SOLUTIONS FOR
SOFTWARE-POWERED
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NFV ORCHESTRATOR POWERED BY VMWARE

White paper
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Amdocs Network Cloud Service Orchestrator enables service agility and operational efficiency, powered by VMware.

For Amdocs, it's important that our customers enjoy a flexible, scalable, high performance experience that can rapidly adjust to changes in a real-time environment. In order to ensure this result, the Amdocs NFV Orchestrator – Network Cloud Service Orchestrator (NCSO) is powered by the VMware vSphere virtualization and cloud computing platform.

Customer value

Reliability and maturity
Combining Amdocs leadership in telco IT and VMware leadership in virtualization reduces NFV implementation risks.

Open multi-layer solution
NFVO & NFVI for any NFV application including utility services such as disaster recovery, high availability, capacity planning and analytics, as well as OSS and BSS for NFV.

Support and services
Comprehensive range of technical and business consultancy services.

Market needs

Service providers are faced with high customer expectations, accelerating capacity demands and increasing competition. They need to offer their customers competitive new services that can be quickly deployed and modified.

Monolithic solution silos from numerous vendors, whether they are appliance-based or vertically integrated software stacks, create barriers to new service introduction where a multi-vendor approach is desirable and drive up operational support costs – making service providers less effective in the competitive landscape. To counter these challenges, service providers are driving a shift to NFV and dynamic network clouds to rapidly introduce new services from a new vendor ecosystem, respond quickly to customer needs and improve operational efficiency.

Business considerations for NFV deployment:

- Increase service agility to reduce time to revenue and allow for service innovation
- Service scalability and elasticity in a unified environment of shared resources
- Dramatically reduce operational cost and break the 1:1 linkage between traffic growth and cost growth

Transforming an infrastructure away from a monolithic approach to a cloud-based delivery requires careful planning and is a significant undertaking. Implementing multiple software silos is likely to generate a higher operating cost than non-virtualized solutions due to the inefficient use of underlying hardware resources and the potential requirement for separate operating teams and management skills.
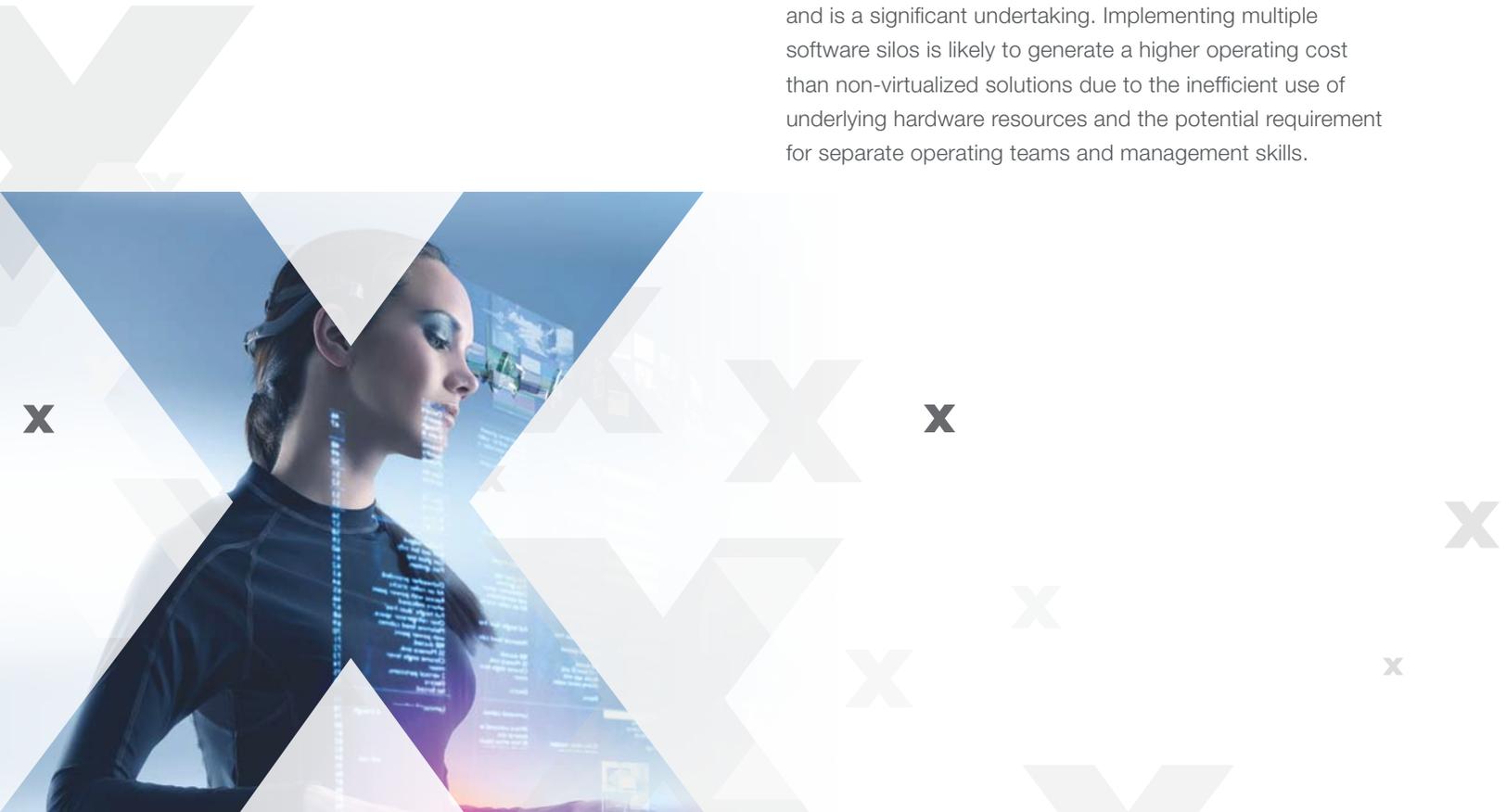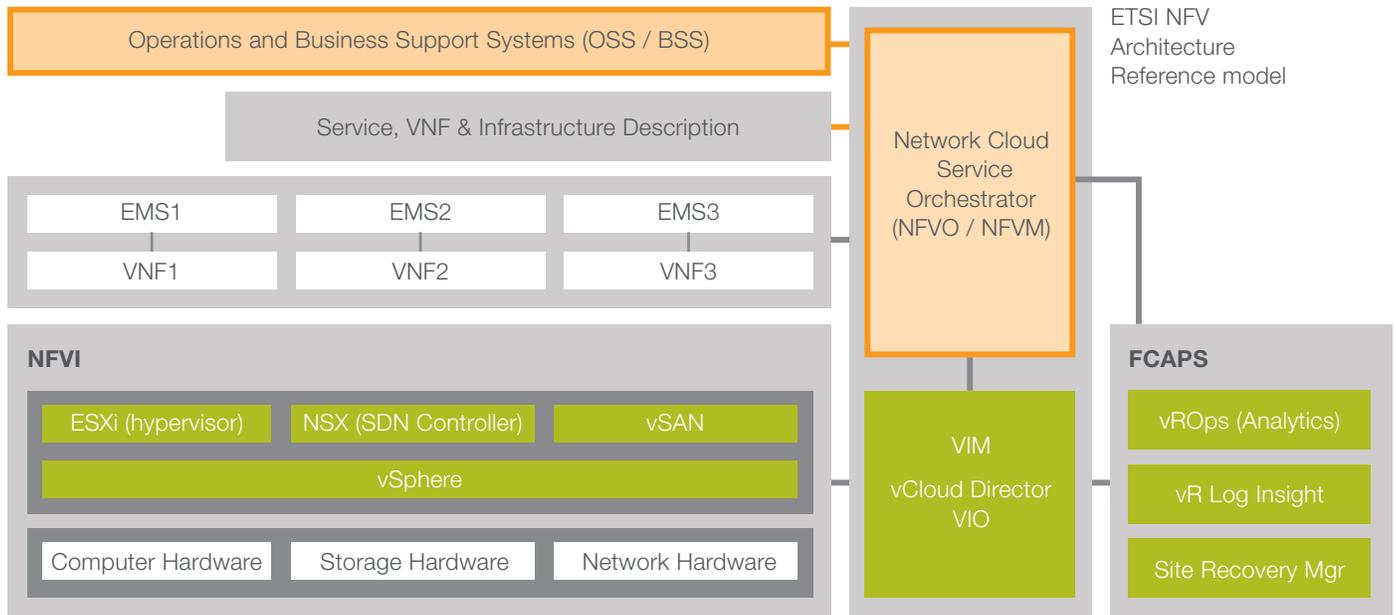
Amdocs and VMware solution

To ensure our customers can benefit from the latest advancements in the network cloud vision, Amdocs NCSO (NFV Orchestrator) is integrated with the VMware vCloud for NFV platform. Amdocs is a leader in telco-grade software solutions and services while VMware is a leader in virtualization and cloud management. The Amdocs and VMware collaboration provides a robust, integrated cloud based solution which is open and VNF vendor agnostic.

- Amdocs component
- VMware component

Operations and Business Support Systems (OSS / BSS)				ETSI NFV Architecture Reference model
Service, VNF & Infrastructure Description			Network Cloud Service Orchestrator (NFVO / NFVM)	
EMS1	EMS2	EMS3		
VNF1	VNF2	VNF3		

NFVI

ESXi (hypervisor)	NSX (SDN Controller)	vSAN
vSphere		
Computer Hardware	Storage Hardware	Network Hardware

VIM
vCloud Director
VIO

FCAPS

vROps (Analytics)

vR Log Insight

Site Recovery Mgr

With Amdocs' Network Cloud Service Orchestrator running on the VMware vCloud for NFV platform, computing, network and storage resources can be allocated rapidly and under policy control to achieve a reliable and highly efficient on-demand resource environment.
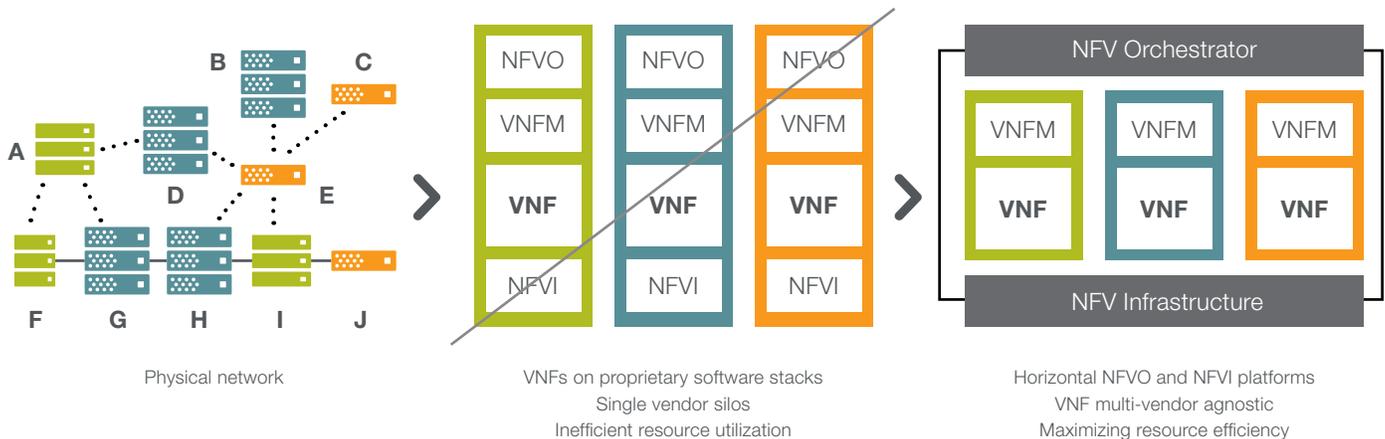
Partnership key value

In addition to the well-known benefits related TCO savings and increased ROI due to operational efficiencies, the following are unique benefits to Amdocs NCSO powered by VMware.

- Amdocs leadership and expertise as a telecom equipment provider and professional service provider combined with VMware product maturity through mass deployment, and proven market leadership results in a highest quality and performance solution
- Highly flexible virtual software solution with carrier-grade performance and low latency
- Quickly and efficiently scalable to support commercial service deployments
- Both Amdocs NCSO and VMware Cloud suite for NFV offer unmatched feature richness that is seamlessly integrated (e.g. vROps analytics and health check add on)

Horizontal platform delivers customer value

Unlike many vendor offerings, the combined Amdocs/VMware solution provides true multi-vendor support for NFV deployments. A vendor-agnostic approach both on the NFV Orchestrator (NFVO) and the NFV Infrastructure (NFVI) layers allows service providers freedom of choice for VNF and hardware vendor selection. By controlling the VNF selection, services providers not only maximize the ability to deliver differentiated services but are in a position to leverage an open market of application providers – reversing the traditional power base in the vendor – service provider relationship.

With support for native northbound/southbound interfaces and options for OpenStack interworking, service providers can benefit from the highest levels of technical capabilities with true multi-vendor support to promote open innovation.

Physical network

VNFs on proprietary software stacks
Single vendor silos
Inefficient resource utilization

Horizontal NFVO and NFVI platforms
VNF multi-vendor agnostic
Maximizing resource efficiency
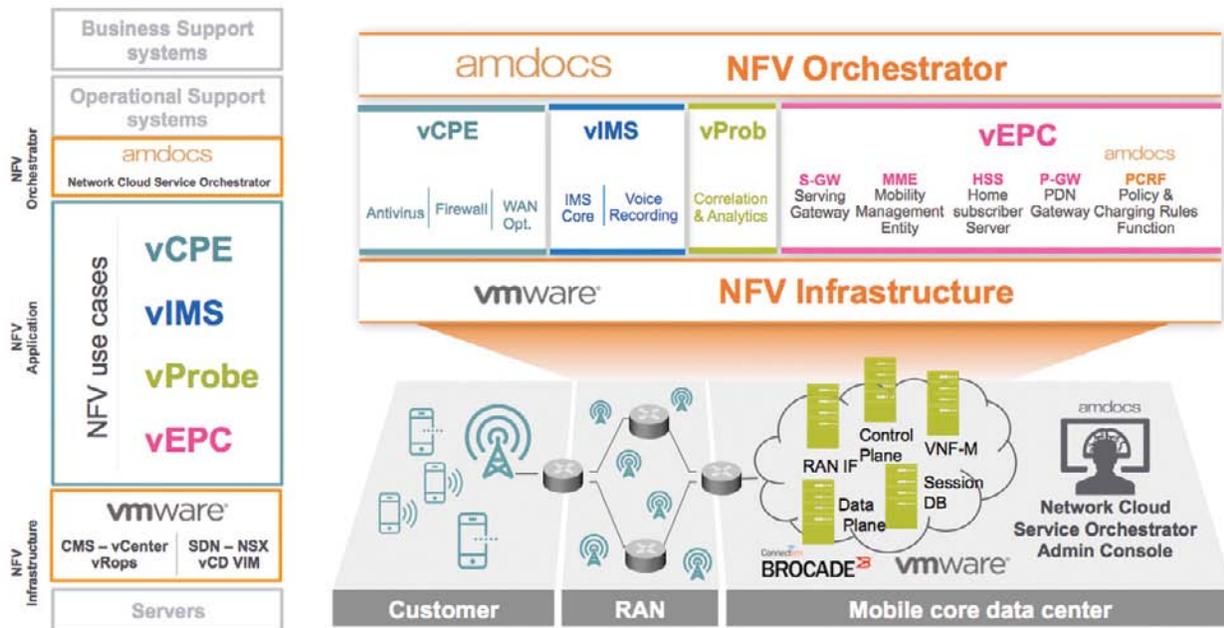
Beyond network function

By clearly defining the demarcation between the provider-owned platform and the VNF vendor, Amdocs and VMware virtualization solutions empower the carrier to support both network and IT application workloads on a unified cloud, delivering the ultimate benefit of a cloud-based infrastructure. The unified cloud strategy maximizes operations' productivity by minimizing the number of teams required to support the platform while allowing skilled resources to focus on the continual development of network and IT services – bringing the DevOps philosophy of application and service development to the telco cloud.

Solution highlights

Amdocs and VMware worked together to develop the virtual Evolved Packet Core (vEPC) solution as well as other solutions such as virtual IP Multimedia Subsystem (vIMS) and virtual Customer Premise Equipment (vCPE) to ensure the delivery of carrier-grade NFV Orchestrator (NFVO). The joint solution enables high performance and stability of the Amdocs Network Cloud Service Orchestrator (NCSO), including the performance of Amdocs high availability mechanisms under VMware management.

Amdocs NCSO is a purpose built NFVO for agile and lean network operations in a virtual and physical environment. It can support any VNF in any network and addresses the key operational issues delaying adoption of NFV. The VMware platform facilitates operational efficiencies including faster response times, immediate access to data center (DC) resources, extensive security and simplified management.

Main solution capabilities in the vEPC use case:

- **Service Creation – Virtual Network Function (VNF) / Virtual Machine (VM) instantiation**

  - Activation of services via Amdocs Multichannel Self-Service (MCSS)

  - Instantiation of VNFs and VMs via Amdocs NCSO

  - Virtual infrastructure management and operations via VMware vCenter & vROps

- **Scaling triggered by CPU overload**

  - Scale-out process by NCSO following CPU overload trap from vCenter

  - Resource monitoring and alerts

- **Capacity Planning, What-if Analytics**

  - vROps trends, most constrained resource

  - What-if scenario checks if additional VMs and additional host resources (physical server) can be added

- **Disaster Recovery**

  - Normal operation – health, risk and efficiency measures

  - Reservation of resources for disaster recovery (capacity planning)

  - VM Fault triggers disaster situation

  - NCSO triggers VM instantiation on remote data center

Key technical benefits

Using VMware virtualization enables Amdocs to provide better scaling within high-end blade servers for improved utilization and growth with fewer limitations. By using the VMware virtualization infrastructure, the underlying hardware resources were separated from the application. There was minimal overhead for the hypervisor as compared to bare metal. VMware virtualization improves NCSO performance with scaling that delivers the appropriate resources where they are needed most. In addition, it gives Amdocs customers the ability to scale out quickly. It provides for greater flexibility and elasticity to extend and increase resources such as on-demand memory, and to expand resource capabilities.

- **Elasticity:** By using VMware as a foundation technology for Amdocs NCSO, a cluster can be easily replicated or moved from one environment to another. This includes use cases, such as moving virtual machines from staging to production, from one cluster to another within a data center or deploying instances for scale out.

- **QoS and SLAs:** Amdocs NCSO powered by VMware platform allows service providers to enable a multi-tenant environment. Service providers can improve the Quality of Service (QoS) and offer service level agreements (SLAs) to tenants through instance isolation and resource pools. In a virtualized environment, service providers can run mixed workloads on the same physical cluster.

- **Data isolation and security:** An NCSO powered by VMware virtualized environment provides organizational boundaries to secure the data and isolate it in a multi-tenant environment. A cluster can be run in an isolated group of virtual machines, providing full data isolation and security, while sharing the same underlying physical hardware.

- **Analytics tools:** NSCO will be able to query and consume analytics from VMware vROps and provide value added capabilities by leveraging this information. The vROps is a forecast tool for capacity planning, capacity what-if analytics as well defining the VM grouping that maps to a VNF for alert reporting.

- **Convergent charging:** Enables service providers to run the Amdocs Convergent Charging solution in a centrally-managed, virtualized environment. Amdocs Convergent Charging is Amdocs' flagship product for delivering scalable, high performance, real-time charging in a single and integrated carrier-grade solution. It lays the foundation for an end-to-end, real-time event processing architecture for all types of charging, including prepaid, postpaid, online, and offline, with different lines of business, in a single convergent system.

  As a proven and tested virtualization environment, the Amdocs and VMware virtualization solution minimizes the risk associated with moving from proprietary appliance-based architectures to pools of high-volume compute, storage and network resources allowing service providers to focus on building high value and differentiated end-customer services.

Support and services

With a depth of experience helping customers transform from monolithic IT structures to cloud-based services, Amdocs and VMware have also developed a comprehensive range of technical and business consultancy and advisory services that help manage the organizational and operational transformations associated with the introduction of cloud based architectures. These services also help organizations restructure functional areas such as service operation and support.

Summary

For service providers looking to realize the benefits of Network Functions Virtualization today, Amdocs Network Cloud Service Orchestrator offers service agility and operational efficiency utilizing dynamic allocation of resources using VMware elastic cloud foundation topology.

As a foundation technology, Amdocs intends to use VMware virtualization to enable next generation solutions and network function virtualization.

By delivering full-featured NFV Orchestrator and virtualization for NFVI, Amdocs and VMware ensure a true horizontal NFV layers boundary that allows service providers a freedom of choice for VNF and hardware vendor selection, maximizing resources efficiency while avoiding VNFs proprietary software stacks.

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About VMware

VMware is a global leader in cloud infrastructure and business mobility. Built on VMware's industry-leading virtualization technology, our solutions deliver a brave new model of IT that is fluid, instant and more secure. Customers can innovate faster by rapidly developing, automatically delivering and more safely consuming any application. With 2014 revenues of $6 billion, VMware has more than 500,000 customers and 75,000 partners. The company is headquartered in Silicon Valley with offices throughout.

See more at: www.vmware.com
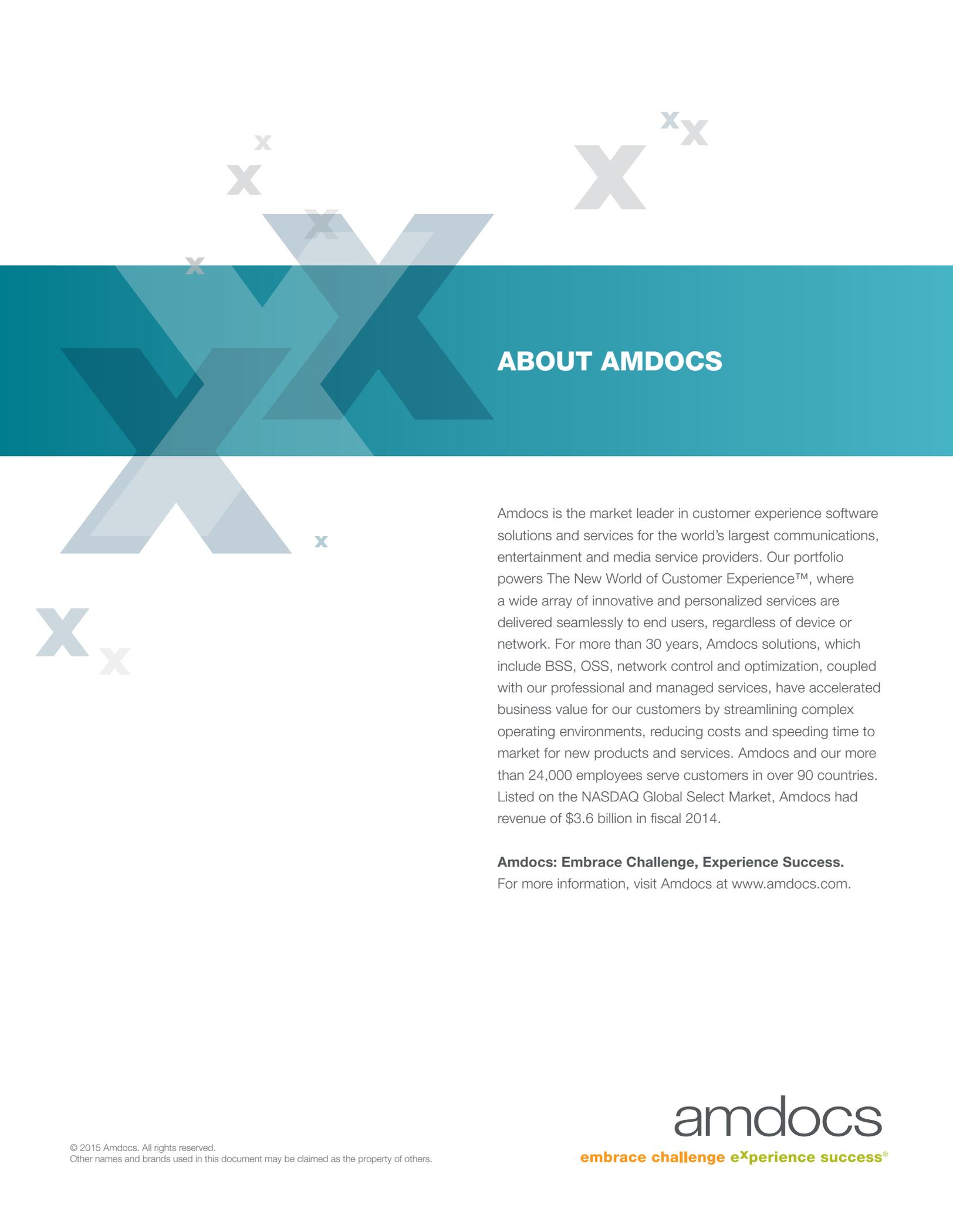
ABOUT AMDOCS

Amdocs is the market leader in customer experience software solutions and services for the world's largest communications, entertainment and media service providers. Our portfolio powers The New World of Customer Experience™, where a wide array of innovative and personalized services are delivered seamlessly to end users, regardless of device or network. For more than 30 years, Amdocs solutions, which include BSS, OSS, network control and optimization, coupled with our professional and managed services, have accelerated business value for our customers by streamlining complex operating environments, reducing costs and speeding time to market for new products and services. Amdocs and our more than 24,000 employees serve customers in over 90 countries. Listed on the NASDAQ Global Select Market, Amdocs had revenue of $3.6 billion in fiscal 2014.

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