FNT

// simplify complexity

Future-Proof Your Data Center Through Integration

HOW TO LEVERAGE THE FULL POTENTIAL OF MANAGEMENT TOOLS AND PROCESSES WITH SMART INTEGRATION

WHITE PAPER // DCIM

IN THIS WHITEPAPER:

Data center infrastructure is changing. New technologies are in play, clouds are in the mix, and the lines between data center, IT, and telecom are blurred by virtualization. To remain relevant, it's necessary to upgrade infrastructure to enable a broader portfolio of service offerings, specifically connectivity and customer-centric services. Additionally, management systems must be adjusted to support new tools and processes. What worked in the past with traditional infrastructure may not work in today's digital environment.

In this white paper, we'll discuss how to drive growth and automate processes through smart integration. Combining a data center infrastructure management (DCIM) solution with other business-critical systems will simplify and unify operational processes and allow you to achieve high-caliber data center management.

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Keeping Pace with Evolving Data Center Infrastructure

Most data centers today are hybrid. They are comprised of both physical and virtual assets and resources that are both on premise and in a public and/or private cloud. Hybrid infrastructures offer companies more possibilities than traditional infrastructures, but they also increase complexity since there are different technologies, storage locations, service providers, billing models, and dependencies between the individual infrastructure elements. This often makes it difficult to identify which processes are being executed and which IT or business services are supported by them.

While cloud providers offer tools, management consoles, and portals, these are not capable of accurately managing the thousands of virtual machines in use. Ideally, a data center should be managed with one set of processes and tools. A DCIM solution can provide a transparent view of the entire infrastructure and maintain data in one place, therefore eliminating silos and improving data quality.

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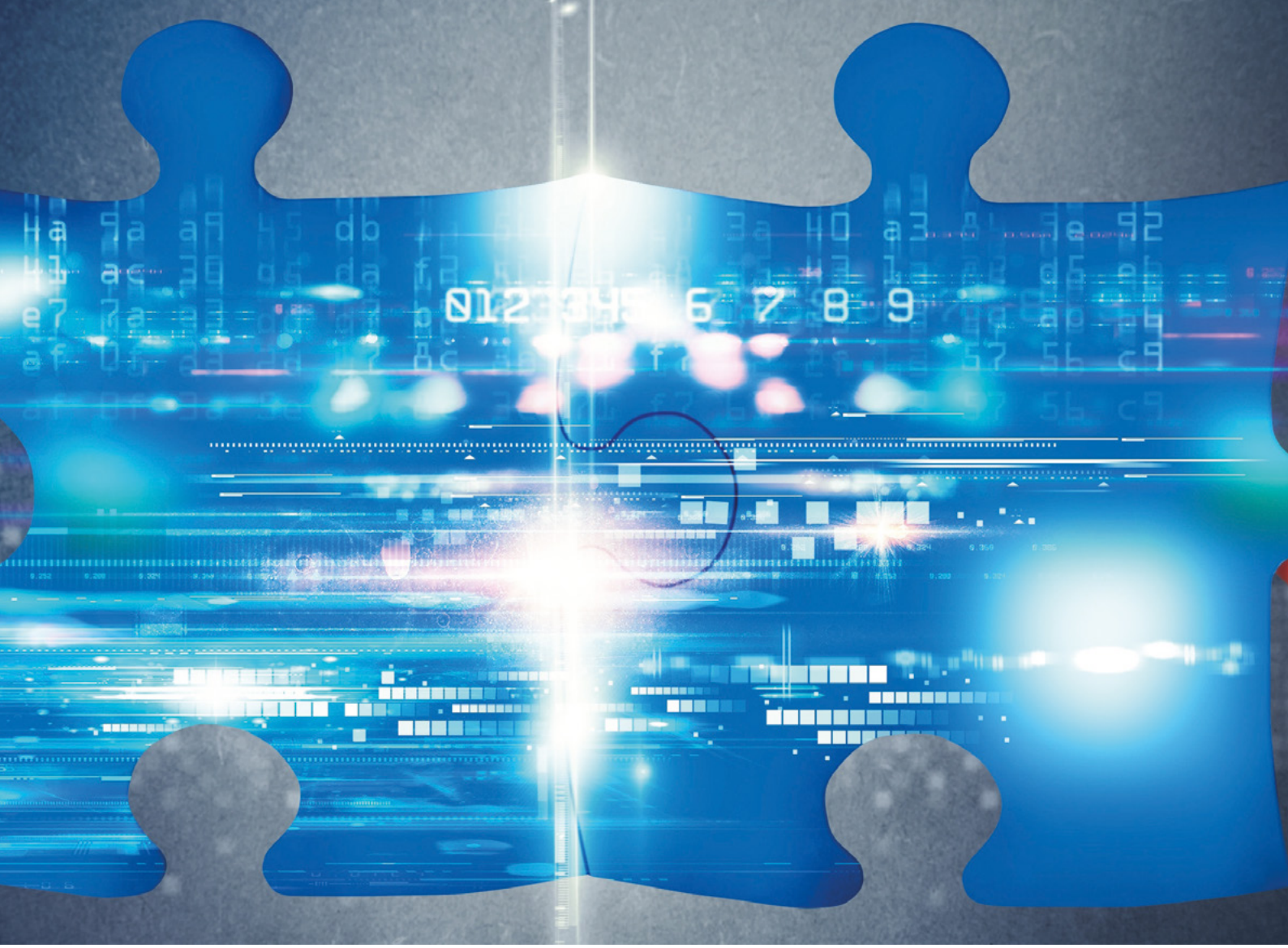
As change is constant, it's crucial to implement management tools that are adaptable. Having the ability to integrate is the key to future-proofing data center infrastructure management. Unlike specialized solutions that are static and can't communicate with each other, integration provides the required flexibility to capitalize on new opportunities and stay ahead of the competition.

Integration is especially important in the area of data center management. After all, a DCIM tool should not be a stand-alone solution – not if you want to fully benefit from all of its capabilities. So, what does integration bring to the table? First, it enables you to create a best of breed solution specific to your data center. Different tools can be used for different purposes, giving data center managers the freedom to assemble the right tool set for their data center. The caveat is the tools must be able to be integrated with other software systems needed for business-critical operations.

Secondly, integration lets data center managers move at their own pace. The traditional "rip and replace" approach for existing tools is neither practical nor economical. It's also bad for business if there are complications with the "replace" process and customers experience downtime. With an integration strategy, different pieces of the tool set can be phased in at different times.

Finally, integration makes it possible to easily address gaps and shortcomings. If there is a deficiency, managers can find a tool that addresses that specific need and, through integration, seamlessly implement into the data center.

If we think of data center infrastructure management as a puzzle, managers must make all the pieces fit together. Integration keeps these pieces connected and enables them to work. It's the glue that holds the data center together.



Best Practices for a Successful Integration Strategy

Once you've decided to move forward with an integration strategy for data center infrastructure management, a plan should be established beforehand to ensure a successful implementation and to avoid unnecessary costs and complexity. The first step is to find the right integration tool for your specific needs.

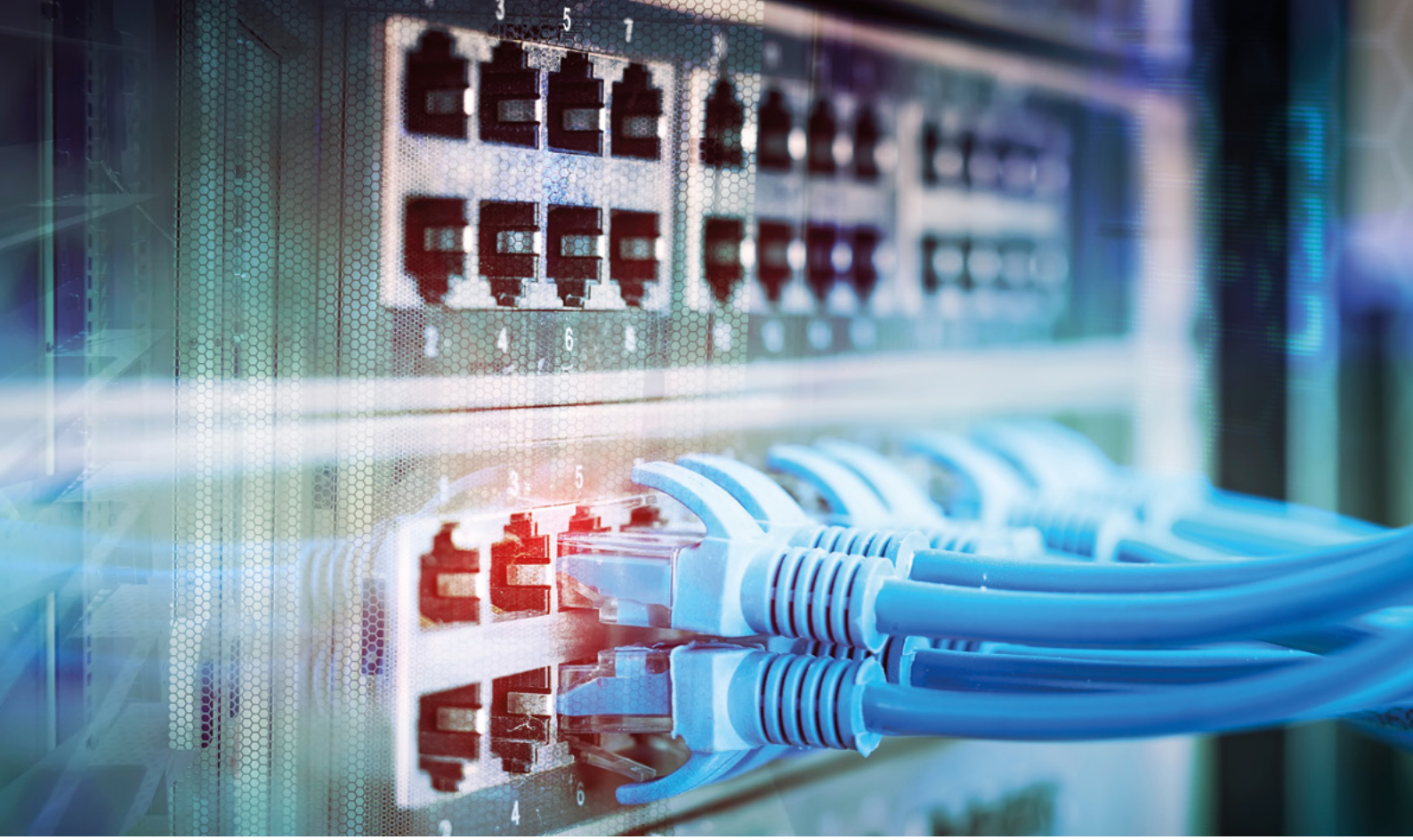
In order for these integrations to work, an open design is necessary. All new data and functions must be available to exchange data with existing tools. Keep this in mind when searching for an integration tool, as most require programming. This should be avoided at all costs, as it will lock you into a solution that can't be easily changed - defeating the purpose of your integration strategy.

The next step is to assess the current situation and identify any gaps or deficiencies in your architecture portfolio. With a complete inventory of the physical and virtual assets and resources, it will be easier to define the sequence for your changeover. It's best to start the integration with the systems that will bring the highest value in the shortest amount of time. Then, move on to the more complicated systems.

The point of integration is to enable the different tools needed to manage your data center to communicate and share data. It goes without saying, then, that the quality of this data is a critical success factor. Data needs to be validated and it needs to be reliable.

KEY STEPS

- ✓ Find the right integration tools for your specific needs
- ✓ Start the implementation with simpler systems; gradually progress to more complex system
- ✓ Validate data to ensure integrity



Integrated Patch Management Enables Efficient Planning and Execution Workflows

A “patch” is not a stand-alone thing, it’s part of a larger process of connecting IT equipment to the network. That being said, it doesn’t make sense to keep patch management solutions separate and isolated from other solutions within the data center. Especially if you want to truly leverage their potential, which is so much more than just tracking unplanned patches.

Integration elevates patching to be “intelligent”. The typical integration for an intelligent patch management system electronically links elements of the network's physical layer and the cabling documentation.

Integrating intelligent patching includes several features:

- Patching in the overall planning of the equipment commissioning process
- Leveraging opportunities to distribute the task via the IPS controllers
- Monitoring for the completion of this subtask
- Automatic documentation updates of the actual patch, which includes automatic adjustments to the plan if changes had to be made

The integration occurs when different tools exchange information. To carry out processes, information and functionality from multiple platforms and tools is required. The most frequent integration leverages API calls for real-time, on demand data exchange between these different platforms. This is significant, as it puts an end to separating the planning of patches from the planning of the overall work order, and all the related processes. As a result of an integrated patching process, overall infrastructure documentation is always up to date, accurate, and a reliable source for further planning steps and capacity evaluations.

BENEFITS OF INTEGRATING AIM/IPS SYSTEMS

Several DCIM tools offer out-of-the-box integration adaptors for various AIM/IPS solutions that support planning steps and procedures to roll out work orders to field engineers. These solutions typically offer options to check work order backlogs and perform on-the-fly re-planning if needed, via consoles, or even mobile apps. They are often implemented as stand-alone solutions where dedicated smart hardware works together with special controllers, a central control station, or software.

AIM/IPS solutions significantly improve the quality of patching activities and provide reliable monitoring for unplanned events. Integrating AIM/IPS system features into the process of commissioning or decommissioning equipment, such as a server, can remove duplicate planning tasks that would otherwise be required. It also speeds up the overall process by streamlining communication throughout the organization.

It's important to note that even with intelligent patching, IPS systems still require manual activities. However, patching can be enhanced by incorporating robotics. Many vendors and system integrators are already experimenting with robots that can execute a patch in a lab environment. The use of robotics can be particularly useful for lights out sites, high-volume change situations like meet-me-rooms, and locations that do not have trained staff on-site 24/7.

Integration makes robotics possible. Just as information must be exchanged with intelligent patching, a master system is needed to trigger the robot arm to perform the desired patch action. This cannot be done without integration.

SOFTWARE DEFINED CONNECTIONS

A third integrated patch management scenario involves software defined connections and leverages software from two different vendors. When used together, integrated patch management with software defined connections can completely automate the floor with respect to network connectivity. A fully automatic cross connect system can utilize robotics technology to patch fibers for over 1,000 duplex ports in a single cabinet. Now, creating a physical fiber patch is as fast and easy as creating a network route using SDN methods.

This robotics system promises to be faster, more efficient, and more reliable than manual processes. It is also more cost-effective than implementing fully "programmable" patching via fabric switches (which would be the next level of "virtualizing" the network). After approval of the initial work order containing the network patch plan, the system will immediately implement the requested physical fiber patch. Basically, the overall process can be governed, so that the patches required for a server are implemented while the corresponding IT equipment is taken from the staging area to the rack where it is about to be installed.

Integrating your infrastructure tool is a must for efficient planning and execution of workflows.

Regardless of your choice of technology, whether you use manual patching, intelligent panels, or fully robotized systems, integrating your infrastructure tool is a must for efficient planning and execution of workflows.

Since each of the systems mentioned above provide powerful API functions, integrating them into a governance workflow and plugging them into a DCIM solution is simple. Keep in mind, a patch is a subtask in a larger process of commissioning equipment such as a new server. The main takeaway here is, don't lose track of the bigger picture by keeping the systems isolated.

Smart Integration Optimizes the Sales Cycle

Customer portals are another example of how integration can improve data center management and empower sales teams to close deals faster.

In most organizations, there is a disconnect between customer or end-user and planning tools. As data must be transferred from one system to the other, usually manually via email requests or a ticketing system, processes are significantly delayed. Manual transfers are not only slow, they're also error prone.

Integration can speed up this process. As a starting point, your sales portal and planning tools can be linked to process orders more efficiently and to implement orders faster, thereby reducing costs and increasing customer satisfaction.

When it comes to optimizing the sales cycle, a Customer Relationship Management (CRM) tool is a common touch point nowadays. Sales teams need access to capacity information for their daily activities and need access to processes to implement infrastructure component requests. Integrating a DCIM solution with a CRM tool can streamline customer orders for network services to enhance workflow and business processes.

Colocation customers, for example, select and order various network connections between cages to Internet service providers and cloud services from a dedicated customer portal implemented on the Salesforce platform. As these types of connects often require physical patching, rather than just increasing capacity of an existing connect, execution on the floor can be a tedious task. Planning for routing across a large data center only increases complexity.

A DCIM solution can provide network auto-routing functions to enable planning to be completely outsourced to IT logic including all validation, capacity threshold monitoring, and plausibility checks. As this eliminates the typical process of completing multiple onsite checks, the planning phase will be much faster. Ticketing and workflow functions implemented within the Salesforce platform can therefore streamline the rollout of workorders to engineers on site and provide greater insight into technical details of the connects to all clients via the portal. While the sales automation tool maintains a master data list for all customer and contract information, technical details are managed by the DCIM solution. Background data synchronization will ensure that all relevant information is available and consistent within each system.

As a result of this integration, colocation providers can deliver network connectivity to customers faster and more efficiently. They will also benefit from considerable internal savings due to less manual intervention, which can decrease from hours to minutes for every single patch. The shorter execution time, combined with higher quality planning and implementation processes, results in greater customer satisfaction.

Automated Asset Tracking and Commissioning Workflows Improve Accuracy

Today, nearly every industry utilizes asset tracking technology. Airports use RF tags to track luggage containers while hospitals use the devices to track the location of medical equipment in their building, which partially includes processes for automatic billing derived from the location. Enterprises use RF devices for asset tagging purposes as part of inventory management or theft prevention.

Asset tracking technology can also be leveraged to optimize data center processes and facilitate daily tasks for teams. By integrating the RF tracking system, detection events can be forwarded to the DCIM solution, enabling location change information to trigger events within your workflow. Most DCIM tools offer out-of-the-box adapters for the market leading RF solutions or allow you to create custom integrations.

Including tracking events into DCIM workflows reduces the time spent on manually updating location changes and improves accuracy. Teams can be automatically notified when a work step has been completed, therefore eliminating any delays in communication between different teams performing subtasks of the overall work order.

This is particularly beneficial when planning the commissioning of a new server, as it's important to know exactly when equipment reaches your holding storage or staging area. Integration makes it possible to automate the installation procedures and send out notifications to relevant teams. The same applies when the tracking system identifies the equipment entering the white space; documentation is automatically updated to reflect the pending install. Similarly, decommission workflows can be automatically initiated, such as corresponding lifecycle log entries created from location change events when assets leave a rack or white space area.

This type of integration has many benefits. Implementing even the smallest shortcuts for processes results in significant cost savings over the span of a year. Adding automation into the processing of commission and decommission work steps reduces the time it takes for planning and operations staff to complete manual, tedious tasks - allowing them to focus on other value-added projects. It also greatly improves site documentation and data quality, which is crucial for success.

Integrating DCIM Tools with Building Management Systems

Many DCIM tools provide out-of-the-box integration options for building management systems (BMS), whether they are based on modern protocols such as https, typical facility communication methods such as OPC, or field buses. In most cases, these integrations are used solely to obtain monitoring data and retrieve alarm status from the BMS, then make it available to DCIM tool users. However, there are several other high value use cases for DCIM and BMS integrations.

One example is to use data from reactive management for proactive planning. Normal operations of a BMS involve three simple steps: monitoring, threshold violation checks, and alarm event display. Thresholds used in this procedure are designed for operation purposes and simply assure that all systems operate within their safe boundaries and total capacity.

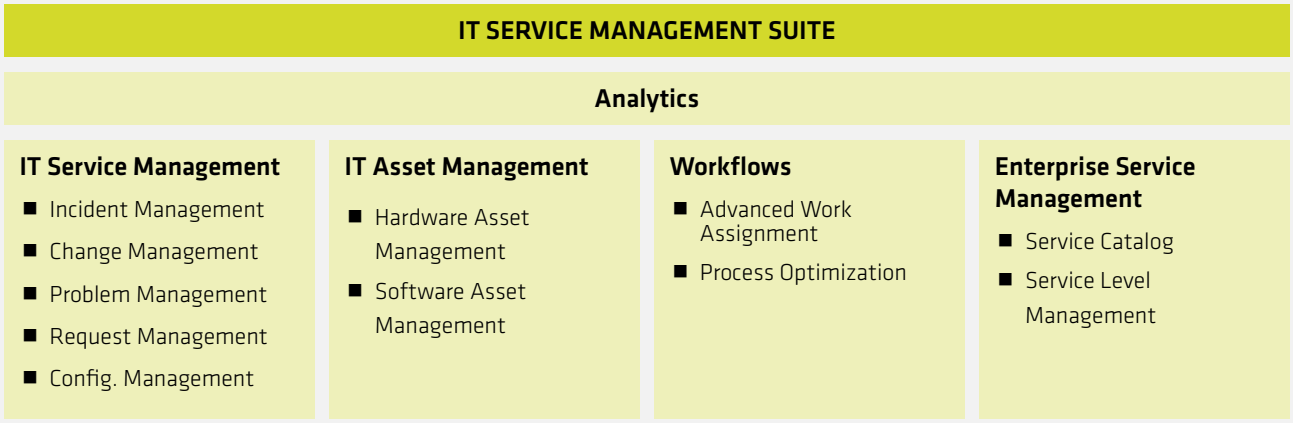
Historical data might give indications about changes over time and increases in overall use, but it does not provide any warnings when data center capacity is growing faster than planned and other actions need to be taken, such as planning for a greenfield additional site. The integration of BMS and capacity planning with a DCIM tool can provide greater intelligence for long term planning and enable provisioning methods including "safe" overprovisioning.

Another example involves usage and user-based reporting. Advanced infrastructure management tools are not only aware of every asset, but also all users and usages. These tools provide very granular reporting and assigning of monitoring data to users and clients.

In regard to monitoring data, presenting raw monitoring data to users outside of the specific facility team is ineffective. This data needs to be evaluated to be of value to users. For instance, business teams need a relation to SLA compliance, not just the mere count of threshold violations. Monitoring data needs to be set into relation to other factors. In this scenario, KPIs are more valuable than technical metrics. All leading DCIM solutions have methods to create such reports.

The last example involves making data available directly to end-users (or clients). Depending on their viewing privileges, either through self-service portals or the analytics engine, users should be able to have access to prepared dashboards or even build their own reports and dashboards based on the data sets that relate to their account.

In this scenario, a DCIM solution can create an abstraction layer to validate and consolidate the collected data that is coming in from various data sources and locations. Data can be stored centrally in a suitable repository and mapped to users or clients so that underlying monitoring values can be properly assigned by reporting tools or analytics engines. In contrast to regular reporting methods, this allows users to analyze the data in greater detail and also to reuse it for their own custom dashboards and reports.



Integration Domains for ITSM Platforms

Smart Integration Enhances Service Management

Modern, powerful ITSM platforms offer a wide range of function sets which extend far beyond the initially defined requirements that we typically think of when we hear the term "service management". In addition to traditional change and configuration management, these solutions now feature powerful workflow engines to drive processes, asset and software management, enterprise service management for service catalog and service levels, and of course, analytics to evaluate performance of configured workflows.

Service management requires a massive amount of information to function properly. Often, data is copied into a service management tool and the data model is extended to have the system function as a stand-alone solution. While that may seem like the path of least resistance, it's much less efficient to put all of your infrastructure information into a service management tool than it is to integrate it with an infrastructure management tool such as a DCIM solution. Integration allows you to maintain the necessary information in both systems.

Combining these systems ensures that there are no data model deviations from the standard set. This type of integration is, for the most part, on-demand and real-time with some supporting data synchronization in the background to make sure that foreign keys are known or identical objects in both platforms use the name identifier/name. For a smooth integration, both systems must have open APIs.

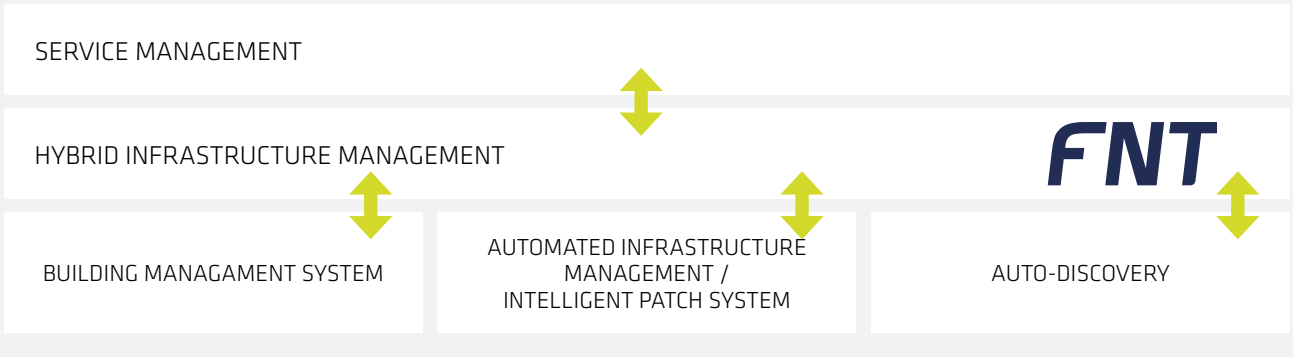
Integration can be used to support the following processes:

- ✓ Enrich tickets in ITSM with relevant infrastructure details to speed up operations.
- ✓ Enhance asset management with up-to-date information to help managers decide whether to replace or purchase new equipment.
- ✓ Set up bidirectional interaction for provisioning processes for infrastructure equipment.
- ✓ Deliver outside-in service design to optimize service catalogue management and service level management.
- ✓ Expand analytics evaluations and reports with infrastructure related information for dashboards geared to specific target groups.

Ticket enrichment is one of the most widely implemented use cases, which usually involves a unidirectional data feed from infrastructure tools. Information from one system is prepared for consumption in another system. This could be the location of an asset or its relationships and dependencies with other equipment or services, which is not obvious within the ITSM tool. The drawback to this method is that it does not provide any insight into the system sending the data, and it doesn't provide status feedback.

Adding a bidirectional sync mechanism allows operators on "both sides" to see the status and progress of a ticket without the need to log into the other product. This also informs infrastructure planners about tickets relating to specific equipment, pending changes, and process progress.

The next level of the implementation pyramid includes the concept of Change Advisory Board (CAB) to plan and evaluate requested changes. Finally, creating product and service catalogs for end-users is necessary for advanced request automation. This eliminates common transmission issues such having typos in asset names and reduces the need to request information from one platform to another through unreliable methods such as email. Product and service catalogs ensure that requests always relate to a clearly identified asset, and only the services and activities that can be executed in a timely manner with be offered.



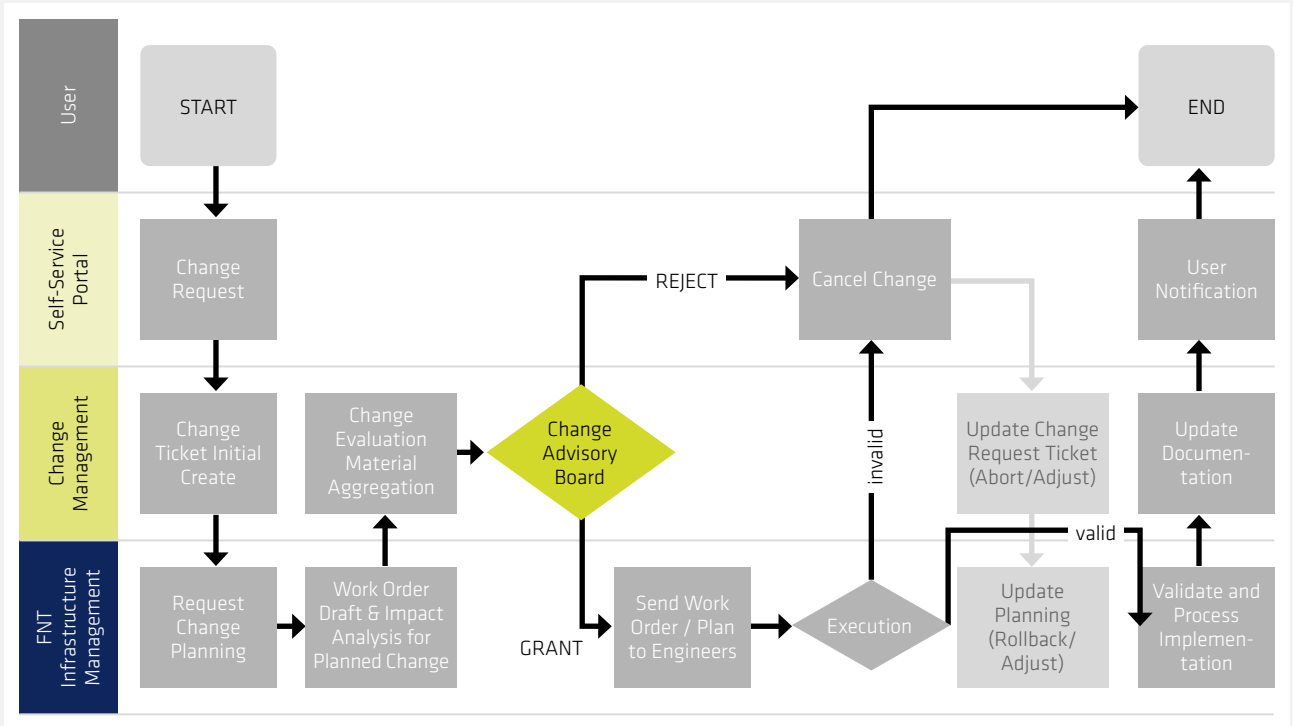
Typical Architecture

The highest level of integration allows end-users to plan, document, and manage all tasks through a single portal. The full-fledge integration underneath optimizes communication routes and event triggers to avoid any unforeseen delays. This is beneficial to end-users as all information is transparent within one central system, either from synced data or on-demand at run-time. All tools needed to process client requests are also readily available.

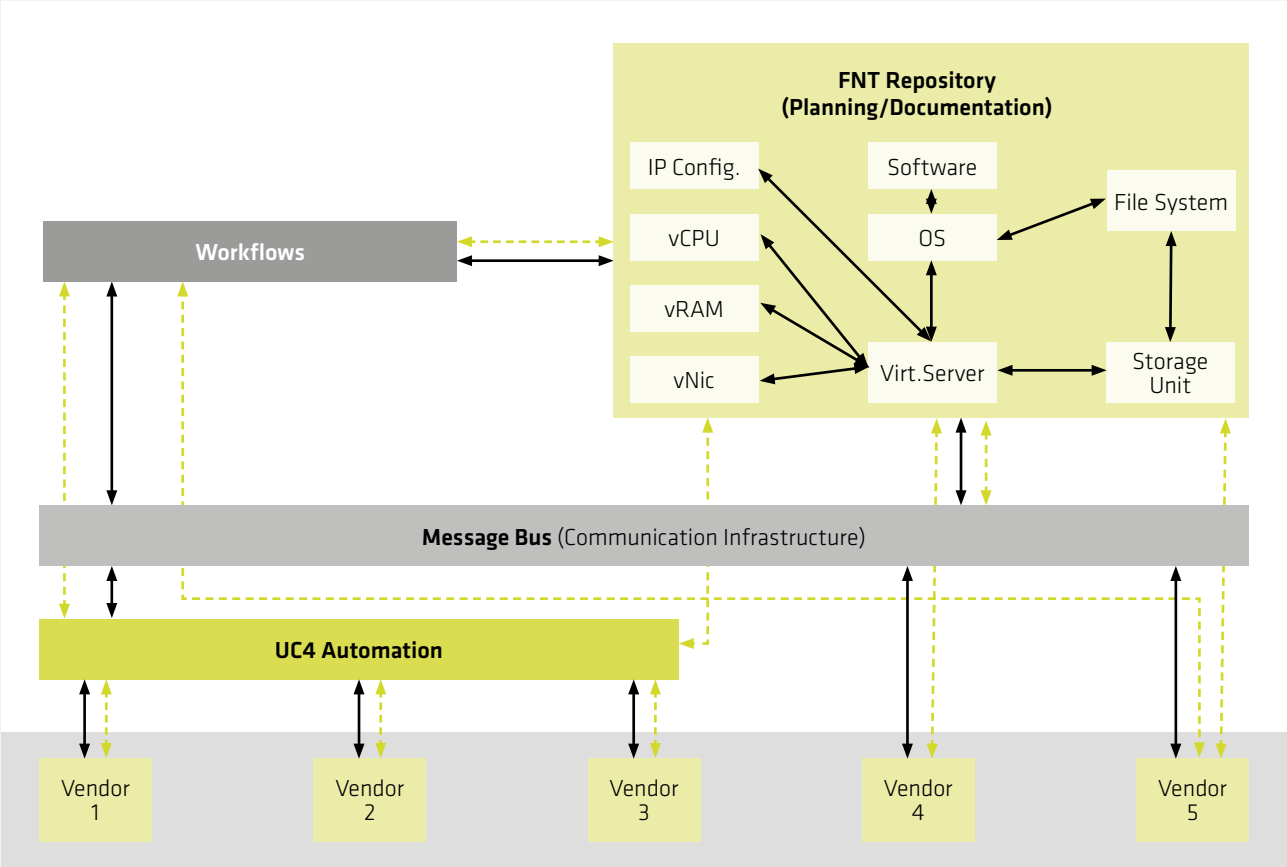
For these higher levels of integration to be of value, additional systems need to be considered in the overall picture. The "Typical Architecture" graphic extends southbound to systems needed to optimize planning and change execution in the field. The customer or end-user facing frontend product, the central infrastructure repository backend, and a variety of supporting operations and special tools are pieces of a puzzle that need proper integrations to deliver best value.

In a data center environment, these systems will typically include building management systems to keep an eye on capacities and room health, intelligent patching solutions to optimize the roll-out of patch cables and to maintain cable documentation quality, and auto-discovery solutions to monitor planned and unplanned changes in the network. The driving factor for this, however, will be the integration between service management and infrastructure management.

A typical application of service management tools governs change advisory boards, or CABs. Before rolling out a change requested by a client or end-user in your organization, this board makes sure that there will be no unexpected negative impact on any other service or the overall operation of the data center. Although ITSM products are perfect at managing the CAB process, they do lack information for the board to make good decisions. This is where the integration with infrastructure tools comes into play. This basic process illustration depicts the so-called happy path and a stub of the cancel rollback procedure for change requests that were rejected by the board or could not successfully be implemented. You can see from the swim lanes how data is travelling back and forth between the tools.



Implementation Example "CAB"



Implementation Example "VM"

Let's also look at how systems interact to provision virtual machines from a customer order. The graphic above displays how FNT's DCIM integration enabled an organization's digital transformation.

This example extends the integration to southbound systems that will perform the individual actions required to roll out a virtual machine from a template, optionally install additional operating system and application software install, install monitoring tools and security applications, and perform basic system configuration tasks. These subtasks are done by special services and tools which are governed by a governance workflow definition.

The change request, after approval, is submitted by ITSM to the DCIM system for planning. The planned work order is sent to the workflow system for distribution and trigger of an automation tool that sends control commands to various vendor specific operation tools such as vCenter or puppet. Success or failure are logged and are used to update the plan and the lifecycle documentation for the asset.

After completion, a notification is sent to the ITSM platform. Then, a service bus or enterprise message bus is used to share data with additional systems such as billing software. Additionally, extending to other ITSM domains and applying the analytics component enables teams to design and deliver high-value KPIs to customers.

Overall, connecting DCIM and ITSM is the best investment you can make to optimize operations. Processes will run more efficiently, allowing staff to be more productive and spend less time on tedious tasks such as copying data from one tool to another. Synchronizing tools and using event notifications and system support in planning and validation eliminates human errors and, ultimately, results in higher quality services. As a result of process integration and data sharing, documentation and data quality significantly improve, enabling planning to be based on reliable information. Faster and higher quality service procurement is bound to improve customer and end-user satisfaction.

BMW, Coresite, DigitalRealty, and Frankfurt Airport are FNT's customers that have benefited from significant cost savings due to smart integration. As accurate information is readily available throughout the organization, help desks can resolve tickets faster and provide a better customer 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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