Alkira Case Study

Koch Industries Deploys Alkira For Their Cloud Networking Journey

Multibillion dollar Koch Industries turned to Alkira to help it deploy a Cloud Network solution to reduce operational costs of its global network by 40%, cut deployment times from years and months to hours and minutes, eliminate future overprovisioning of systems/services, and empower the organization to respond more quickly to changing business needs.

Background

Koch Industries is one of America's largest privately held companies. Based in Wichita, Kansas and with revenues estimated by Forbes of up to $115bn, Koch is highly diversified with interests in, among others, chemicals, biofuels, oil and gas, minerals, process and pollution control systems, electronics, software and data analytics.

The company has invested $120B in growth and improvement since 2003, including nearly $30B in technology investments alone in the past six years.

"I've been with the company for 20 years. I've seen a lot of changes in that time, but nothing compares to the rate of change and impact to the business that we're seeing today."

Matt Hoag, CTO, Koch Business Solutions

So says Matt Hoag, CTO at Koch Business Solutions, reflecting not just the rate of change of the business, but the constantly evolving IT infrastructure that supports it.

The diversity of the business and several major acquisitions have resulted in a complex IT legacy, which includes seven global networks spanning 700 sites in 70 countries, thousands of applications, thousands of routers and firewalls, tens of thousands of access points and hundreds of thousands of switch ports.

Hoag and his team are responsible for the smooth operation of the sprawling global networks, including the security of data, the performance of the applications on which the business and its customers depend, and the return on Koch's investment in network operations.

In common with other enterprises, the past few years have seen Koch turn its attention to the cloud, which has steadily become more central to the company's IT strategy.

The Transformation Imperative

Rewind to the early last decade when Koch had a traditional MPLS based network anchored to its data centers, with limited bandwidth to most sites and all Internet access centralized. The vast majority of business applications were running in the data centers.

Hoag takes up the story:

"Then came the transformation imperative. In order to stay relevant in the digital age we needed to think and operate our businesses differently. My team was created, and we were tasked with preparing our foundational technologies, including the global network, for the rapidly growing digital business domains. We developed plans up and down the IT stack to decouple our businesses from the data center and to implement cloud-native capabilities that could be deployed and adapted at the speed of business, not at the speed of traditional IT."

The first step on a journey that Koch hoped would equip it for the challenges of a knowledge-based economy was to implement a global SD-WAN. Hoag's choice of partner was Viptela (later acquired by Cisco), which brought him into contact for thefirst time with Viptela's co-founder and CEO, the SD-WAN pioneer, Amir Khan and his brother Atif Khan, who was a VP of Technology and Solutions, and the member of Viptela's founding team.The SD-WAN deployment enabled a step change in network performance – yielding a seven-fold increase in bandwidth across 500 locations – and implemented direct internet access at most of those sites, as well as improved wired and wireless connectivity at Koch's manufacturing facilities.

Keeping Up With The Cloud

After settling on AWS as its preferred public cloud environment, Hoag realized that simple VPN connections were not going to do the job. "If we were going to put in high-speed circuits to enable production workloads, we were going to need a better plan for resilience and redundancy," he says.

Hoag and his team developed a vision for cloud on-ramps that they dubbed transport hubs. These would be implemented in three phases:

1. Physical connections to the cloud for the data
2. Virtual hubs for improving the performance experienced by remote sites and end-users centers
3. Transport hubs as a service, which would be capable of rapid deployment at scale centers

Version 1

The version 1 transport hubs provided high-speed connections for data centers to AWS, but approval, installation and testing took 18 months. The hubs also cost more than $2m to put in place.The project succeeded in its goal of giving business application teams the ability to leverage new cloud capabilities, but left the network rooted in the data center physical infrastructure.

"In order to be able to break ties with the data center and improve application performance and user experience, we needed to replicate our physical transport hubs virtually in the cloud and allow users and sites to access those workloads through the SD-WAN," Hoag says.

Version 2

Version 2 of the transport hub took only about six months– a great improvement over the data center

physical transport hubs. "Much of that time was spent learning the network constructs of AWS and overcoming some of their limitations," Hoag explains.

However, rolling out the version 2 hubs across the enterprise remained a daunting proposition. The structure of Koch's business and the limitations of cloud networking meant that every business network would need its own hub – a different one for each region. In the US alone, the business straddled two AWS regions. Extending the network globally would require multiple hubs, and when Koch wanted to connect to other public clouds, the hub count would start to climb.

"Cloud networking is fundamentally different to traditional networks in many ways and each cloud provider implements their version of networking a bit different to the rest. We hadn't yet branched out into Azure or GCP. So even allowing for learning gained with AWS, expanding to other clouds would be months of work in each case," Hoag says.

"So, while we'd solved these business and technology challenges, we found that we'd created a highly complex set of solutions, so complex in fact that only four or five of our network engineers were fully connected to the over all architecture. We were also still in a single cloud with no plans to expand the solution to other clouds. On top of all that we had no idea how to get to transport hub version 3, which in our vision was transport hub as a service," he adds.

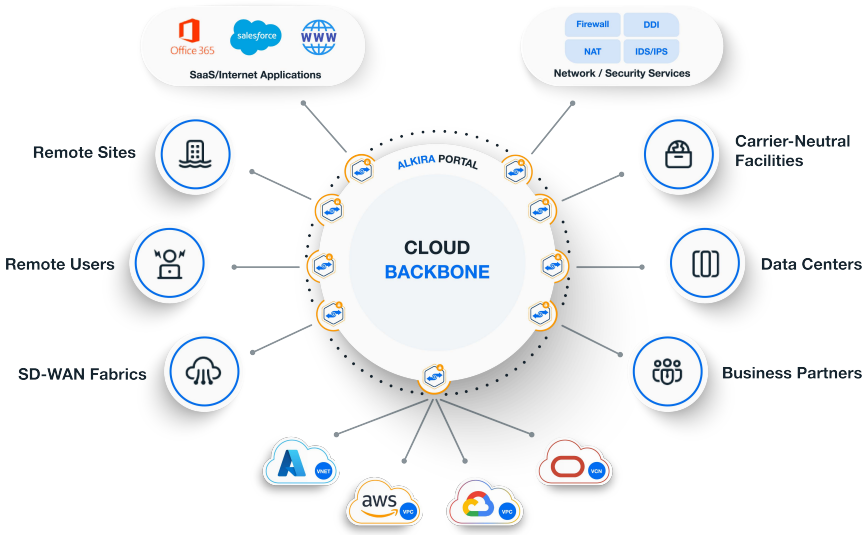
Koch scoured the market for a technology provider with a solution but drew a blank.

Onwards And Upwards

In mid 2018, Hoag became aware of a start-up named Alkira. Its founders were the Khan brothers, who had emerged from the sale of their SD-WAN venture to take on a new challenge. "I reached out to Amir (Khan) and found a technology provider who shared our vision of an as-a-service network," Hoag says.

"On top of the aligned vision, we'd already built a great working relationship with Amir and his team during the days at Viptela. Getting challenging transformations together as we did in the early days of SD-WAN can build a strong relationship."

Figure: Alkira Cloud Area Networking



Alkira's Cloud Area Networking platform appeared to offer all the capabilities that Hoag and his team had been searching for:

- Seamless connectivity for single and multi-cloud environments
- Full integration of higher-level services, like the next-generation firewalls
- End to end visibility and governance
- High availability with disaster recovery and day two operations built in.

Hoag was amazed by what he saw. "What had taken us over two years to evolve in our transport hub version 1 and version 2 deployments we were able to recreate with the Alkira software in a single afternoon,"
he says.

We had gone from a mass of complexity and months of work to a dashboard that allowed you simply to draw your network and deploy it in a few hours."This thing's easier to use than [Microsoft's business process and flowcharting package] Visio," Hoag adds.

In the weeks that followed, Koch started deploying production workloads on the Alkira platform, starting with a greenfield approach – workloads that weren't already connected to a transport hub, while working on replacing the existing transport hubs over time.

Next Stop: The Multi-Cloud

Koch is aiming to replace ten existing transport hubs with just two Alkira Cloud Exchange Points (CXPs), which will greatly reduce the amount of virtual infrastructure Koch runs, manages and pays for.
It will also simplify operations.

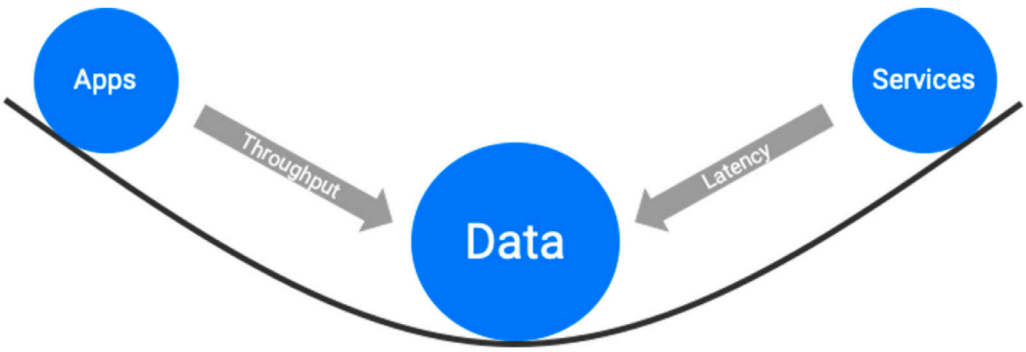
Alkira's solution enables Koch to expand beyond AWS and connect to Microsoft's Azure cloud service. Building production-ready on-ramp to Azure would have taken three to six months using the transport hubs in Koch's previous architecture. "With Alkira, we were able to stand it up in a single day," Hoag reports. He adds that the network team's newfound turn of speed initially took their application team colleagues by surprise. The Azure connection was in place before the application teams were ready for deployment. "The network team was no longer the long pole in
the tent," Hoag says.

Defying Data Gravity

The concept of data gravity is familiar to IT professionals. Very high volumes of dataexert a gravitational pull-on throughput and latency, particularly when applications and services are running in one environment and data is stored in another.

At the point of the Azure deployment, Hoag warned the application teams that with services running in Azure and data residing in AWS, they might experience a potentially steep fall-off in performance. This turned out not to be the case.

Figure: Data Gravity



Alkira's multi-cloud capabilities ensured low latency and high sustained throughput between AWS and Azure environments."It was a eureka moment," Hoag says, "like discovering anti-gravity for data."

"We're no longer locked into cloud platforms depending on where our data resides. And in cases where our data and applications are running on different platforms Alkira has dramatically reduced the data gravity issue that had been a fundamental hindrance to our industry," Hoag adds.

Next Steps

Koch is not resting on its laurels but pushing ahead to address further network challenges. In future it hopes to add advanced routing capabilities such as shared services and cross-segment routing. It is planning to implement voice gateways and zero-trust network access – the latter becoming more important as companies increasingly move to distributed workforces in a post-Covid world.

The company is also looking forward to continuing development of the marketplace element of the Alkira platform, which makes available best-in-class networking and security services from Alkira and third-party vendors.

Summary: Simplifying the Cloud Journey

Looking ahead to the future of Cloud Area Networking the single greatest benefit to Koch and other organizations, believes Hoag, is simplification.

"We run networks because we have to, not because we make money from it. Being able to leverage new capabilities in Cloud Area Networking and be able to do those quickly at the speed of the business, not at the speed of traditional IT, that's going to be a huge value not just to Koch but all Alkira's customers."

He lists the following key benefits of the Alkira solution:

1. End to end deployments from months and weeks to days and hours with provisioning taking just minutes
2. High throughput, low latency between clouds
3. Network and security services marketplace
4. Built-in day two services for continual optimization of operations
5. Enable multi-cloud opportunities

Hoag emphasizes that consumption of the Alkira solution as a service brings **three crucial advantages**:

* Simplicity - Network teams don't have to learn every new capability in every cloud.
* End to end visibility – a single "pane of glass" to view all the traffic and transactions wherever they are on the network.
* Delegated operations – the organization doesn't need to build, own and operate network assets and advanced services.

"Ultimately Cloud Area Networking is freeing up our teams to work on other opportunities and allowing us to take advantage of our data in ways that I wouldn't have thought possible a year or two ago– and I believe we're just scratching the
service," Hoag says.

In a footnote to the story, in 2020, Koch made a further demonstration of its faith in the Alkira Cloud Area Networking platform. Its Koch Disruptive Technologies arm led a consortium of investors in a $54M second round of venture funding for Alkira.

About alkira

Alkira is industry's first solution offering global unified network infrastructure as-a-service. With Alkira, enterprises can have a consistent and significantly simplified experience deploying a global cloud network for end-to-end and any-to-any network connectivity across users, sites, and clouds with integrated network and security services, full day-2 operational visibility, advanced controls, and governance. The entire network is drawn on an intuitive design canvas, deployed in a single click and is ready in minutes!

The Fastest Way to the Cloud.