



Business challenge

Bernhardt Furniture Co. needed a faster way to deliver enhancements to business applications and a more flexible architecture to facilitate new capabilities and accommodate rapid growth.

Transformation

For maximum adaptability, Bernhardt replaced its administrative back end with a microservices architecture and API infrastructure in a hybrid cloud environment. The company also adopted a DevOps approach to facilitate quick and continuous service improvements.

Business benefits

20%

more customers
engaged by sellers during sales events

20%

sales increase
because of enhanced customer engagement and ordering capabilities

Transforms IT

into a strategic partner
that can proactively deliver new business capabilities

Bernhardt Furniture Co.

Delivering digital transformation in 10 weeks

When Bernhardt Furniture Co. was founded in 1889 with 25 employees, it was the lone industrial enterprise in Lenoir, North Carolina. Today, though still headquartered in Lenoir and run by the Bernhardt family, the company has 2,100 employees and is a leading global furniture manufacturer with eight manufacturing facilities in the US and five international offices. As it has grown, Bernhardt has maintained its focus on both product quality and customer experience, winning many awards for design excellence.

“We’re using APIs to tap in to new capabilities and give the business a new level of insight. And they’re making changes that improve the bottom line.”

—Lacey Griffith, Director of IT, Bernhardt Furniture Co.

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A need for more flexible IT

“Personalization is a very important part of what we do. The customer expects perfect quality at every part of the customer experience, not just the product quality but the service quality as well,” explains Alex Bernhardt Jr., Bernhardt Furniture Co.’s president and chief executive officer (CEO). With service quality in mind, over just 10 weeks in 2014, Bernhardt transformed the way it engaged with customers at its biggest sales event, the biannual High Point Market. Working with the IBM® jStart® Emerging Technologies team and using the IBM Bluemix® platform as a service (PaaS), the company launched a mobile sales and analytics solution, Bernhardt Virtual Showroom, which boosted salesperson effectiveness and enabled Bernhardt to optimize its

physical showroom configurations for 20 percent greater sales. The digital transformation was a great leap forward from the previous, paper-based sales process. The mobile app’s immediate success and fast adoption, however, quickly stressed the back-end architecture supporting it.

When the Bernhardt IT department and the IBM team first launched the Virtual Showroom app into production, they built it with a monolithic IT architecture; one application handled all the administrative functions supporting the Apple mobile app that sales staff uses. As app usage grew, it created bottlenecks in back-end administrative processes. And a problem in one process resulted in problems with the app as a whole. “We needed flexibility to allow us to quickly respond to different challenges,” says Lacey Griffith, Bernhardt’s director of IT. “Things are

moving fast, and we need to make sure that the services we’re providing to our users can respond as quickly as the business requires.” Bernhardt recognized that by changing its approach to IT architecture, it could enable greater scalability and faster improvements not only for the Virtual Showroom solution but also for other business applications. It was an opportunity to position the company for continual improvements to operations and service.

APIs, hybrid cloud and DevOps

Working as one team, the Bernhardt IT department and experts from the jStart Emerging Technologies and IBM Cloud teams employed two means to achieve new levels of scalability and adaptability. For a more

flexible architecture, the joint team replaced the monolithic back-end application with a microservices architecture and application programming interface (API) infrastructure running in a hybrid cloud environment. To accelerate ongoing development and maintenance, the team adopted the DevOps model of application development.

In one sense, the IBM and Bernhardt team enhanced the back-end architecture by breaking it and scattering the pieces. Where they’d previously had one application of multiple administrative processes, they established nine microservices corresponding to those processes. Then they integrated the microservices through APIs across a hybrid environment of cloud and locally hosted platforms. With APIs serving

to connect and share data between the processes, the now-separate parts can still function as a unified application but without the performance-limiting dependencies of the old architecture. Now, when one process experiences a bottleneck or outage, the others will still function independently, and the team can focus on the particular issue without worrying about affecting other processes. According to Griffith, “The microservices architecture provided the uptime and flexibility we needed to meet the demands of our users and customers.”

The hybrid cloud environment further supports performance by allowing Bernhardt to base each service on the platform that lends the greatest capabilities to that particular function. For example, several Virtual Showroom APIs and microservices are built on IBM WebSphere® Application Server Liberty Core software and run on the Bluemix public

cloud platform. The content management microservice, which includes official product and showroom information, runs in the SoftLayer® cloud solution and is supported by an IBM Cloudant® NoSQL database service running on the Bluemix platform. And Apache Spark open-source analytics software runs in a high-performance cluster of IBM Power Systems™ servers hosted in a local IBM facility.

Moving forward, as Bernhardt rolls out new services for other business areas, and as business requirements and performance demands inevitably change, the company can port individual services between cloud and on-premises platforms as needed. For example, to accommodate the peak workloads of the High Point Market, the team may employ a Docker container to move the content management service from the cloud to a local network of dedicated computing resources.

For Bernhardt, APIs are both the connections holding together the microservices architecture and the links to innovation. Because they are language-agnostic, they facilitate integrations with a wide range of services, meaning Bernhardt can incorporate new functionality into business applications with relative ease. For example, the team enhanced the Virtual Showroom solution with two non-IBM services available through the Bluemix third-party catalog: SendGrid software, for automated emails about product orders, and Redis software, to allow business users a single sign-on (SSO) to the entire Virtual Showroom environment. Other APIs allow the company to combine Apache Spark analytics software with Internet of Things (IoT) capabilities to gain a clear understanding of how foot traffic moves through the furniture showroom and how often people see or miss particular products.

“We’re using these APIs to tap into new capabilities and give the business a new level of insight,” says Griffith. “And they’re making changes on the fly that improve the bottom line.”

To take greatest advantage of the more flexible, modifiable architecture, the Bernhardt and IBM team promote software-development efficiency by using the DevOps model. “DevOps is smaller cycles, quicker feedback,” says Griffith, “and it’s increased our speed and accuracy in terms of developing solutions that meet the business’s needs.” The team uses IBM Bluemix DevOps Services to facilitate user feedback and collaboration, accelerate development and test cycles, and automate deployments. As feedback on application performance and functionality rolls in constantly from sales staff and other business users, the team collects “user stories” in the Bluemix DevOps Services collaboration forum.

It then defines the specific improvements needed and breaks those down into a series of development tasks aligned to the relevant microservices. It can perform updates to the different microservices in parallel, and Bluemix DevOps Services makes moving updated code from development to testing to production simple drag-and-drop tasks.

After Bernhardt used the Virtual Showroom solution for three consecutive High Point Markets, the IT team defined a user story that would result in the largest innovative feature added to the app to date. Sellers wanted a way for potential customers to explore more options on products than they could see on the showroom floor. What if customers wanted to see how a certain chair frame looked in a different finish or fabric? What if they wanted to see how two separate pieces looked together in a room? The team entered these

scenarios into the Bluemix DevOps Services forum, determined the development requirements and went from there. At the next High Point Market, Bernhardt sellers used a Signature Seating feature of the larger app to help customers assemble custom furniture pieces and view them in virtual room settings.

Business and IT transformation

Thus far, using the new Virtual Showroom app enables sellers to engage 20 percent more customers during sales events and increase sales by 20 percent. Further, Bernhardt is taking advantage of the microservices architecture to extend the Signature Seating feature to its main website, with the goal of improving engagement with online shoppers year round.

But beyond the business results, for a company with such a long and rich history, the new approach to

IT represents an extremely positive paradox: Bernhardt has both changed and remained true to its past. The company has not only stepped into a new realm of business technology but also reinforced its commitment to its traditional values of quality, innovation and growth. It can now match its artisanship and fashionable designs in furniture with equally appealing, cutting-edge customer engagement. And the overall process of adopting cloud technologies, a flexible infrastructure model and the DevOps process, has redefined the role of IT for Bernhardt. “We used to be looked at as just a services department. We were reactionary. We responded to problems,” says Griffith. Alex Bernhardt Jr. adds, “Under Lacey’s direction, IT is a much more proactive organization, one that is solving problems that their clients didn’t even know they had.” And that positions Bernhardt well for the future.

Solution components

- IBM® Bluemix®
- IBM Bluemix DevOps Services
- IBM Cloudant®
- IBM jStart®
- IBM WebSphere® Application Server
- IBM WebSphere® Application Server Liberty Core
- SoftLayer®

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