

WHAT IS IT VIRTUALIZATION, AND WHAT IS ITS ROLE IN MANUFACTURING'S FUTURE?

As someone who has worked in the IT field for many years, one of the challenges I face is trying to understand and explain new technologies as they emerge. One example is IT virtualization. This is not a new technology – it has been embraced as an IT standard in data centers for some time now. My purpose of writing this blog post is to offer some insights as to whether or not IT virtualization makes sense for manufacturers to use on their shop floor.

To start, I thought it might be helpful to explain what I mean by “IT Virtualization.” Something that is “virtual” doesn’t physically exist. A hologram is a good example, which offers a three-dimensional image of an object, but isn’t actually a picture of the object – it is a representation that was created to replicate the object. An IT system can be created in the same way whereby hardware is formatted to appear as if it is “dedicated” entirely for one application. In reality, however, the hardware can be shared by many different programs as a way to save costs.

As a manufacturer, the first question to ask is why should I even consider virtualization? Unless there is a compelling benefit, then the decision to implement becomes an easy one! My experience has taught me that there are three ways that IT virtualization might benefit manufacturers, as explained below.

Server Consolidation

From a hardware perspective, virtualization makes it possible to run more IT applications on the same hardware, which translates into cost savings. If you buy less servers, then you will incur less capital expenditures and maintenance costs. But, in the “big picture,” how significant are these costs? To answer this question, I find it is best to compare the hardware costs to the total opportunity cost of a production line stopping due to a hardware issue or a software performance issue. If the cost of your finished goods is high, or if you have a high volume of production at a specific site, then you are probably at a greater risk of experiencing a high cost with a production delay. This high potential cost might then outweigh the potential cost savings of installing one fewer server at that particular plant. In other words, from a hardware cost savings perspective, your evaluation must really consider what each specific plant is producing as well as what other IT applications are being run locally to support that production. Smaller, remote sites with less IT resources to support local servers might begin to make more sense to embrace IT virtualization.

Process Standardization

Another possible benefit from IT virtualization is from a process management perspective. Virtual machines can be centrally managed and monitored, thereby allowing you to more easily achieve greater process consistency across your enterprise. Benefits include ease of continuous process improvement, greater agility and less training burden as employees are transferred to different sites or promoted. As you consider the extent of this possible benefit, the first question to ask is how standardized are your processes? Or, asked differently, how standardized do you want your processes? This might be a strategy that could support this transformation for you.

Lifecycle Management

Manufacturing Execution Systems (MES) and other manufacturing software often have a long lifecycle, given the upfront time and cost to implement, as well as the ongoing training that is needed. Once your IT system is live, I have observed that it is quite common for manufacturers to avoid making changes to their software configurations as a way to reduce risk. By separating your software from your hardware updates, a virtual IT environment might offer benefits to ease this management lifecycle of software and OS system updates.

Hardware purchases can also be performed on a more regular or scheduled basis, resulting in greater consistency in system specifications, which will undoubtedly lead to fewer IT compatibility and integration issues in the future.

In Summary

IT virtualization allows you to abstract the application and OS away from the server hardware. As a result, you can more effectively manage the lifecycle of your application and hardware in a more methodological, cost effective manner. Future software updates can be centrally managed and better standardized, continuing to add further benefits from this IT strategy. In the end, the need for greater agility plays an important role in how you evaluate this important strategic decision – the need for greater consistency may be sufficient to accept the possible risk of reduced throughput from a possible equipment failure based on a virtual IT environment. Large facilities with significant production are probably not worth the risk, but smaller, remote locations that can benefit from greater agility that have less to risk from a temporary throughput decline may be perfect candidates.

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