Architecting security and user experience with edge computing

Service-based enterprises that deal directly with the public have moved toward web-based and mobile apps to increase efficiency for both the consumer and the business.

These interaction-intensive organizations can be found in many arenas, from consumer retail to banking and other financial services. Even the public sector now offers many of its services through these portals. They might be in people's homes, in their pockets and they can also be housed in kiosks in a store or out in public somewhere, such as a bank ATM on a street corner. As more of these public interactions flow through these channels, a growing number of issues must be addressed.

Challenges: Secure endpoints while providing a great user experience

These interactions can often be data intensive with complex applications. Consider banking or working with state or local governments where highly sensitive information or confidential records are exchanged. Two key issues must be addressed:

- The quality of the user experience
- The security of the transactions

In some instances, such as consumer retail, the switching costs to the consumer are quite low and a single poor experience or minor security hiccup could result in a lost customer. The stakes rise higher when considering these proliferating endpoints can become attack vectors for bad actors seeking access to corporate or government networks.

Analytics can help address both of these issues. Understanding consumer behaviors such as their purchase preferences or even A/B testing of screen arrangements and icons can improve the user experience. Analytics can also help determine the signatures of a probe of networks through these web or mobile apps. Video surveillance can also aid in both producing behavioral data as well as adding a layer of security when the interactions are in public.

All of this comes with costs, both in money and potential latency. The shift to the cloud is well underway, but these interaction-intensive applications can experience latency, potentially in the hundreds of milliseconds if the cloud data center is located across the country from the individual consumer. Running security services out of the cloud has the same latency problem for acting quickly against an intrusion at the network edge. Shipping all this data – especially video data – up to the cloud for processing can be expensive.

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Industry-specific use cases

- **Banking:** Deliver a personalized and secure banking experience from any branch or device.
- **Retail:** Provide secure and seamless touchpoints through applications designed to personalize and enhance customer experiences
- **Public Sector:** Securely offer citizen services on an app. Then optimize the user experience of the app by analyzing user data.

Solution: Edge computing provides the heart of Acquire, Analyze, Act virtuous cycle

Intelligent Solutions from Lumen® Edge Computing integrates the consulting services, network and management services, hardware and software to architect and build an Edge Computing solution for an Acquire, Analyze, Act use case. Many of the cloud data centers enterprises use for advanced analytics and AI processing are already on Lumen fiber networks. This allows Lumen to essentially expand data center functionality out into the network to put key resources where they need to be to optimize this virtuous cycle.

Storage as a Service can be built into the network for edge resources on or off-premises depending on the needs.

This creates a data "base camp" where the behavioral data can be stored as it is acquired. In the case of video data for analytics, this "base camp" can then provide some level of processing to separate the data that needs to be passed up to the cloud. This alleviates constantly streaming data to the cloud over the network.

The cloud engines then build algorithms and business logic in the Analyze phase. Running them from the cloud introduces latency that can reach into the hundreds of milliseconds. In many cases, this latency creates a sub-optimal Act phase. Edge computing in localized data centers can optimize the responsiveness of complex applications and the speed of security responses to protect the network.

Results: Efficiency, security, lower costs

These architectures composed of Lumen Intelligent Solutions components, expertise and managed services can modernize operations-intensive enterprises. Consider just a few effects of this edge computing infrastructure for different types of firms:

- Reduced latency for complex applications, enhancing user experience
- Security at the edge can help protect application experiences and organizational networks
- Lower network costs from transporting only relevant data to the cloud

Edge computing complements both cloud computing and the IoT, creating a seamless, low latency virtuous cycle.

Edge computing approaches put data processing and storage closer to the network edge —where people, processes and items in motion reside.

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