Microsoft

Unlock insights on any data
Customer Solution Case Study

JABIL

Global Firm Takes an Evolutionary Leap in Data Management with Self-Service BI

Overview

Customer: Jabil
Customer Website: www.jabil.com
Customer Size: 186,000 employees
Country or Region: United States
Industry: Manufacturing

Customer Profile
Jabil, a leading supply chain management and electronics manufacturing partner, operates in 33 countries to provide supply chain and product development solutions.

Business Situation
As data volume grew at Jabil, efficiency was of increasing concern, everywhere from the business groups to the data centers to the factory floor. In the face of this challenge, IT required better ways to meet business users' data reporting needs.

Solution
With a new self-service business intelligence (BI) solution using Microsoft SQL Server 2014 and SQL Server 2014 Power View, Jabil can instantly generate and present powerful new reports.

Benefits
- Smarter workflows with enhanced data mining
- Productivity savings via self-service BI
- Predictive analytics to guide more efficient use of data and resources
- Lower data operations burden on IT

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Paul Bunting, IT Technical Lead, Jabil

Business intelligence (BI) information is only valuable when the right users can discover, analyze, use and share it with others—and all in a timely manner. Current technologies produce data at overwhelming rates, often faster than business users can analyze it, and the bottleneck is frequently the time that it takes to generate useful and impactful reports. At US-based supply chain management giant Jabil, as in many enterprises, data analysis has long been a time-consuming and intensive collaboration between the business groups and IT, creating customized reports whose information, by the time it's used, is already growing stale. With its new solution built on Microsoft SQL Server 2014 and SQL Server 2014 Power View, Jabil users can create their own reports in minutes from business critical data sources using Microsoft Excel, with IT providing training and guidance—freeing up time to work on strategic projects.

Situation

Jabil, based in St. Petersburg, Florida, is one of the world's leading global manufacturing solutions partners. Its business began with circuit boards for the automotive industry, and it now comprises more than 90 factories providing system design and related services that operate sophisticated supply chain management solutions in 33 countries. During this growth, Jabil has expanded its IT toolset in creative ways to better serve its customers' needs while benefiting from internal efficiencies and precision.

These innovations yield a great amount of data, and as with many companies today, this data volume is increasing at a steady and almost unmanageable pace. In particular, workers on the shop floor of each factory require timely knowledge of upstream processes in order to effectively manage and scale their duties. Managers and employees need early visibility into defects or other issues that might lead to downtime and lost revenue. Machine metrics and service desk incidents must be closely managed to achieve the optimum productivity for factory operations. If possible, all of this data must be available in one place and readily analyzed so that predictions and adjustments can be made.

To date, the Jabil method for capturing and communicating this data has been online analytical processing (OLAP) cubes that use data from Microsoft SQL Server software and report the data using SQL Server Reporting Services. These reporting methods took place at each of the company's global manufacturing sites. Although end-to-end operations at all locations are generally the same, each supports different customer types, and so different methods were used for analyzing information. Data aggregated using OLAP cubes and then visualized using Reporting Services might be sufficient to support operations at a particular site, but because the sites functioned autonomously, it was difficult to standardize and share useful information from one site to another. This lack of agility in managing shop floor data made it difficult for Jabil to take the long view of its business intelligence (BI) requirements.

Another increasingly important factor was the impact of business evolution on data volume. As Jabil has improved its data collection abilities, Jabil applications are supplying more and more data that can be used for various purposes. Within some sites, for example, component placement machines include multiple "feeders" which supply thousands of parts to these machines, and while doing so, send consolidated, real-time production data—to the tune of hundreds of millions of records. Jabil collects and analyzes this data in order to learn about and streamline operations. Elsewhere in the process, other applications are also producing data, and when multiplied by the number of factories under Jabil operation, this data volume quickly approaches a point where operators and analysts are challenged to view and interpret the data while it's still useful.

But the main limitation of OLAP and Reporting Services in the Jabil environment was the required coordination between the employee requesting each report and the IT database administrator delivering the report via specialized queries into the data. Employees requesting reports did not fully understand the reporting system's capabilities and limitations, and were therefore not empowered to use the system to its full potential. Database administrators frequently faced combining data from multiple sources, including SQL databases, OLAP cubes, and third-party application feeds. The process of aggregating this data manually was a time-consuming and complex effort. The time lost between requesting and receiving each report was significant not only in paid resource hours but also in lost productivity and opportunity in factory floor operations.

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Paul Bunting, IT Technical Lead, Jabil

Over time, Jabil workers learned to work within these limits, but the IT staff knew it could do better. With improvements in technology—lower storage costs, more computing power, and better data management and analysis tools—Jabil IT decided to rethink its methods for delivering BI solutions to its business users.

Solution

Bob Bell, Corporate IT Architect at Jabil, and Paul Bunting, IT Technical Lead at Jabil, worked with Microsoft to capitalize on the capabilities of SQL Server 2014 and introduce a solution at Jabil that improves service quality for internal customers and saves the company valuable time.

"When I was hired fifteen years ago," Bell says, "Jabil was using SQL Server 7, and with each release of SQL Server I've advocated the use of new functionality, such as Reporting Services, Report Builder, Analysis Services and SSIS."

He and Bunting created a series of visualizations for demonstrating SQL Server 2014 Power View, an interactive, browser-based Reporting Services tool that provides flexibility for self-service users to visualize and present the data they discover. The demonstrations, conducted as part of a proof of concept but soon to be rolled out in the Jabil production environment, showed Jabil business users how to readily view and transform various kinds of data and produce their own customized reports instantly—no IT request required. The demonstrations showcased the BI capabilities of Power View and showed how self-service visualizations can be used to address the users' business cases.

Power View features a graphical interface where users can access and analyze information in a way that is highly intuitive and familiar to Microsoft Office users. With a variety of tables, charts and graphs built into the new solution, users can compile data into a single view and visualize it in ways that best suit their needs. They can build powerful, logical models of multidimensional data sources in Microsoft Excel spreadsheet software and use the models to dynamically build visualizations that answer many important business questions. With this tool, any user can easily create a report in a few minutes and transform the shape of the data with a single click.

The demonstrations in Bell's and Bunting's solution portray many kinds of data—structured and unstructured, relational and non-relational—from internal sources as well as from the Internet. By managing these diverse data types and offering a user interface where they can be manipulated and examined easily and quickly, Power View helps Jabil achieve new levels of BI visualization by allowing users to interact directly with data, producing and refining views of the data in new ways to help them perform their work more effectively.

The initial rollout of the platform was to 15 "power users" who tested the new capabilities and provided feedback to IT. Over the next four to five months, as part of an ongoing SQL Server 2014 rollout, IT will continue to demonstrate Power View to additional users. Rather than going location by location or department by department, the strategy is to introduce a mixed sampling of users with each wave, representing a wide range of job titles and geographic diversity.

For now, Excel is the basis for most of the demonstrations, although Jabil is also working on proof-of-concept solutions using Microsoft SharePoint Server 2013 to share Power View reports, in-browser Excel workbooks and SharePoint Integrated Reporting Services dashboards. In addition, the Jabil IT staff is investigating the use of Power View with Office 365 as they take more steps toward hosting applications in the cloud.

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Benefits

The new capabilities put a great deal more power and flexibility into the hands of individual Jabil workers than was afforded by the previous workflow. In fact, the Jabil IT team is careful to point out that their tool provides demonstrations only. The real success of the new workflow depends on the ingenuity of each individual user. "By no means are we expecting the dashboards we have created to be exactly what users want," says Bunting. "They are meant to demonstrate what end-users can actually do themselves, quite quickly and simply."

All of this has created an evolutionary leap in the way Jabil knowledge workers interact with data in their various jobs. Up to this point, Excel was being used at Jabil primarily as a spreadsheet tool. Even the latest data management capabilities in Excel were underutilized, mostly due to users' lack of awareness of the Power View capabilities. Now, after a few demonstrations, users at all levels—from line managers to finance personnel to executive staff—feel comfortable and excited about discovering new ways of working with data.

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By investing in SQL Server 2014 and demonstrating Power View to its various user groups, Jabil was able to realize new operational and business benefits in the form of smarter workflows, cost savings, productivity gains and new predictive analysis and maintenance capabilities.

Smarter Workflows with Data Mining

Aggregating data from assorted sources leads to more informative, proactive business processes. At Jabil, users can now achieve this ability without IT involvement. Any Jabil employee can analyze data in real time in creative ways and customize the results in whatever presentation format will yield the strongest business impact. If at first a set of queries doesn't tell the story, users can transform the queries themselves by using Microsoft Power Query for Excel to "slice and dice" the data into the format they need. These capabilities, new to Jabil users, empower employees to show innovation and initiative by looking at the facts of their day-to-day jobs in a whole new way.

Power Query makes data consumption easy for both novice and IT Pro users, so that they can transform and consume data from a mass of accessible sources. Also, Microsoft SQL Server PowerPivot for Excel assists with the company's frequent need to query large amounts of client-side data.

OLAP cubes remain the key sources for Jabil business data, but now the business teams have access to them in ways they didn't before. "We were really excited when we found out that Power View was going to be able to connect more and more of our cubes together," says Bunting. "Looking at these new connections between compiled sources was a real driving factor in our demonstrations."

Cost and Productivity Savings

In the past, the end-to-end process of gathering data and presenting it in reports was a laborious effort, involving both IT personnel and business users. With the new solution, this process is hugely accelerated, in large part because with the intuitive toolset users can build the reports they want without any IT involvement. The savings is measurable in productivity gains and, therefore, in operational cost.

Previously, for example, when a user wanted to gather data about one of the factory floor machines and present it to management, he or she worked with IT to create a custom Reporting Services report with the relevant embedded macros for data manipulation. An IT staffer pulled the necessary data at the user's request and

Unlock insights on any data

Microsoft business intelligence (BI) solutions simplify access to virtually any type of data, whether it resides in the business or the cloud. Powered by Microsoft SQL Server, and built into familiar programs such as Microsoft Excel, BI tools speed insight into data from multiple sources, including business applications, blogs, and sensors.

For more information about unlocking insights on any data, go to: www.microsoft.com/en-us/server-cloud/cloud-os/data-insights.aspx

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put it into the report, exporting it to a comma-separated value (CSV) file on the network. The user then retrieved the CSV file, ran the macros, and applied formatting to make it presentable, manually creating charts or graphs as needed. Depending on complexity, this whole task could take anywhere from several hours to several days.

In one of the demonstrations presented by Bunting and Bell, a user opens a blank Excel workbook, and within a few minutes the workbook is populated with the machine data. The user can take advantage of any of the built-in Power View features to portray the data in a variety of visual formats, and have a presentation ready to share right away. What's more, because the report is dynamically tied to the OLAP cubes, updating the data is as easy as refreshing the report directly in the Excel user interface.

Predictive Analytics and Maintenance

One common instance at Jabil of generating useful data on-the-fly is the "first pass yield" report that measures the percentage of a new product that passes quality control the first time it is built, with no failure or required rework. A shop floor monitoring system tracks system performance, machine setups, and the use of specialized units such as the feeders and other components. By examining these numbers as soon as the first pass of the new build is conducted, the floor team can predict production outputs, as well as fine-tune the process for subsequent runs, resulting in a more agile, efficient development cycle overall.

Proactive data monitoring activities such as this save time and money by reducing waste of materials and employee time.

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Because machine errors are also tracked by the monitoring system, this method of reporting can also be used to accurately predict and reduce required downtimes for machine maintenance. Power View data can be used to detect error patterns in real time that can be fixed easily before they lead to a larger, more catastrophic outage. Even at the smallest Jabil factories, the cost of unexpected downtime (factoring in lost employee utilization and production line output) can amount to a significant dollar amount per hour.

Jabil is in the process of building new data-mining and predictive models within SQL Server 2012 and 2014 Analysis Services, using the current set of Microsoft-supported statistical models as a basis. The choice of each model will depend on its predictive accuracy relative to the data being used.

Lower Data Operations Burden on IT

The new self-sufficiency of its business users has created a clear "win-win" result for Jabil IT. Setting users loose to discover, model, analyze and visualize data in exciting new ways within a familiar user experience means that IT can devote its own resources to its other missions: driving operational efficiencies and sustaining company growth.

Software and Services

- Microsoft Server Product Portfolio
  - Microsoft SQL Server 2014
  - Microsoft SharePoint Server 2013
- Microsoft Office
  - Microsoft Excel 2013
- Technologies
  - Microsoft SQL Server 2014 Reporting Services

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