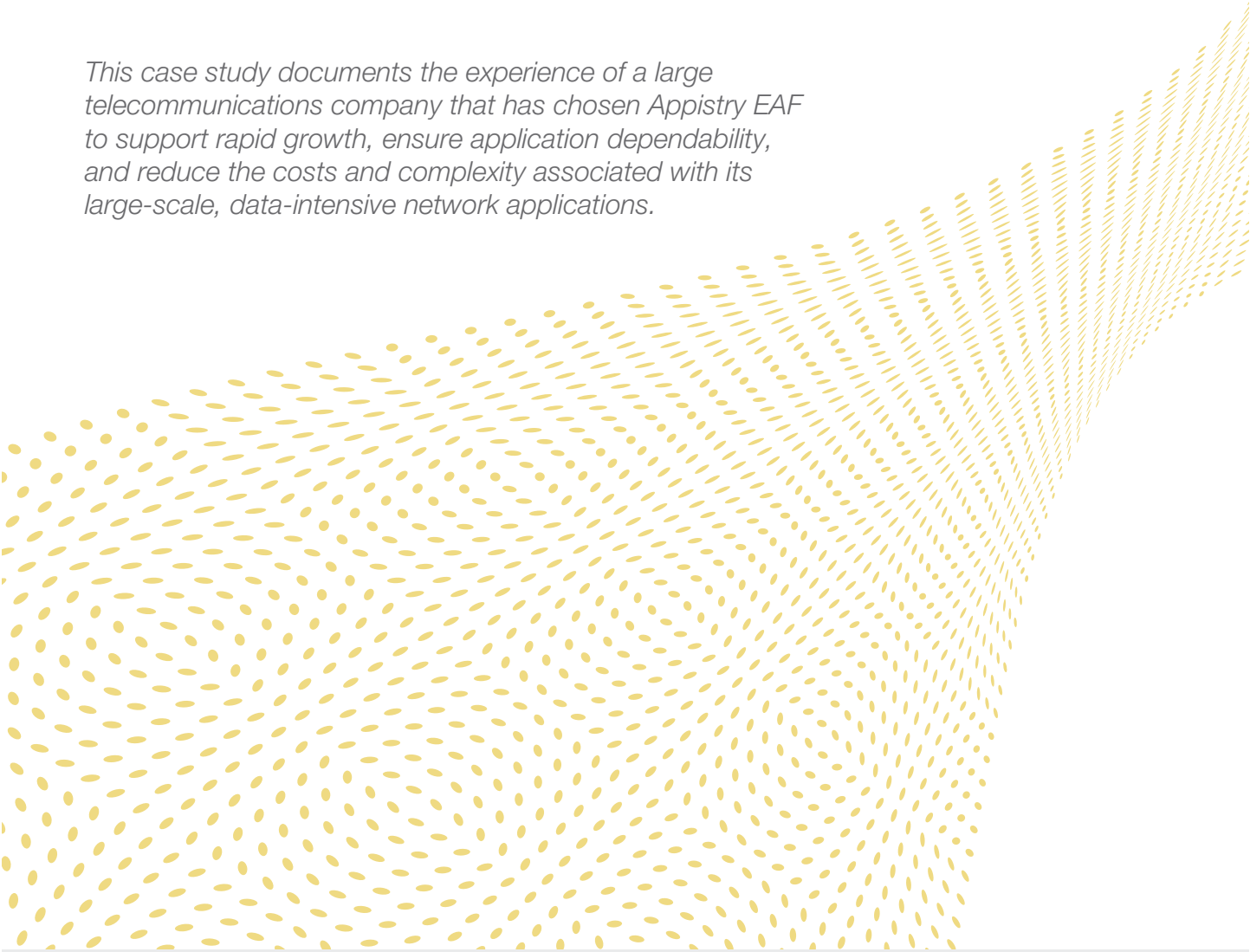




Appistry® Enterprise Application Fabric: Realizing “Scale Without Fail” for a Large-Scale, High-Volume Telecommunications Application

This case study documents the experience of a large telecommunications company that has chosen Appistry EAF to support rapid growth, ensure application dependability, and reduce the costs and complexity associated with its large-scale, data-intensive network applications.



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Executive Summary

This case study documents the experience of a large telecommunications company that chose Appistry Enterprise Application Fabric (Appistry EAF) to support rapid growth, ensure application dependability, and reduce the costs and complexity associated with its large-scale, data-intensive network applications.

This customer is a global telecommunications provider and member of the Fortune 100. The customer offers a range of communication products and solutions, including wireless, long-distance voice and data transport, global Internet protocol (IP), and local and multi-product bundles. It is one of the top providers of personal communications services in the United States.

At-A-Glance

CASE STUDY: Telecommunications

Challenge

Scale applications to support subscriber growth and deliver new services, while reducing operational complexity, ensuring application dependability, and limiting the costs associated with building, deploying, and maintaining network applications.

Solution

Appistry EAF for a new OSS (operational support system) application supporting a large rollout of broadband wireless data services. Additional OSS applications are potential targets for Appistry EAF.

Key Benefits

- Estimated 94% reduction in hardware and software acquisition costs and 41% in 3-year recurring costs for initial application running on Appistry EAF
- Application layer insulated from physical infrastructure frailties, ensuring uptime
- Effortless assimilation of additional capacity, easing planning and response to growth
- Simplified application management, decreasing operational complexity

“Everyone will want to do this as soon as they learn about it and understand the benefits and savings it offers.”

The Challenge: Provide Superior Services to Customers, Support Rapid Growth, and Reduce Infrastructure Costs

Background

The network services group at this large telecommunications company is charged with delivering a wide range of wireless, voice, data, and Internet services to an ever-increasing subscriber base. To meet and exceed customer expectations, the company offers an innovative and growing portfolio of services. The highly competitive and capital-intensive nature of the telecommunications industry creates tremendous cost pressure for the company. The network services group has to support subscriber growth and deliver new services in a way that both ensures subscriber satisfaction and controls costs.

Application dependability is of critical importance to this customer, particularly as it serves more subscribers with more services. Application dependability requires that applications are available whenever they're needed and that they reliably perform the work entrusted to them. While most companies strive for high rates of availability, a telecommunications company is required by the FCC to have highly dependable network services and faces penalties for non-compliance. Furthermore, this customer's network services group is responsible for managing systems that directly affect revenue. If a call is not billed or a fraud not detected because of a system error, the result is lost revenue.

Like most large organizations, this customer traditionally turned to a hardware-centric, multi-layered architecture approach for deploying and managing its data-intensive and time-sensitive network applications. This approach called for fortifying infrastructure with technologies such as clustering and expensive—often proprietary—computing hardware designed to be fault-tolerant. Further, this approach was increasingly cost prohibitive, complicated, and time consuming, as high-end Unix servers were expensive to scale and required engineering overhead. Even with all of its investments in computing infrastructure, this company found failure of server components inevitable and application failover schemes complex and risky.

Customer Growth Increases Challenges

In recent years, this customer has seen a dramatic rise in the rate and volume of data generated in the process of serving its subscribers. Traditional approaches employed by telecommunications companies for deploying and managing the OSS (operational support system) applications that process and act on this data made it expensive to support this growth. The higher volume of data-processing greatly increased the cost and complexity of rolling out new back-office systems, such as billing, network management, and fraud detection applications, and the mediation systems that integrate them with network elements. It was difficult, inefficient, and costly to continually build out a traditional infrastructure to support the increased load on these applications.

In short, the customer required an application environment that provided a more cost-effective and agile way to scale its OSS applications to serve a growing subscriber base demanding new services—without sacrificing application dependability. And it needed to meet these goals while simultaneously reducing the growing cost and complexity of its network computing infrastructure.

Search for Alternatives Comes Up Short

The firm’s network services group considered several potential alternatives to meeting these challenges, including clustering and grid computing. The group found the failover scenarios associated with clustering and related “high-availability” techniques to be too complex and operationally expensive, particularly for large applications.

“Grid” computing, as traditionally defined by scaling applications using existing, heterogeneous resources, presented the group with serious fault-tolerance, deployment and management challenges. Traditional grid computing software provides little or no consideration for fault-tolerance, and therefore was a poor solution for the company’s time-constrained applications that required reliable and timely execution of data-processing tasks. Additionally, traditional grid computing provides little or no consideration for manageability, requiring that each resource in the grid be managed separately rather than as a single, virtual system. While the group was attracted to grid’s commodity computing concept, the grid computing architecture was simply not a good fit for this type of workload.

Enter the Application Fabric

In 2004, the telecommunications company chose the Appistry Enterprise Application Fabric (Appistry EAF), as the software-based application environment met the company’s requirements for reducing cost and operational complexity, while increasing speed, efficiency, and flexibility.

The decision makers saw that Appistry EAF could dramatically reduce its hardware and application acquisition and maintenance costs, while simultaneously meeting its application scalability, dependability and manageability requirements. In a hypothetical analysis, detailed in Figure 1, the customer estimates that a large application running on Appistry EAF will save 94% in hardware and software acquisition costs and 41% in 3-year recurring costs. This analysis is based on only a subset of costs projected for one large OSS application. The customer believes that even after factoring in the development costs associated with migrating existing applications, their cost savings would still be considerable. As multiple applications are moved over time to the Appistry EAF environment, cost savings will further increase due to shared resources.

Figure 1. Projected Savings Calculation

Calculation For One Large-Scale OSS Application:	Acquisition Costs	3 yr. Recurring Costs
Traditional Approach:		
40 Optimized, Unix Servers (70k each)	\$2,800,000	
8% Annual Maintenance (\$224,000/yr)		\$672,000
Compared To:		
160 Commodity PCs @ \$1,000 ea. (assume 4PCs = 1HP 9000)	\$160,000	
Appistry Software License/Support @ \$125,000/year		\$375,000
Hardware Failures (5%/year replacement)		\$24,000
Application Fabric Savings	\$2,640,000	\$273,000
Percent Savings	94%	41%

In addition to significant cost savings, the network services department expects additional benefits:

- The application-level fault tolerance offered by Appistry EAF ensures that all application work is completed—hardware failure never impacts in-process tasks or transactions. This means the company doesn’t have to build fault-tolerance, failover, and recovery into software or purchase costly fault-tolerant servers.
- Adding new capacity is nearly effortless, as it is as simple as plugging a new computer into the application fabric. The addition of standards-based, low-end servers to the application fabric increases the application’s ability to scale, yet requires no architectural changes or changes to the application’s code base.
- Since capacity upgrades can happen in minutes, the company can support customer growth and add new services quickly, flexibly, and cost effectively.
- The ease with which capacity can be added means that designs can be created for expected initial volumes rather than potential peak volumes, lowering the risk and cost of deploying new applications.
- To developers and administrators, the application fabric can be viewed as one system. Upgrading applications or operating systems can be done in one step instead of machine-by-machine, with the updates propagating across the application fabric. This automation greatly reduces operational complexity.
- Appistry EAF simplifies hardware acquisition, as the team can simply choose the lowest cost provider of commodity computers, and lowers installation and configuration costs by automating new resource assimilation.
- Appistry EAF handles failover, recovery and maintenance, reducing management and administrative overhead.

Always cautious with the products it puts near its revenue-bearing network, this customer’ network services group put Appistry EAF through extensive testing in its advanced technology laboratory. This testing validated several areas of Appistry EAF performance, including:

- the linear scalability of the product up to 100 computers
- the continuous availability of the application fabric to accept new work
- the reliability of data-processing in spite of infrastructure failures
- the automated operations provided by Appistry EAF

This successful testing gave the customer the confidence to move forward with a pilot application built upon Appistry EAF. In general, the customer saw that Appistry EAF allows for scalability, dependability, and cost control , ultimately providing them with the agility to quickly, easily and more affordably meet evolving subscriber expectations and a growing subscriber base and services portfolio. Appistry EAF has the potential to fundamentally change the way that the customer builds, deploys, and manages any number of its strategic applications – including “real-time” analytics, high-performance computing, service-oriented, and additional data-intensive applications.

According to a company manager familiar with the project, “Everyone will want to do this as soon as they learn about it and understand the benefits and savings it offers.”

Looking Ahead

This customer’s first project is to migrate an application which monitors performance on parts of its new 3G wireless network. This application allows them to collect different metrics from switches and other network elements, and to modify these metrics as new services are added. The application is being developed in Java and will be deployed on low-cost Hewlett-Packard 1U rack mount servers.

This performance monitoring application is just one of many applications that fit the application fabric profile. Other systems such as billing and fraud detection are among the next potential Appistry EAF targets identified by the customer. The customer’s longer-term vision is to deploy network elements themselves as fabric-based applications, as the different organizations responsible for these systems gain experience with the fabric paradigm and the opportunities it presents.

About Appistry

Appistry is the leading provider of application fabric software. Pioneering the next-generation of grid computing, Appistry is enabling enterprises to quickly, easily and cost-effectively deploy and manage large-scale, time-critical applications, thus minimizing operational complexity and increasing business agility.

About Appistry Enterprise Application Fabric

Appistry Enterprise Application Fabric (Appistry EAF) is software that allows customers to quickly, easily and cost-effectively deploy large-scale, time-critical applications across a virtualized “grid” of commodity-grade computers. Appistry EAF creates a “scale without fail” environment that provides scalability, dependability and manageability for the applications that run within it, insulating them from the underlying hardware and its frailties. As a result, fabric-based applications are extremely agile, able to quickly adapt to the changing demands on the business.

Appistry EAF supports C, C++, Java and .NET programming languages such as C# and VB .NET. Microsoft Windows and Linux are supported operating systems.

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