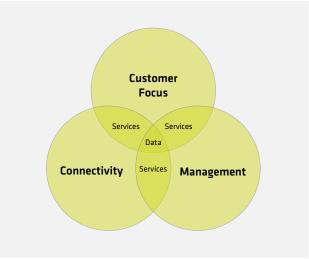
KEY REQUIREMENTS FOR COLOCATION PROVIDERS

Demand for data centers is set to rise, but the criteria for a good colocation operator are changing. They will have to build faster while reducing costs and carving out a distinc-

tive profile. Old data centers are threatened by technological progress. Successful providers are innovative, understand what custom-

Successful providers are innovative, understand what customers want, and manage their capacity efficiently.

ers want, and manage their capacity efficiently. Three requirements determine the success of a colocation provider in today's market.



Three success factors for colocation providers: customer focus, connectivity, and management.



1. Customer focus

Digital transformation means it's no longer acceptable for provision of a service to take several weeks. However, because information is frequently still held in multiple locations, many colocation operators take too long to analyze available capacity, prepare a quotation, and then deliver the service. They often know exactly how much power is being used, for example, but not by which customers. Colocation provider teams are also often unable to state exactly when a customer contract expires and what the effect of that on electricity consumption will be, making it impossible to alert sales staff in a timely fashion and to plan effectively.

What they need is a "single pane of glass", i.e., an overview of the relevant information from multiple sources in a unified dashboard or console. All the colocation provider's staff, from planning to sales, benefit from the ability

to access the current status and available capacity at any time. The aim of this transparency is greater operational efficiency and optimized management, coupled with lower costs and improved service. More effective collaboration boosts customer focus and gives businesses a decisive edge in today's highly competitive market.

2. Connectivity

In September 2021, ResearchAndMarkets.com estimated that the \$45 billion colocation market would grow at a compound annual rate of 14.3% during 2021–2026. But no one is going to win market share today simply by offering space and power. Interconnectivity is equally important for colocation growth – for operators and their customers alike. A Forrester study identified interconnectivity of data centers as one of the primary advantages of the carrier neutral colocation model and highlighted the importance of robust interconnection roadmaps.



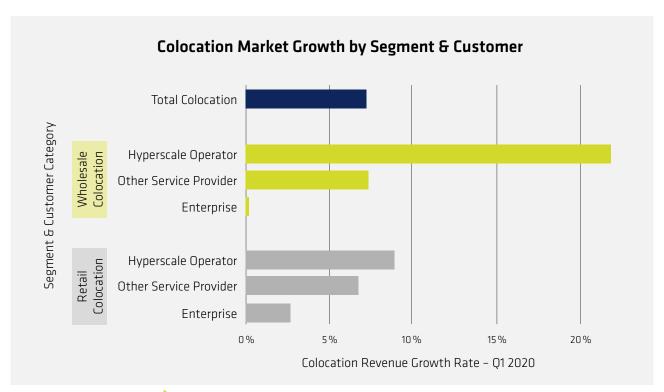
Source: Synergy Research Group Aore information



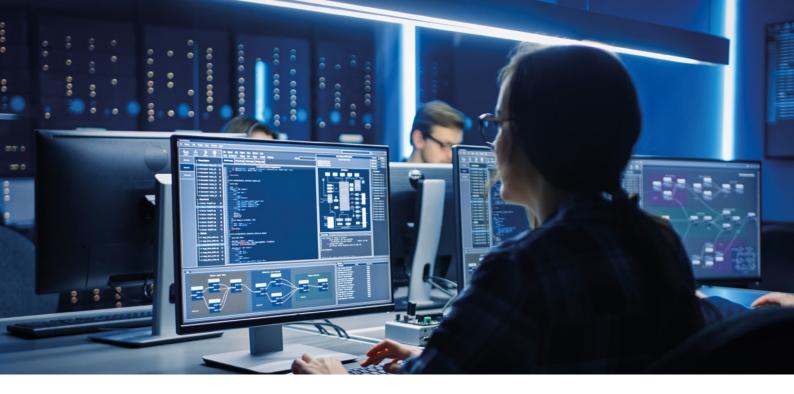
While interconnectivity is crucial, what matters to customers is fast connection times and value-add services – not least because they are increasingly less willing to get involved in operational matters themselves. Colocation operators must reduce the time needed for patch planning from hours to minutes via automated process support, with patches then being implemented with minimum delay. This can only be ensured through rigorous service design and provision, e.g., by way of a service catalog. This approach offers optimum support for sales teams and also allows technical teams to streamline planning and delivery. Further benefits include seamless documentation of the services offered and those booked by a customer.

3. Management

Data is the new fuel - not just as input for customer applications, but also for colocation operators. Ultimately, data drives revenues and efficiency. With the right data platform, colocation operators can support sophisticated capacity management and simultaneously analyze and optimize ongoing contracts, enabling them to provide customers with new services more quickly. That shrinks the interval between order and first invoice: the customer doesn't lose any time and the colocation provider optimizes its income stream. Gartner, for example, recommends that colocation customers should only accept services that are fully fit for purpose. They should check not only the provider's physical infrastructure, but also the operational processes around change management, response times when incidents occur, and more generally how the data center is run.



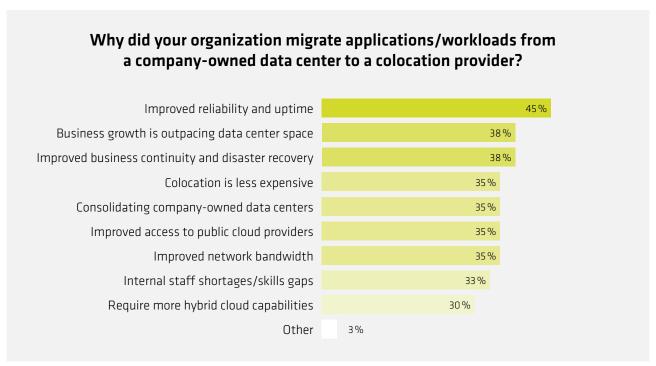
Source: Synergy Research Group More information



Comprehensive and detailed data from their colocation providers enables customers to plan their own business better. Examples include the ability to access all their data via a portal, including assets, consumption, and contracts. This information comes from a wide range of sources and a variety of different locations, such as a billing management system, another monitoring tool, or a CRM application. It is harmonized and combined in the management platform, with the guiding principle being to deliver the right information to the right recipient.

A portal that builds on existing data resources not only meets the wishes of many customers, it also brings benefits for the colocation operator, who can then "outsource" its own services to customers and reduce risk. Software-defined networking (SDN) with virtual meetme rooms that access the harmonized data also saves internal costs and accelerates day-to-day business – assuming digital management and planning of connections works smoothly.

The following case studies show how various colocation operators have adjusted to different requirements. The solution paths they have taken demonstrate that despite many similarities, it always comes down to finding a customized solution. There are many ways to achieve optimization in the colocation sector, but making the right changes is key.



Source: 451 Alliance More information

Next-Gen Colocation Management

HIGHER REVENUES, HIGHER CUSTOMER SATISFACTION

The colocation industry is booming, but competition is fierce and customer demands regarding transparency and speed are growing. With modern tools, colocation providers can ease the burden on their own resources, offer their tenants additional new services, boost the speed of their operations, improve customer satisfaction, and achieve greater cost efficiency. The FNT Command Platform focuses on three aspects that are critical to optimizing colocation performance and customer loyalty.



1. Connect services

Comprehensive transparency across the entire network facilitates the control and operation of IT infrastructure. Using the FNT Command Platform, colocation opera-

tors can plan, implement, and document network connections faster. Integration of a range of functions in a single system also makes daily tasks easier through automated work orders without the need for manual intervention. Our case studies relate to capacity and asset management of network connections, spaces, and racks.



2. Connect data

In hybrid structures, it's difficult for colocation operators and customers to keep track of all the components in their rented rooms. The FNT Command Platform pro-

vides a solid foundation for identifying, aggregating, and processing data from all locations, thereby giving colocation tenants and operators full transparency into costs and environmental conditions, all at the touch of a button. This also includes automatic merging of data from different sources, sites, and technologies without time-consuming adaptation. Our case studies focus on information on installed hardware and power consumption.



3. Connect customers

Information and speed are key expectations of colocation tenants. With the FNT customer portal, colocation providers can give their customers the ability to obtain

data on the resources they are using whenever and wherever they want. In this one-stop shop, tenants can actively manage their colocation assets, optimize the use of colocation rooms, and thus accelerate tasks and processes. Our case studies show how customers use self-service options to the benefit of both sides.



Oliver Linder, Head of Business Line DCIM at FNT Software

NEXT-GEN COLOCATION MANAGEMENT IN PRACTICE

Four tips for next-generation colocation management from Oliver Linder, Head of Business Line DCIM at FNT Software.

Prioritize customer satisfaction

Tenants favor a multi-supplier approach but are loyal to their primary provider. You can secure preferred status by leveraging state-of-theart reports to always deliver expected level of service.

■ Stand out in a crowded market

Meet changing demands for value-add services. The ability to accommodate new requirements will tip the scale in your favor when customers are comparing options.

■ Find new revenue streams

Upgrade your infrastructure to enable a broader portfolio of service offerings, specifically connectivity and customer-centric services.

■ Operate more cost-effectively

Cost is one of the primary drivers for shifting workloads into colocation. Using software to automate service delivery and infrastructure management significantly improves efficiency.



Case Study #1 - Plan Patches and Spaces Faster

How many square meters are currently vacant, occupied, or being reconfigured? How quickly can I onboard a new customer and create network connections? Do I have to move wire mesh partitions if the customer only wants to rent part of the available space? The speed with which a customer can move into a colocation center – and start paying rent – is dictated by how long a provider takes to answer these questions and execute these tasks. By planning and creating network connections significantly faster, colocation operators can increase their revenues.

Using the FNT Command Platform allows one US colocation provider to manage thousands of patches a year efficiently and hook up rented cages faster. This is made possible by the platform's autorouting function, which covers the entire network across all distribution points on each floor, in every room, and in all meet-me areas. The autorouting tool creates plans showing the individual work steps, thereby shortening lead times significantly. Services can be provided faster and at higher quality because integrated planning removes the need for subsequent reworking.

OVERVIEW OF MORE THAN 250 COLOCATION CENTERS

Following the merger with another major market player, the FNT Command Platform remained in use as a strategic solution for the colocation business – a reflection of the high level of customer satisfaction and extensive functionality. The colocation operator now has a comprehensive global presence through its own data centers in the US and Europe and partnerships on other continents, operating more than 250 colocation centers in total.

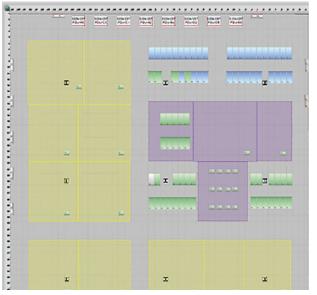
However, as the business grew, it became increasingly difficult to keep track of the available space and capacity. And without reliable information, it's difficult for sales staff to produce timely quotations for potential customers. Time is money here, even after the contract has been signed. The longer it takes to plan space and reconfigure cages, the later the customer can move in and start booking services. The timescale varies across the market even today, ranging from several weeks to just hours, depending on the level of automation in planning and the quality of capacity management.

With the FNT Command Platform, all space is classified and color-coded in the system according to specific attributes, e.g., occupied, being reconfigured, or vacant.

This information is also available to the sales teams in real time. If a customer orders new space, it's possible to establish almost instantly how long it will take to set it up. The data center company uses this feature across all its US facilities and is rolling it out internationally. Connection points and network distributors are documented alongside the space. Data centers can also use the FNT Command Platform functions to plan and document occupancy of their racks.

Benefits of an integrated platform

- Increased telecoms network transparency into intra- and interconnections, underlying assets, cross-connections in meet-me rooms, and IP addresses
- Integrated solution for planning and documentation
- Advance planning and a proactive rather than reactive approach
- Immediate answers to customer inquiries regarding quotes or from sales team members concerning the status of a contract and (available) capacity
- Impact assessment, i.e., identifying incidents and their causes, is now four times faster



Footprints of their data centers help the colocation provider to better understand the real situation. Cages are colored according to their specific status, e.g. available or leased.



Case Study #2 – Smart Follower Instead of First Mover

Sometimes it's more important to be the best than it is to be the first. Within just a few years, this UK-based colocation and cloud provider has gained a strong foothold in the market, expanded, and also managed to stand out from the local competition with a Tier III data center and 100 percent availability. Today, the company offers multicloud and data center solutions for public and private sector organizations. Its customers include national and local governments, public authorities, telecommunications companies, and several universities.

A CENTRAL PLATFORM FOR ALL ASSETS AND RESOURCES

Its greenfield beginnings gave the company the opportunity to choose the ideal management tool right from the start, without being held back by legacy applications. To support its infrastructure and to offer its customers reliable services, guaranteed uptime, and low latency network solutions, the colocation operator invested in a state-of-the-art DCIM tool – the FNT Command Platform. The company uses this to manage all its software assets, servers, racks, and other data center infrastructure components. In addition to its functionality, other benefits of deploying the FNT Command Platform are the flexible Software-as-a-Service (SaaS) model and multi-client capability.

The latter was important because it is essential for customer data protection and GDPR compliance. When colocation customers access their own assets, the FNT multi-client functionality ensures that they will never be able to inadvertently see the assets of other customers. While traditional DCIM concentrates on factors such as power, space, and cooling, here the focus is on the assets, their relationships and dependencies, and ownership relationships. It's important that they can be reliably assigned to the right entities, while the scope for human error is also reduced.

REAL-TIME DATA EXCHANGE WITH THIRD PARTY SYSTEMS

In addition to managing the DC infrastructure, FNT works with the colocation provider's other major SaaS providers to facilitate the sharing of business-critical data between systems. API integration keeps systems such as Service-Now updated with accurate, real-time information from the FNT Command Platform data repository. If assets are added to the repository, the software can update the other systems via automatic routines. This makes innovative and better services possible, which boosts customer satisfaction and loyalty.

SUCCESSFUL DIFFERENTIATION

Within just a few years, the operator has built a distinctive presence in the colocation and cloud services market. The intention is to continue with the same successful strategy. New value-add services such as hybrid colocation/cloud environments, better management information, and multi-tenant access for customers are in the pipeline. Comprehensive infrastructure planning and development functions ensure that services are always of high quality and highly available.

Benefits of the FNT Command Platform

- Automates and streamlines processes to provide better service at lower costs
- Validation rules based on medium, connector, and wire type prevent planning errors
- Assigns resources to customers for quick and easy provisioning of new services and automation of accurate and timely billing
- Auto-routes new connections and runs signal tracing throughout the entire network
- Minimizes issue resolution time with direct impact analysis
- Supports root cause analysis and optimizes maintenance window management



Case Study #3 - Information on Customers and Capacities

It's not just colocation customers who find it difficult to keep track of all the components in their rented rooms – colocation operators themselves need fast and reliable information. Real-time reports and dashboards help them to stay in control of their distributed data centers, rooms, and racks. What's needed most is for data from a variety of sources, locations, and technologies to be brought together at a single point.

INDIVIDUAL REPORTING AND REMOTE HANDS SERVICES

This user is a market-leading telecommunications company in the Arab world with an extensive colocation offering. The key assets are the company's own communications network and subsea cables for Internet connections. Having the best data rate and lowest latency are increasingly making this company a sought-after colocation provider for disaster recovery and as a secondary data center location. Its space is divided up accordingly into various size units, from whole floors through cages to partial racks.

This mixed use makes management of customer assets and reporting a complex task. The company also offers its customers remote hands services, enabling them to send devices by messenger, which are then installed and documented by the colocation operator. The operator has a strong interest in documenting the installed hardware, since this allows accurate planning of the power requirements of individual customers. Billing is based on capacity, not actual consumption. Customers often specify more performance than they actually end up using. This flexibility to expand leads to poor utilization, which has a significant impact on the facility's PUE value.

ONE PLATFORM FOR ALL REQUIREMENTS

The colocation operator now maps all the requirements in the FNT Command Platform. The implementation covers several data centers with a total of 2,500 cabinets and is being rolled out site by site during live operation. A complete turnkey DCIM solution was delivered with the assistance of FNT Implementation Services (based on the "Fast track to value" methodology). Allocation of data, metering, and inventory to individual customers, together with monitoring, provides up-to-date overviews of all devices as well as the ordered power and actual consumption. This allows reporting that is tailored to individual customer requirements. Timely information from consumption metering also enables optimum utilization of capacity. These reports are automatically sent to colocation customers once a month.

Furthermore, DCIM information and metrics are relayed to large screens in the hospitality area. Customers and visitors alike can see that the colocation operator not only has attractive buildings, but also deploys state-of-the-art management tools for planning and monitoring.

Benefits of a single source of truth

- Consolidates data from multiple sources, locations, and technologies into one central tool
- Supports the accurate planning of the power requirements of individual customers by documenting the capacity of the installed hardware
- Provides a real-time overview of all devices of a customer as well as the corresponding data, measured values, power demand and power consumption
- Enables customer-specific reports to be generated automatically



Case Study #4 - Billing Data and SLA Compliance

Power may be a commodity, but it remains a challenge for data centers. The more precise planning and monitoring need to be, the more effort it takes to automatically produce accurate data. That is particularly true if the calculation involves multiple measuring points across multiple locations. Manual steps and standalone solutions are anathema to efficiency; the aim must be to create an open platform that brings together all the information.

INDIVIDUAL CUSTOMER REPORTS ON POWER CONSUMPTION

The user is a major colocation operator from the APAC region, who is gradually expanding into other countries. Although a modern building management system (BMS) from our partner ABB provides the company with information on power consumption, no specific details were available. Assigning cabinets and space to a customer and linking them to a report is theoretically possible, but the BMS tool is not designed to do this and implementation would be too unwieldy.

Using the FNT Command Platform, the consumption data from the relevant metering devices is now collected, assigned to customer accounts, processed, and presented as an attachment to the electricity bill – cumulatively, based on the individual cabinets and locations. Customers are also automatically sent reports containing daily consumption breakdowns. In addition to power, data on air humidity and temperature is also aggregated. This is not

for billing purposes, but as evidence of compliance with the climate conditions in the cages set out in the service level agreement (SLA).

DIRECT ACCESS TO METERS

All reports are generated automatically; customers can download them via a portal or choose to receive them by email. This use case is not dependent on having a BMS system in place. The FNT Command Platform can also access electricity and humidity meters directly via gateways.

Benefits of automated reporting

- Provides detailed data to support usage-based billing
- Provides historical data for SLA reporting purposes
- Links customers, assets, and measured data
- Platform for report storage/retrieval for customers
- Data consolidation across multiple data center sites
- Publishing of information for customers and operational purposes



Case Study #5 - Self-Services for Colocation Customers

Colocation customers' demands for transparency into services and resources make a modern communication interface essential. Telephone and email no longer fit the bill. A portal containing all the relevant information helps tenants to actively manage their resources in the colocation environment, optimize the use of space and racks, and speed up tasks and processes. The benefits lie in customer satisfaction, efficiency, and data protection.

ONE-STOP SHOP FOR COLOCATION TENANTS

Accordingly, a leading European colocation provider with its own communications network and a worldwide market presence implemented a customer portal based on the FNT Command Platform. This accesses the central DCIM and serves as a one-stop shop for colocation tenants and self-service user access management. If a colocation customer sends their own staff or a hardware manufacturer's service technicians to a site to undertake work, they must notify the colocation operator. This often still happens by phone, which is laborious and error-prone. One risk factor for the operator is Europe's strict data protection legislation (GDPR) - but if the customer enters the data via a self-service portal, it becomes the customer's responsibility. This simultaneously reduces staff costs for the colocation operator. Many colocation customers now also prefer the option of being able to maintain access authorizations themselves, without needing to call.

ACCESS TO DATA ANYTIME, ANYWHERE

In addition, service desk integration is possible. In the event of a fault, the people who need to be notified are identified from the authorized contact list provided by the customer via the portal and then alerted by email through the service desk system. The same applies to planned

maintenance work. The data center operator can also use a portal to provide extra value-add services. Based on the comprehensive FNT Command Platform data model, customers can be given access to selected 2D views of the rented cabinets and 2D floor plans of available space, for example. They can view their own racks with photorealistic images to help them manage installed assets and unused space. The portal also allows access to reports and commercial contract data.

This comprehensive overview of customer-related data across multiple locations opens up new possibilities for cooperation between business customers and colocation providers. The next addition to the portal will be API access to functions, enabling customers to integrate their information into existing DCIM, monitoring, and asset management tools. The aim of this active monitoring is a "room health card" for all of the operator's own DC locations and rented facilities, thereby enabling a swift response to any problems.

Benefits of a customer self-service portal

- Provides 24/7 access for customers and authorized staff/contractors as a single point of contact for all service requests
- Facilitates management of customer contact details and access permissions
- Delivers information on SLA relevant site conditions, e.g., temperature/humidity
- Enables provision of optional assets management features to customers as chargeable items
- Provides other value-add services as chargeable items



Case Study #6 - Meet-Me Rooms & Cross-Connects

Flexibility is a key strength of this colocation provider, who operates more than two dozen data centers in the US. The company generally provides cabinets, power, and air conditioning, but customers may also bring in their own hardware. The network focus is on cross-connects, i.e., creating links between the company's customers. These include the major Silicon Valley web and IT players.

The company used a tool for connections that documents devices and port data. However, there was no plausibility check to identify occupied ports and the network medium. Technicians resorted to touring the data centers, using photos and notes to document which ports in which cabinets are already in use. Based on this information, the system was then updated and the new connections planned.

BETTER DATA QUALITY, BETTER INTEGRATION

Clearly, this method was less than ideal in terms of responsiveness. The colocation provider recognized that data quality was not good enough and connections were taking far too long to meet the high expectations of web giants. A new management product was needed to deliver improved data quality and support better integration into the company's proprietary tools. The FNT Command Platform is designed to fulfill precisely these needs and was duly chosen. Alongside its main use as a central tool for capacity management and for the planning and administration of power supplies and signal paths (data

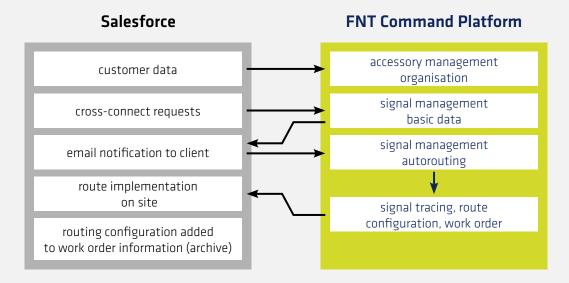
center, power, and signal management), integration with Salesforce as the master CRM system is a huge benefit.

AUTOROUTING FINDS THE BEST WAY

When the customer orders a connection, a new signal path is created in the FNT Command Platform with the status "planned" and added to the customer data. A colocation operator technician assigned to implement the new signal path receives a list of tasks directly from the tool. The software uses autorouting to find the shortest path between the customer's start and end points and suggests a signal path. The technician can also choose to input additional search criteria and preferences, for instance to exclude certain floors.

FROM PLANNING TO DOCUMENTATION – AUTOMATICALLY

Once autorouting finds the ideal path, the user can start planning the patch cables in the meet-me room with just one click. The system checks that only free ports are used, that the media are compatible, and that the overall length of copper cables is not exceeded. The latter is among the tasks the old tool was unable to handle. A work order is generated for the chosen signal path, which the installer takes to the site to connect the patch cables. The protocol is then switched from PLANNED to CURRENT (with the status becoming "provisioned").



Interaction between the FNT Command Platform and Salesforce as the master CRM system.

ONE TOOL FOR INSTALLATION, CONVERSION, AND REMOVAL

This information is fed back into the Salesforce CRM tool. As a result, all the colocation operator's customers have access to their data and can clearly identify the equipment – whether their own or belonging to the colocation operator – that the routes use. Although the data is held in the FNT infrastructure repository, it is displayed in Salesforce and updated on an hourly basis. The tool can also be used to remove connections or change cables if required. The data clearly shows whether the selected pathway is suitable, or whether it needs to be rerouted.

EFFICIENT STAFFING WITH APIS AND AUTOROUTING

Today, only a very few colocation operator employees need to make changes directly in the FNT Command Platform, using it to manage around a dozen technicians per site. The tool supports employee efficiency because they can approve considerably more planned changes than before within a very short timeframe. This is possible thanks to the heavy use of APIs and autorouting. Salesforce users don't notice the database at all. Every location has one key user for autorouting. The colocation provider's technician receives the work order and then the status of the connection changes in the background. Autorouting also covers media connectors used to link fiber optic and copper cables. This flexibility is a powerful argument for customers.

Benefits of improved data center connectivity services

- Optimized circuit creation based on consistent data using the FNT Command Platform's autorouting functionality
- Validation rules based on medium, connector, and wire type to avoid manual rework
- Automatic work order creation
- Capacity overview and port usage reporting
- Impact analysis on affected services in case of failure



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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