



BlueStar Energy Services, Inc. is the fastest-growing energy provider in the deregulated energy marketplace, providing highly differentiated energy products to commercial and industrial customers. BlueStar now also plans to extend its energy services to the residential marketplace.

SOLUTION OVERVIEW

BlueStar Energy uses Mule to collect and disseminate data from hundreds of energy market participants, including RTOs, LDCs, and customers, as well as other systems such as weather feeds and pricing systems. Mule also offloads processing and transformation tasks for certain business processes, such as credit checks and customer provisioning.

Benefits:

- ▶ Simplifies the task of integrating data feeds from hundreds of external business partners, each with its own messaging protocols, formats, and delivery mechanisms.
- ▶ Affords BlueStar the agility to react quickly to changes in external factors (changes in energy prices, weather conditions, regulations) and insulate core systems from those changes
- ▶ Lowers costs by streamlining business processes such as customer credit checks

BLUESTAR ENERGY RELIEVES ITS INTEGRATION BURDEN USING MULE

THE CHALLENGE – LACK OF STANDARDIZATION

Just like any commodity, energy has varying values based on when, how and by whom it is purchased. BlueStar's energy products and pricing schemas are differentiated by its ability to buy energy in a competitive fashion from wholesale suppliers, then deliver that power to its customers over a highly reliable electric distribution infrastructure.

BlueStar's information technology systems are in a constant state of collecting and disseminating data from numerous sources. The information supports a number of processes ranging from customer enrollment and provisioning, to supply forecasting and procurement, to customer care and billing, to sales force automation, to organizational financial management... just to name a few. It's a very information-intensive, dynamic business environment with a number of associated integration challenges. Millions of dollars in revenue are tied to timely access to information and the ability to act on that information.

“We’ve got, quite literally, thousands of information feeds coming at us both in batch and real-time, with varying data structures. Mule helps us insulate our systems from the necessary transformations and processing.”

Tom Keen
Chief Technology Officer
Blue Star Energy

A primary integration challenge that BlueStar faces is lack of standardization by which the different energy market participants share information. For example, regional transmission operators (RTOs) manage the power grid infrastructure. BlueStar must tell the RTOs on a daily basis what the RTO must schedule to supply to the grid (on an hourly basis) to service BlueStar’s various clients. The RTOs, in turn, must tell BlueStar what the actual supply (on an hourly basis) was and what the line-losses were.

There are numerous RTOs supporting the North American Energy Market, such as the Midwest Independent Transmission System Operator (or “MISO”) and PJM (the world’s largest wholesale electricity market). Each have their own messaging protocols, formats and delivery mechanisms to exchange information with retail energy providers like BlueStar. Further complicating matters, organizations which transmit the energy from the Grid to the point where it is consumed (Local Distribution Companies or LDCs), meter the customers’ usage and provide these usage figures to the retail energy provider via EDI (“Electronic Data Interchange”). Unfortunately, the 100s of LDCs do not consistently comply with the EDI specifications.

“The disparity is in the structure of the data,” said Tom Keen, Chief Technology Officer of BlueStar. “The information may be the same — for example, hourly readings of energy usage. But the way in which that information gets delivered to us between, say ComED and Pepco and Ameren is very, very different.”

BlueStar’s integration challenge also includes the messaging rigors between the many different systems being run in-house. From the primary systems (supply forecasting systems, pricing and product management systems, accounting and finance systems, etc.) to the various other ancillary systems (business intelligence, enterprise content management, etc.) — data must be continuously shared across numerous domains. Not only are the energy prices constantly in flux, but the energy industry itself is susceptible to frequent legislative changes.

“We have to be able to insulate our solutions away from legislative dynamics,” said Guillermo Tantachuco, Enterprise Architect at BlueStar. “If a building regulation or pricing regulation changes, for example, we don’t want accounting to be affected or any of the other ancillary systems.”

Even weather is a huge variable that must be accounted for across BlueStar’s systems.

“Depending on the clients’ outside temperatures, these models have to take into account the impact on how we schedule the power,” said Keen. “Obviously the weather in Chicago is different than what it is in Peoria and what it is in Springfield.”

PRIMARY INTEGRATION REQUIREMENTS

- ▶ Reliable messaging for a loosely-coupled, SOA environment
- ▶ Ability to perform complex data transformations in real time
- ▶ Rapid response to new changes (from pricing to new regulation)
- ▶ Reliable handling of a tremendous amount of offloading and processing

THE SOLUTION – PARTNER INTEGRATION AND BUSINESS PROCESS OFFLOAD

Today BlueStar uses Mule to insulate internal systems from the complexities of the numerous incoming data sources, and to handle the transformation and routing heavy-lifting requirements.

The Mule ESB transforms incoming data (from weather feeds to energy pricing, and numerous other disparate data feeds and formats) so that BlueStar's supply systems understand how to react. After the supply systems generate appropriate scheduling for the various transmission operators, the Mule bus then routes the data to the appropriate energy exchange market (whether MISO or PJM). Working with Mule offloads the processing and transformation complexities, and enables new semantic-based types of intelligent messaging for BlueStar.

On the provisioning side, BlueStar needs to coordinate with the local distribution companies (like ComEd, for instance). So Mule sends an EDI request so they can tell ComEd their customer is now a BlueStar customer. After sending the EDI request over FTP to ComEd's FTP site via a VAN (value-added network), Mule gets the enrollment request acknowledgement from ComEd, either approving or denying the request.

Once approved, Mule tells the other systems internally that a new customer has been enrolled – at which time BlueStar starts receiving usage information from that particular customer. To monitor usage, BlueStar uses an FTP connector with several instances of Mule. One instance listens to the FTP site waiting for EDI files that carry the usage of the customers. As these 20-100 megabyte files come through FTP, another

Mule instance breaks up the large file into individual messages, does the appropriate transformations, then feeds the usage into the respective internal systems. BlueStar utilizes the Mule Quartz provider to schedule the intervals with which meters are polled for usage stats.

Mule also plays a roll in BlueStar's process for credit checks for prospective customers.

"We obviously have to maintain very good credit with our energy suppliers," said Keen. "The better your credit rating, the cheaper you can get the power."

BlueStar uses several outside vendors for credit card payments and address validation, and values the flexibility that Mule provides interacting with these services.

"Sometimes we may need to communicate with a SOAP Web Service, and other times it may be a REST Web Service," said Tantachuco. "The beauty with Mule is that we can tie into whichever standard the situation calls for, and our core application is not affected by the implementation of those Web Services. Mule allows us to not only expose services as Web Services, but we can use JMS or any other standard mechanism and expose the same service using different protocols or applications."

Later this year, BlueStar will be rolling out residential energy services to the Illinois Marketplace, which will further increase the scope of data input / output and related integration requirements.

ABOUT MULESOURCE

MuleSource is the leading provider of open source infrastructure and integration software. Founded by the creators of the Mule project, the world's most reliable and widely-used open source ESB and integration platform, MuleSource delivers enterprise class support and services to the hundreds of organizations that have downloaded the open source project worldwide. Founded in 2006 and backed by investors Hummer Winblad Venture Partners, Lightspeed Venture Partners and Morgenthaler Ventures, MuleSource is headquartered in San Francisco with offices worldwide.

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