Success Story - Biotechnology

Data Center Security, Regulatory Compliance and Structural Standards

The Challenge
In just under a year, a young molecular diagnostics startup has grown into a headstrong participant in the competitive Massachusetts biotech market. Founded on the genuine premise of providing affordable, accurate testing using the most superior and cutting-edge technology, the company has grown exponentially in size since the initial occupancy of their headquarters in Boston. Day-to-day procedures demand the flawless operation of their data center; technical infrastructure is largely provisioned for aspects of clinical operations, R&D, informatics, genomics, and communication services. From a business perspective, delivering accurate results to clients in a timely fashion is a top priority. From a logistics perspective, achieving this target on a daily basis relies on the efficiency, stability, and integrity of the data center.

Since the formative stages of the business, this biotech organization dealt with a local, third party solutions provider for all of their equipment procurement and desktop support. Employees from this solutions provider were also hired to be on call in case of unscheduled server downtime or emergency maintenance. Most significantly, the solutions provider was responsible for erecting the business’ data center, ensuring that all specifications and compliancy guidelines for its installation were followed to the letter. The bespoke data center design - a combined effort of the biotech company’s most senior technical staff - was entrusted to to the solutions provider in confidence that it would be implemented categorically, and that requirements would be met without fail. However, it was not long before flaws and omissions in the original specification became apparent. The frequency of these discoveries happened to increase following a crippling blizzard that swept through parts of the East Coast. Alerted by the potential for such a threat to disrupt normal business and server operations, the biotech organization approached KPM Consulting with a request.

It was not only of concern that the original specifications for the data center had not been followed. The growing communication gaps, noted lack of documentation, as well as questionable adherence to standards did not align with the business’ IT strategy. Seeking a professional and unbiased view, the informatics director of the biotech organization requested a formal GAP analysis on the state of their data center.

KPM Consulting met this request with the understanding that above all, business continuity was of the greatest importance. The organization was heavily dependent on their data center for a number of critical business functions and it was with this caveat in mind that KPM Consulting undertook a thorough analysis to provide recommendations for improvement to their data center.
Approach
KPM Consulting first spoke at length with the biotech company to gather a full understanding of the concerns and expectations for this analysis. Apart from the original data center specifications, there was little to no documentation on the actual, current state of the data center and how it measured up to expectation and IT standards. KPM Consulting offered a thorough analysis of the data center’s architecture, structural integrity, wiring, and adherence to specifications and compliance. This would not only provide valuable documentation but also the means by which KPM Consulting could provide recommendations for further improvements.

The assessment was compiled during several tours of the data center and follow-up meetings with members of the biotech organization’s risk assessment team. The formal deliverable was written in the form of a walkthrough and covered the following key elements.

Layout
The analysis was based primarily on the general layout of the data center and its impact on the equipment within. Placement of server cages, air conditioning, and their relation to other elements in the room were significant as were the presence of storage units, switches, alarms, and phones or other communication devices. KPM Consulting thoroughly documented and described the layout of the room, providing accurate measurements of the floor area and ceiling height, and a detailed data center map was drafted.

Structural Assessment
Structural integrity is of the utmost importance when designing a data center and this can be compromised if provisions are not made to account for the sensitivity of the equipment. KPM Consulting researched the age and history of the building as well as the nature of the surrounding businesses occupying the offices above and below the biotech company, in order to assess potential risk to the data center in the event of a structural collapse of the ceiling or floor. The entire data center was scanned to note any features such as cracks, hinges, vents, stress fractures, wall creases, or anything else that might be a sign of wear and tear or a breach of the room in any way. It was also noted whether there were any pipes or conduits running through the room as this could be a part of a fire extinguishing system and if damaged, had the potential to harm equipment. Further, the presence of any custom structural elements such as raised flooring or anti-vibrating walls were tested to determine whether they had been installed correctly and were functioning as per design.

Security
It is important in terms of risk assessment to gain an understanding of who has access to the data center and with what frequency. KPM Consulting investigated the security measures and procedures put in place to restrict access to the room. Is there keycard access? How many employees would have access? Would visitors be allowed to enter and would they always be escorted by an employee? KPM Consulting also noted the ease of access to the facility to determine whether it would be common for visitors, maintenance staff, or couriers to move about freely in the main offices. Security within the data center was further documented to account for locking mechanisms on any circuit breakers, kill switches, and server cages.
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Safety
KPM Consulting observed current company safety guidelines and procedures extending to the data center. These included: restrictions on food or drink near equipment, the placement of maintenance equipment in relation to the servers, the presence of any hazardous or volatile materials, the use of any parts of the room for storage and what specifically was stored, and details of the accessible pathways and traffic areas.

Equipment
A detailed inventory was taken of equipment and other items present in the data center, denoting physical placement in the room and purpose. Peripherals such as cables and their relation to the equipment were also documented. The level of organization for each piece of equipment was categorized (for example, whether peripherals appeared to be tidy or if cable management met expectations). Measurements were taken for maintenance equipment such as air conditioning and fire detectors in order to ensure that the units were properly installed.

Results
KPM Consulting’s GAP analysis uncovered significant concerns with regard to the safety of the biotech company’s servers and other sensitive equipment. Discrepancies in the outfitting of the data center demonstrated that many of the original specifications had not been addressed or communicated prior to its construction. The company, with this information in hand, began to address KPM Consulting’s recommendations for action steps starting with the highest risk factors.

The biotech organization agreed on the importance of revisiting original specifications to ensure that any structural requirements first omitted were taken into consideration for the future. KPM Consulting proposed to bring in experts such as structural engineers to work with the organization and conduct a more thorough assessment of the data center’s stability. Guidelines were also recommended for better management and safeguarding of equipment and as a result, the company has revised many of their IT policies and procedures to be more in line with industry and compliance standards.

As a result of these efforts, the biotech company has plans to continue work with KPM Consulting in the future for additional improvements to the quality and integrity of their data center.