

云计算与虚拟化技术

第3讲：VMware vSphere

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讨论提纲

- VMware & VMware Produce
- VMware vSphere 6.7
 - vSphere Suite
 - VMware ESXi
 - VMware vCenter Server
 - vSphere Update Server
- Features in VMware vSphere
- Licensing
 - VMware vSphere Product Editions
 - Trial and Free & Hands-on Labs



1.VMware

1.1VMware, Inc.

- VMware总部位于美国加州帕洛阿尔托，是全球云基础架构和移动商务解决方案厂商，提供基于VMware的解决方案，企业通过数据中心改造和公有云整合业务，借助企业安全转型维系客户信任，实现任意云端和设备上运行、管理、连接及保护任意应用。



我们的业务范围

VMware 可帮助企业简化流程，高效转型为数字化企业，以便为客户提供更好的体验并使员工能够出色地完成工作。我们的软件横跨以下领域：计算、云计算、网络连接和安全性，以及数字化工作空间。

加快您的云计算之旅

我们让客户能够在任意云环境运行、管理、连接和保护所有应用，因此，他们能够降低成本、提高效率以及加快创新速度。

[了解更多信息 >](#)

网络和安全转型

我们为任意位置的应用和数据提供安全且全面覆盖的端到端连接。

[了解更多信息 >](#)

拥抱数字化工作空间

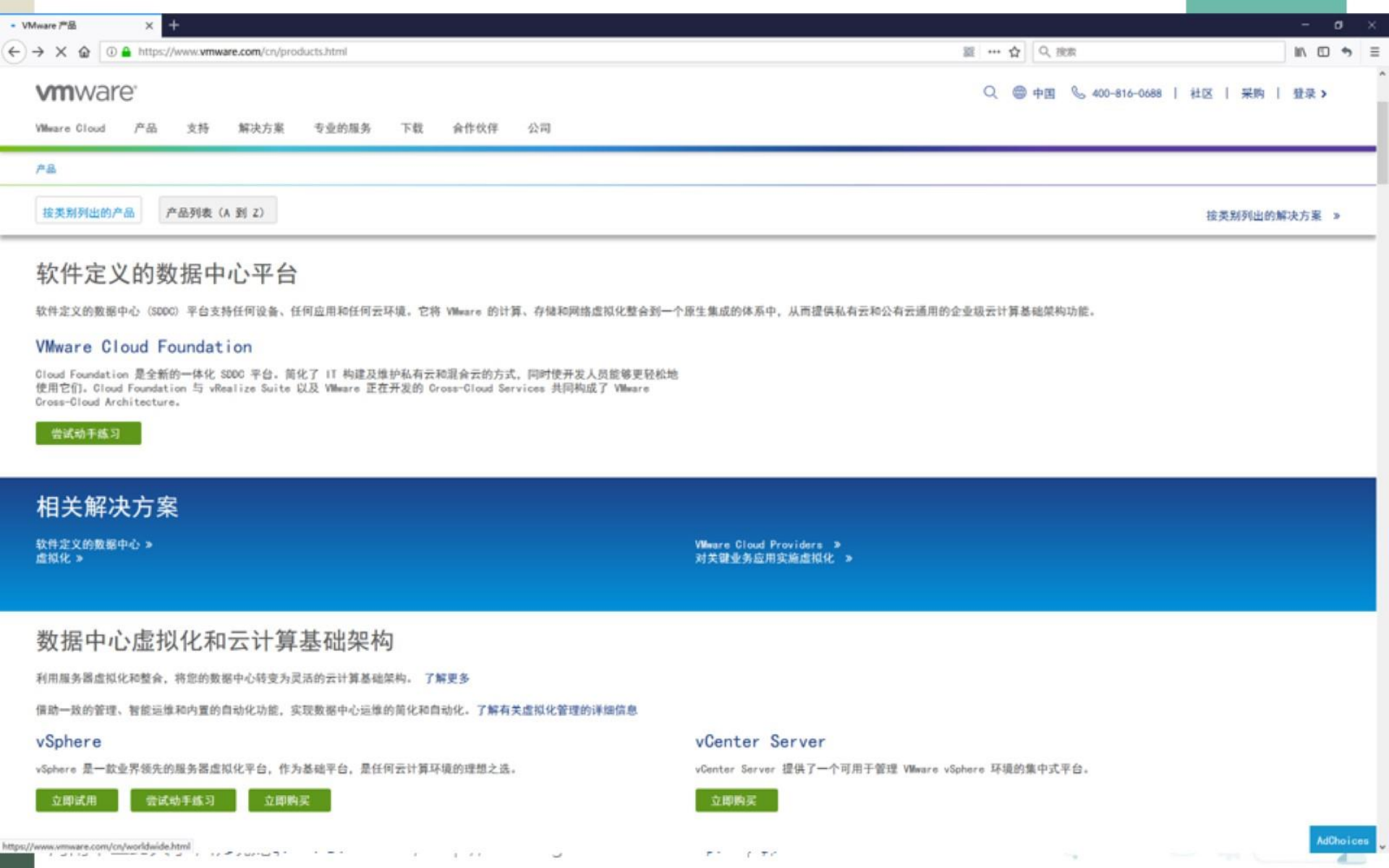
我们可为员工所需的所有应用提供端到端管理和安全支持，同时助力员工随时随地根据需要展开工作。

[了解更多信息 >](#)

[为何选择 VMware? >](#)

<https://www.vmware.com/cn/timeline.html>





软件定义的数据中心平台

软件定义的数据中心 (SDDC) 平台支持任何设备、任何应用和任何云环境。它将 VMware 的计算、存储和网络虚拟化整合到一个原生集成的体系中，从而提供私有云和公有云通用的企业级云计算基础架构功能。

VMware Cloud Foundation

Cloud Foundation 是全新的一体化 SDDC 平台。简化了 IT 构建及维护私有云和混合云的方式，同时使开发人员能够更轻松地使用它们。Cloud Foundation 与 vRealize Suite 以及 VMware 正在开发的 Cross-Cloud Services 共同构成了 VMware Cross-Cloud Architecture。

[尝试动手练习](#)

相关解决方案

[软件定义的数据中心 虚拟化](#)

[VMware Cloud Providers 对关键业务应用实施虚拟化](#)

数据中心虚拟化和云计算基础架构

利用服务器虚拟化和整合，将您的数据中心转变为灵活的云计算基础架构。 [了解更多](#)

借助一致的管理、智能运维和内置的自动化功能，实现数据中心运维的简化和自动化。 [了解有关虚拟化管理的详细信息](#)

vSphere

vSphere 是一款业界领先的服务器虚拟化平台，作为基础平台，是任何云计算环境的理想之选。

[立即试用](#)

[尝试动手练习](#)

[立即购买](#)

vCenter Server

vCenter Server 提供了一个可用于管理 VMware vSphere 环境的集中式平台。

[立即购买](#)

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[立即购买](#)

vCloud Availability for vCloud Director

借助 vCloud Availability for vCloud Director, vCloud Air Network 服务提供商能够提供简单、经济高效的云端灾难恢复服务。

vCloud Director

vCloud Director 适用于想要打造本质上可以识别混合云的独特云计算服务的服务提供商。

Cloud Provider Pod

VMware Cloud Provider Pod 是一款经测试可以面向云服务提供商提供的自动化 SDDC 产品，它可帮助用户轻松地对私有云和公有云进行一键式部署和配置。

相关解决方案

[软件定义的数据中心 >](#)
[虚拟化 >](#)

[VMware Cloud Providers >](#)
[对关键业务应用实施虚拟化 >](#)

网络连接和安全性

网络连接和安全性

借助策略驱动型方法，为虚拟机提供网络和安全服务；利用 NSX，将物理网络用作容量传输池。

NSX 数据中心

NSX 数据中心是专为软件定义的数据中心 (SDDC) 构建的网络虚拟化平台。

[尝试动手练习](#)

NSX Cloud

VMware NSX Cloud 可为公有云中原生运行的应用提供具有运维可扩展性的一致微分段安全保护。

[> 尝试动手练习](#)

NSX SD-WAN by VeloCloud

NSX SD-WAN by VeloCloud 支持简单、敏捷、安全的分支机构广域网。

NSX Hybrid Connect

VMware NSX Hybrid Connect 可实现跨任意 vSphere 环境的应用移动性和基础架构混合性。

vRealize Network Insight

vRealize Network Insight 可提供智能运维管理，进而实现软件定义的网络连接和安全保护。

[尝试动手练习](#)

AppDefense

VMware AppDefense 是新推出的数据中心端点解决方案，旨在为您的应用和数据所在的虚拟化层嵌入威胁检测和响应功能。

[尝试动手练习](#)

相关解决方案

[软件定义的数据中心 >](#)
[虚拟化 >](#)

[战略 IT 优先事项 >](#)
[SD-WAN >](#)

存储与可用性

软件定义的存储可将虚拟化的优势延展到存储领域。它可以跨传统和超融合存储领域提供应用级存储服务并支持基于策略的通用管理体系结构。[了解更多](#)

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vSAN

vSAN 是一个极其简单的企业级共享存储解决方案，适用于针对现今的全闪存性能进行优化的超融合基础架构。

尝试动手练习

Site Recovery Manager

Site Recovery Manager 是一款灾难恢复自动化软件，可提供基于策略的管理、无中断测试和自动化编排。

立即试用

立即购买

相关解决方案

超融合基础架构 >
业务连续性和灾难恢复 >

虚拟化管理 >
云计算管理平台 >

超融合基础架构

我们以 hypervisor 为中心的体系结构融合了软硬件产品体系，可通过单个行业标准 x86 服务器硬件平台交付全面融合的基础架构。了解更多

vSAN ReadyNode

vSAN ReadyNode 是超融合合作伙伴硬件解决方案。此类解决方案已针对运行 vSAN 进行了预先配置。它们由服务器 OEM 进行销售。

尝试动手练习

VMware HCI Software

VMware HCI Software 由私有集成的软件体系中的 vSphere、vSAN 和 vCenter Server 组成。

尝试动手练习

Dell EMC VxRail

Dell EMC VxRail 设备由 VMware vSAN 提供技术支持，是首个也是唯一一个与 VMware Software-Defined Data Center 全面集成的设备。

云计算管理平台

有效管理在混合云环境中交付服务的整个生命周期。了解更多

vRealize Suite

vRealize Suite 包含 vRealize Automation、vRealize Operations、vRealize Log Insight 和 vRealize Business for Cloud。

[尝试动手练习](#)

vRealize Suite Lifecycle Manager

vRealize Suite Lifecycle Manager 可为 vRealize Suite 产品提供全面的软件生命周期管理功能。通过自动对套件执行部署、配置和升级操作，它可以帮助客户缩短价值实现时间。

vCloud Suite

vCloud Suite 包含 VMware 业界领先的 vSphere Hypervisor 和 VMware vRealize Suite 多供应商混合云计算管理平台。

[尝试动手练习](#)

vRealize Operations

借助 vRealize Operations，您可以实现 IT 运维管理自动化、管理性能并获得跨物理和虚拟基础架构的可见性。

[立即试用](#)

[尝试动手练习](#)

vRealize Automation

vRealize Automation 可自动交付个性化基础架构、应用和自定义 IT 服务。

VMware Integrated OpenStack

借助 Integrated OpenStack，您可以快速而轻松地基于 VMware 基础架构部署和管理生产级 OpenStack。

[免费下载](#)

[尝试动手练习](#)

vRealize Log Insight

vRealize Log Insight 提供了高度可扩展的异构日志管理功能，它具有多个可在其中执行操作的直观控制面板、完善的分析功能和广泛的第三方可扩展性。

[立即试用](#)

[尝试动手练习](#)

vRealize Code Stream

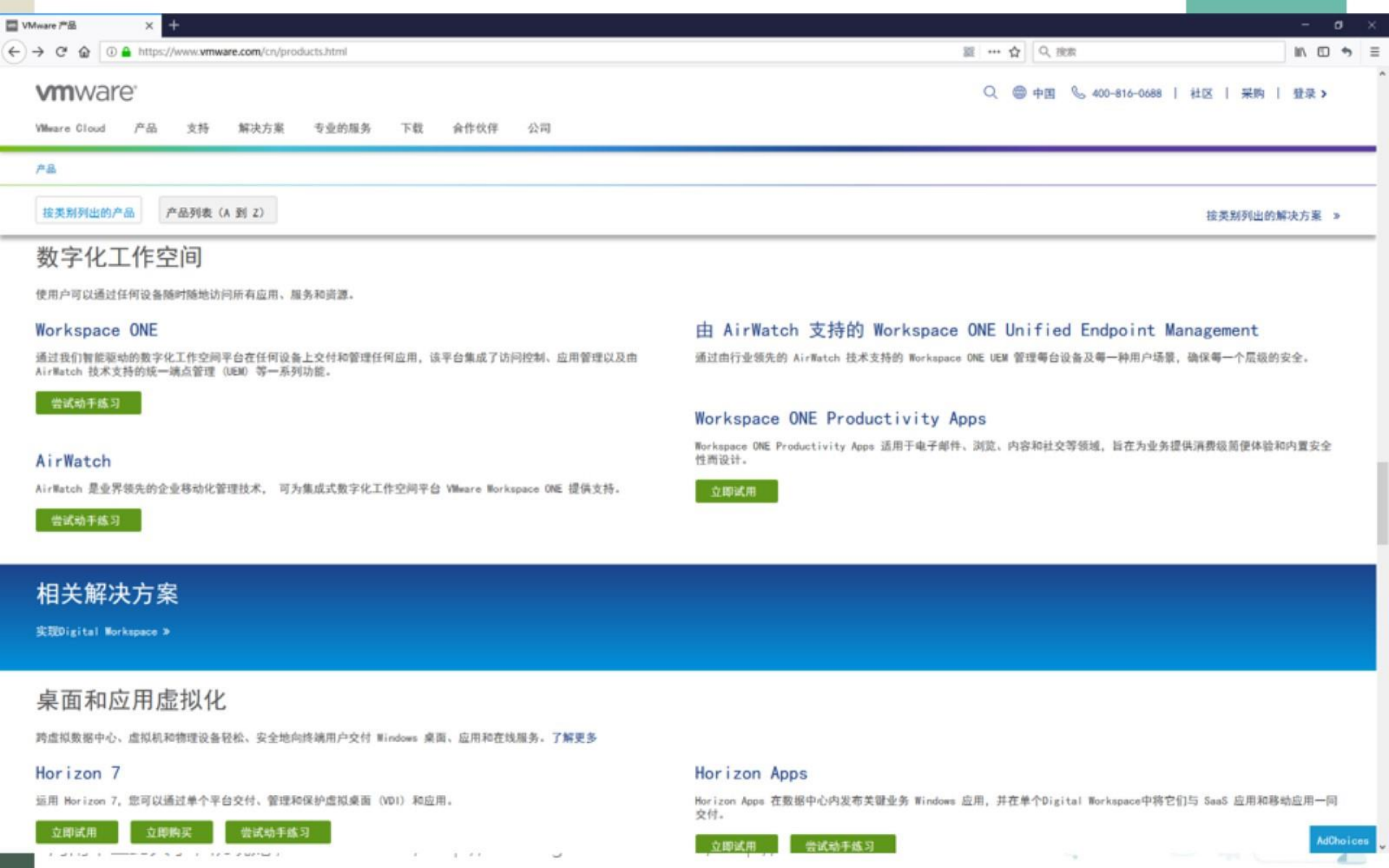
vRealize Code Stream 提供了发布自动化和持续交付功能，使您能够频繁且可靠地发布软件，同时降低运维风险。

[立即试用](#)

vRealize Orchestrator

借助 vRealize Orchestrator，您可以在开发复杂的自动化任务之后，从 VMware vSphere Client、VMware vCloud Suite 的各种组件或借助其他触发机制来访问和启动工作流。

[尝试动手练习](#)



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产品

按类别列出的产品

产品列表 (A 到 Z)

按类别列出的解决方案 >

数字化工作空间

用户可以通过任何设备随时随地访问所有应用、服务和资源。

Workspace ONE

通过我们智能驱动的数字工作空间平台在任何设备上交付和管理任何应用，该平台集成了访问控制、应用管理以及由 AirWatch 技术支持的统一端点管理 (UEM) 等一系列功能。

尝试动手练习

AirWatch

AirWatch 是企业领先的企业移动化管理技术，可为集成式数字工作空间平台 VMware Workspace ONE 提供支持。

尝试动手练习

由 AirWatch 支持的 Workspace ONE Unified Endpoint Management

通过由行业领先的 AirWatch 技术支持的 Workspace ONE UEM 管理每台设备及每一种用户场景，确保每一个层级的安全。

Workspace ONE Productivity Apps

Workspace ONE Productivity Apps 适用于电子邮件、浏览、内容和社交等领域，旨在为业务提供消费级简便体验和内置安全性而设计。

立即试用

相关解决方案

实现 Digital Workspace >

桌面和应用虚拟化

跨虚拟数据中心、虚拟机和物理设备轻松、安全地向终端用户交付 Windows 桌面、应用和在线服务。了解更多

Horizon 7

运用 Horizon 7，您可以通过单个平台交付、管理和保护虚拟桌面 (VDI) 和应用。

立即试用

立即购买

尝试动手练习

Horizon Apps

Horizon Apps 在数据中心内发布关键业务 Windows 应用，并在单个 Digital Workspace 中将它们与 SaaS 应用和移动应用一同交付。

立即试用

尝试动手练习

AdChoices

桌面和应用虚拟化

跨虚拟数据中心、虚拟机和物理设备轻松、安全地向终端用户交付 Windows 桌面、应用和在线服务。了解更多信息。

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立即试用

立即购买

尝试动手练习

Horizon Cloud

利用 Horizon Cloud, 您可以从单个云计算控制平面随时随地向任何设备交付云托管或本地部署的虚拟桌面和应用。

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立即试用

尝试动手练习

相关解决方案

实现 Digital Workspace >

桌面和应用虚拟化管理

利用 VMware 桌面和应用虚拟化管理工具可精简管理、整合控制、实现交付自动化并保护用户计算资源。VMware 桌面和应用管理解决方案可用于支持 VMware 和 Citrix 虚拟桌面以及已发布的应用。

App Volumes

App Volumes 是一组集成式应用和用户管理解决方案, 适用于 Horizon, Citrix XenApp 和 XenDesktop 以及 RDSH 虚拟环境。

立即试用

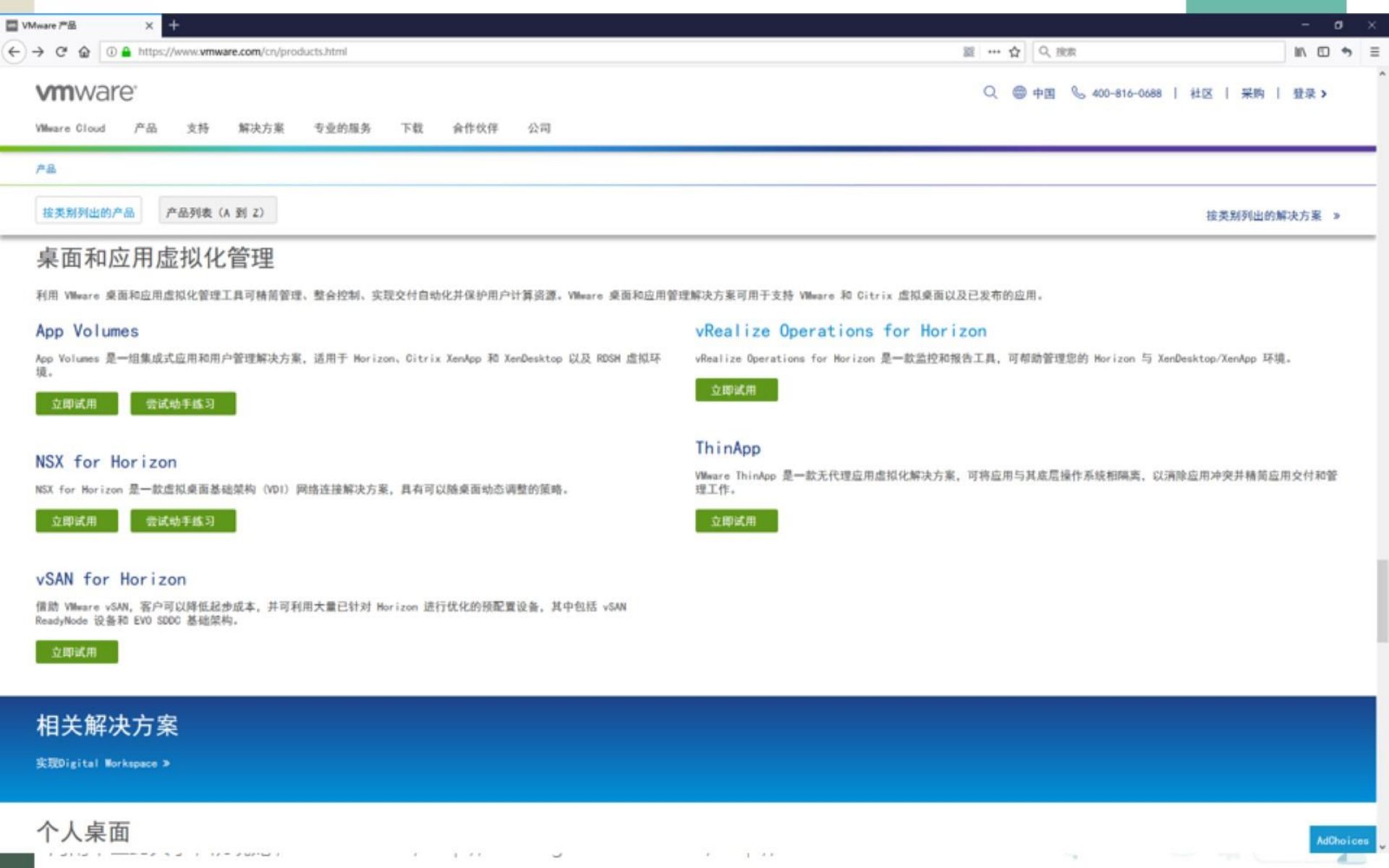
尝试动手练习

vRealize Operations for Horizon

vRealize Operations for Horizon 是一款监控和报告工具, 可帮助管理您的 Horizon 与 XenDesktop/XenApp 环境。

立即试用

AdChoices

[按类别列出的产品](#)[产品列表 \(A 到 Z\)](#)[按类别列出的解决方案 >](#)

桌面和应用虚拟化管理

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[立即试用](#)[尝试动手练习](#)

NSX for Horizon

NSX for Horizon 是一款虚拟桌面基础架构 (VDI) 网络连接解决方案，具有可以随桌面动态调整的策略。

[立即试用](#)[尝试动手练习](#)

vSAN for Horizon

借助 VMware vSAN，客户可以降低起步成本，并可利用大量已针对 Horizon 进行优化的预配置设备，其中包括 vSAN ReadyNode 设备和 EVO SDDC 基础架构。

[立即试用](#)

vRealize Operations for Horizon

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[立即试用](#)

ThinApp

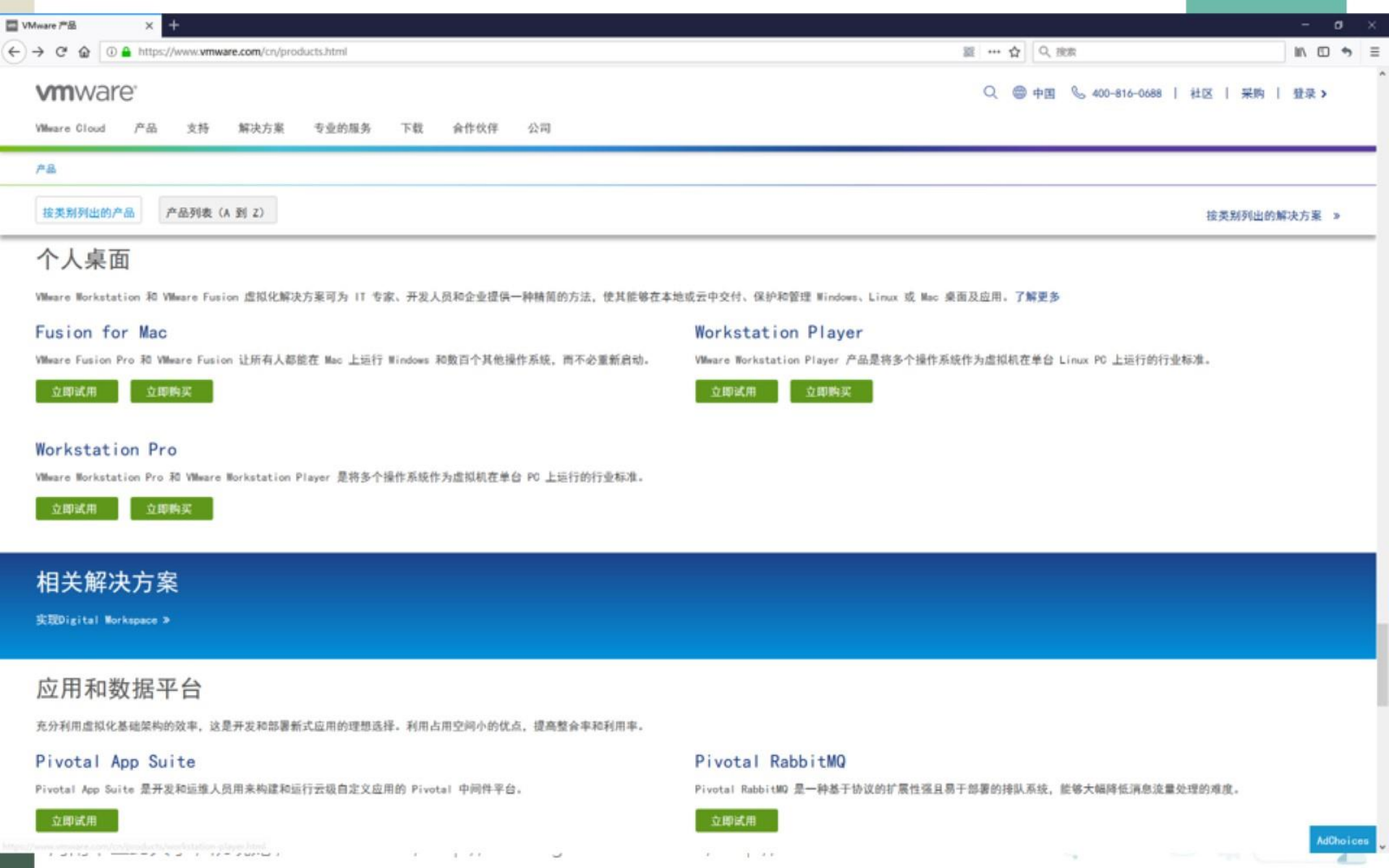
VMware ThinApp 是一款无代理应用虚拟化解决方案，可将应用与其底层操作系统相隔离，以消除应用冲突并精简应用交付和管理工作。

[立即试用](#)

相关解决方案

[实现Digital Workspace >](#)

个人桌面



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产品

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个人桌面

VMware Workstation 和 VMware Fusion 虚拟化解决方案可为 IT 专家、开发人员和企业提供一种精简的方法，使其能够在本地或云中交付、保护和管理 Windows、Linux 或 Mac 桌面及应用。了解更多

Fusion for Mac

VMware Fusion Pro 和 VMware Fusion 让所有人都能在 Mac 上运行 Windows 和数百个其他操作系统，而不必重新启动。

立即试用

立即购买

Workstation Player

VMware Workstation Player 产品是将多个操作系统作为虚拟机在单台 Linux PC 上运行的行业标准。

立即试用

立即购买

Workstation Pro

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立即试用

立即购买

相关解决方案

实现 Digital Workspace >

应用和数据平台

充分利用虚拟化基础架构的效率，这是开发和部署新式应用的理想选择。利用占用空间小的优点，提高整合率和利用率。

Pivotal App Suite

Pivotal App Suite 是开发和运维人员用来构建和运行云级自定义应用的 Pivotal 中间件平台。

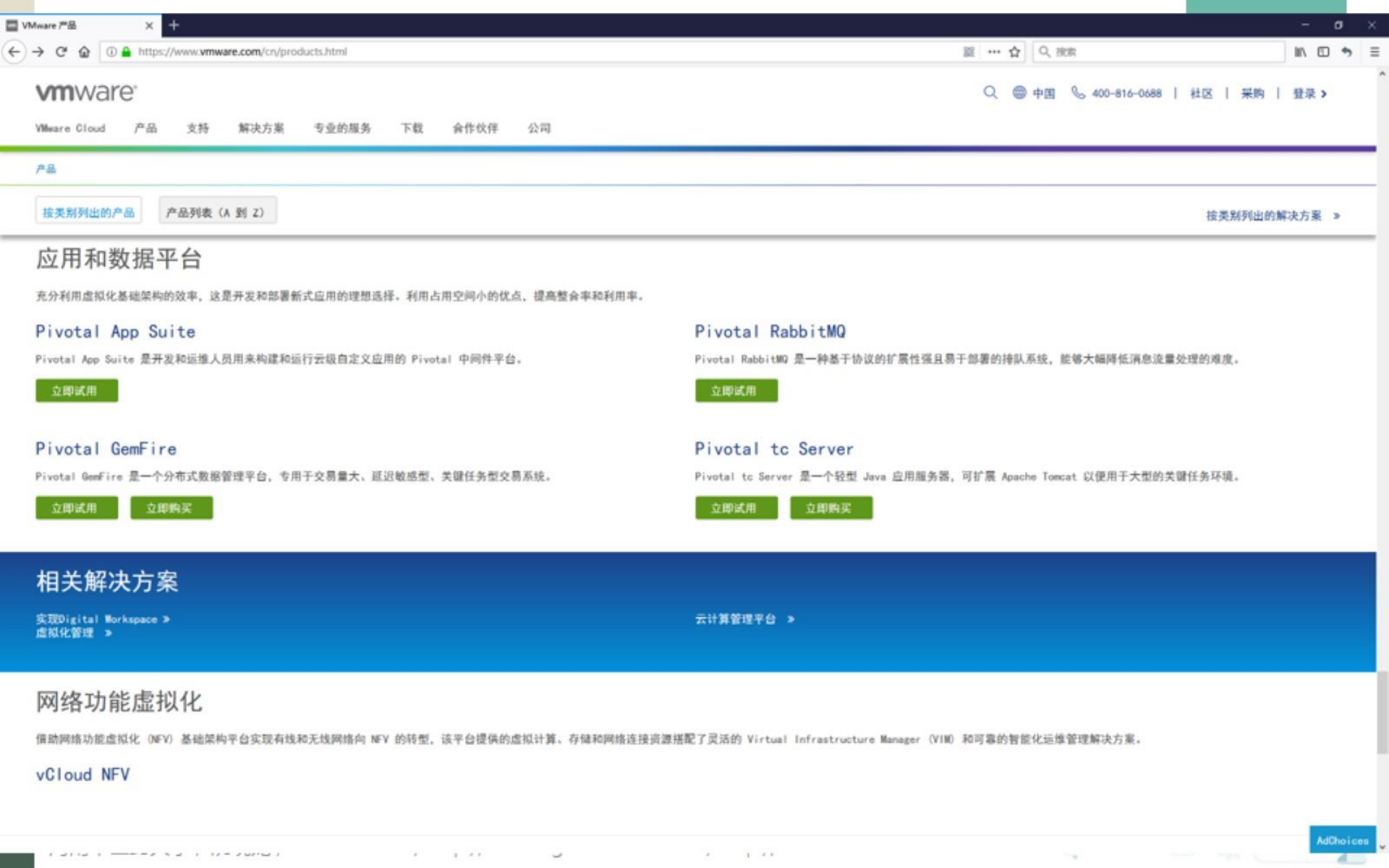
立即试用

Pivotal RabbitMQ

Pivotal RabbitMQ 是一种基于协议的扩展性强且易于部署的排队系统，能够大幅降低消息流量处理的难度。

立即试用

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立即试用

Pivotal GemFire

Pivotal GemFire 是一个分布式数据管理平台，专用于交易量高、延迟敏感型、关键任务型交易系统。

立即试用

立即购买

Pivotal tc Server

Pivotal tc Server 是一个轻型 Java 应用服务器，可扩展 Apache Tomcat 以用于大型的关健任务环境。

立即试用

立即购买

相关解决方案

实现 Digital Workspace >
虚拟化管理 >

云计算管理平台 >

网络功能虚拟化

借助网络功能虚拟化 (NFV) 基础架构平台实现有线和无线网络向 NFV 的转型。该平台提供的虚拟计算、存储和网络连接资源搭配了灵活的 Virtual Infrastructure Manager (VIM) 和可靠的智能化运维管理解决方案。

vCloud NFV

AdChoices

免费产品

借助业界最出色的 hypervisor 虚拟化服务器，实现资金节约。在 PC 上的隔离虚拟机中安全试用新软件。同时还可快速将物理机转换为虚拟机 - 所有这一切都是完全免费的。

vSphere Hypervisor

vSphere Hypervisor 是一款免费的裸机 hypervisor，能够虚拟化服务器，以便将应用整合到更少的硬件上。

免费下载

免费下载

vCloud Usage Meter

免费下载

vCenter Converter

vCenter Converter 可将基于 Windows 和 Linux 的物理计算机以及第三方映像格式转换为 VMware 虚拟机。

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面向集团和行业的解决方案

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2.VMware vSphere 6.7

2.1vSphere Suite

- VMware vSphere 6.7 builds on previous generations of VMware's enterprise-grade virtualization products that have been leading the industry since 2001.
- vSphere 6.7 gives greater control, performance, and extensibility with a focus on enabling workload security and mobility. With dynamic resource controls, high availability, and fault-tolerance features along with distributed resource management and operational tools included as part of the suite, IT administrators have all the tools they need to run an enterprise environment ranging from a few servers to tens of thousands of servers distributed among multiple clouds.



2.VMware vSphere 6.7

2.1vSphere Suite

- VMware vSphere is a comprehensive collection of products and features that together provide a full array of enterprise virtualization functionality. The vSphere product suite includes the following products and main features:
 - VMware ESXi
 - VMware vCenter Server
 - vSphere Update Manager (VUM)
 - vSphere Virtual Symmetric Multi-Processing
 - vSphere vMotion and Storage vMotion
 - vSphere Distributed Resource Scheduler (DRS)
 - vSphere Storage DRS (SDRS)



2.VMware vSphere 6.7

2.1vSphere Suite

- VMware vSphere is a comprehensive collection of products and features that together provide a full array of enterprise virtualization functionality. The vSphere product suite includes the following products and main features:
 - Storage I/O Control (SIOC) and Network I/O Control (NIOC)
 - Storage-Based Policy Management (SBPM)
 - vSphere High Availability (HA)
 - vSphere Fault Tolerance (FT)
 - vSphere Storage APIs
 - VMware Virtual SAN (vSAN)
 - vSphere Replication
 - vSphere Content Library



VMWARE vSPHERE

高效且安全的混合云平台

概览

VMware vSphere® 是业界领先的虚拟化和云计算平台。该平台高效、安全且适用于混合云。它通过提供简单高效的规模化管理、全面的内置安全性、通用的应用平台以及顺畅的混合云体验，加快了数字化转型进程。因此，用户可以获得一个具有增强的应用性能，并可作为任何云环境基础的可扩展的安全基础架构。

主要优势

- 在任何云上运行任何应用
- 大幅提升应用性能
- 顺畅的混合云体验
- 高效的规模化管理
- 全面的内置安全性
- 通过 vSphere 持久内存将应用性能提升 6 倍
- 就 vCenter 的每秒操作数而言，vSphere 6.7 的速度比 vSphere 6.5 快两倍
- vSphere 6.7 执行与 DRS 相关的操作时速度比 vSphere 6.5 快 3 倍
- vCenter Server Appliance 6.7 的内存使用量减少 3 倍

关于 vSphere

VMware vSphere 是业界领先的虚拟化和云计算平台，它高效、安全且适用于您的混合云。它为业务敏捷性奠定了强大、灵活且安全的基础，从而可加快您向混合云的转型。助您在数字化经济中取得成功。vSphere 通过简单高效的规模化管理来同时支持现有的和新一代工作负载，将客户体验提升到一个全新的水平；它具备全面的内置安全性，可通过一个操作简单的策略驱动模型实现；它是一个通用应用平台，支持新型工作负载并利用硬件创新来增强性能；而且它提供顺畅的混合云体验，允许在本地和公有云之间轻松地查看、迁移和管理工作负载。现在，您可以跨您的整个混合云在一个通用操作环境中运行、管理、连接和保护您的应用。

VMware vSphere Platinum 是新的 vSphere 版本，兼具核心 VMware vSphere 和 VMware AppDefense™ 的功能，能够保护应用、基础架构、数据和访问。它提供了一种简单而强大的方式来维护现有工作流，同时支持 vSphere 管理员、安全团队、合规团队和应用团队之间的协作；在发生安全事件时，响应和修复流程的中断减少。vSphere Platinum 提供了专门构建的解决方案，通过利用 hypervisor、机器学习的强大功能以操作简单的内置方式来保护基础架构与应用，对性能的影响极小。

6.7 版中的新功能特性

- **规模增强** - 新的最高配置甚至可以支持最大的应用环境
- **VMware vCenter Server® Appliance™ 链接模式** - 利用嵌入的 Platform Services Controller 支持 vCenter Server Appliance 的链接模式，可链接多达 15 个 vCenter，而不需要负载均衡器
- **VMware vCenter Server® Converge Tool** - 可轻松将拓扑从配备外部 PSC 的 vCenter Server Appliance 迁移至配备嵌入式 PSC 的 vCenter Server Appliance
- **VMware vCenter Server® Appliance Back Up Scheduler** - 安排 vCenter Server Appliance 备份；提供完整的 REST API 以用于备份和恢复
- **单次重新引导** - 通过跳过主机重置大大缩短升级时间
- **vSphere 快速启动** - 可在不重新启动物理主机的情况下重新启动 ESXi™ hypervisor，跳过耗时的硬件初始化环节，从而缩短修补和升级时间
- **支持 4K 原生存储** - 大规模增强了性能，可以更好地服务于大型基础架构

2.1vSphere Suite

- **功能齐全、基于 HTML 5 的 vSphere Client** - 增添了功能，可轻松管理连接的组件
- **规模化安全性 - 策略驱动的安全性**，可简化保护基础架构的操作
- **支持可信平台模块 (TPM) 2.0 和虚拟 TPM** - 增强了安全性以保护 hypervisor 和客户操作系统免受未经授权的访问
- **跨 vCenter 加密 vMotion** - 可跨不同的 vCenter 实例和版本执行加密 vMotion
- **支持 Microsoft 基于虚拟化的安全性 (VBS)** - 在 vSphere 上以较高性能安全地运行 Windows 虚拟机
- **VMware AppDefense** - 保护在 vSphere 上运行的应用的完整性，以提供更好的可见性、应用控制和威胁响应
- **NVIDIA GRID vGPU 增强** - 支持针对 vGPU 的暂停和恢复功能，以改善主机生命周期管理。支持 VMware vMotion® 和快照功能，因此可以在维护时段将 vGPU 支持的虚拟机迁移至另一台主机，以减少对终端用户的中断
- **vSphere 持久内存** - 支持持久内存，将其公开为块存储或内存，以增强新应用及现有应用的性能
- **VMware vCenter Server® Appliance 混合链接模式** - 为跨私有云和公有云 (VMware Cloud on AWS) 的混合环境提供一致的可见性和管理功能，私有云和公有云中的 vSphere 可以是不同版本
- **虚拟机级 Enhanced vMotion Compatibility (EVC)** - 在本地部署环境和云之间无缝迁移工作负载
- **跨不同 vCenter 版本调配** - 简化跨具有不同 vCenter 版本的混合云环境的调配操作





- 扩展阅读:
 - [pdf:vmw-vsphere-datasheet](#)
 - [pdf:vmware-whats-new-in-vsphere-whitepaper](#)

2.VMware vSphere 6.7

2.2VMware ESXi

- The core of the vSphere product suite is the hypervisor, which is the virtualization layer that serves as the foundation for the rest of the product line. In vSphere 5 and later, including vSphere 6.7, the hypervisor comes solely in the form of VMware ESXi.
- Longtime users of VMware vSphere will remember this as a shift in the way VMware provides the hypervisor. Prior to vSphere 5, the hypervisor was available in two forms: VMware ESX and VMware ESXi.



2.VMware vSphere 6.7

2.2VMware ESXi

- Although both products shared the same core virtualization engine, supported the same set of virtualization features, leveraged the same licenses, and were considered bare-metal installation
- VMware ESXi, on the other hand, is the next generation of the VMware virtualization foundation. Unlike VMware ESX, ESXi installs and runs without the Linux-based Service Console. This gives ESXi an ultralight footprint of approximately 150 MB. Despite the lack of the Service Console, ESXi provides all the same virtualization features that VMware ESX supported.



2.VMware vSphere 6.7

2.2VMware ESXi

- The key reason that VMware ESXi is able to support the same extensive set of virtualization functionality as VMware ESX but without the Service Console is that the core of the virtualization functionality wasn't found in the Service Console.
- It's the VMkernel that is the foundation of the virtualization process. It's the VMkernel that manages the virtual machines' access to the underlying physical hardware by providing CPU scheduling, memory management, and virtual switch data processing.

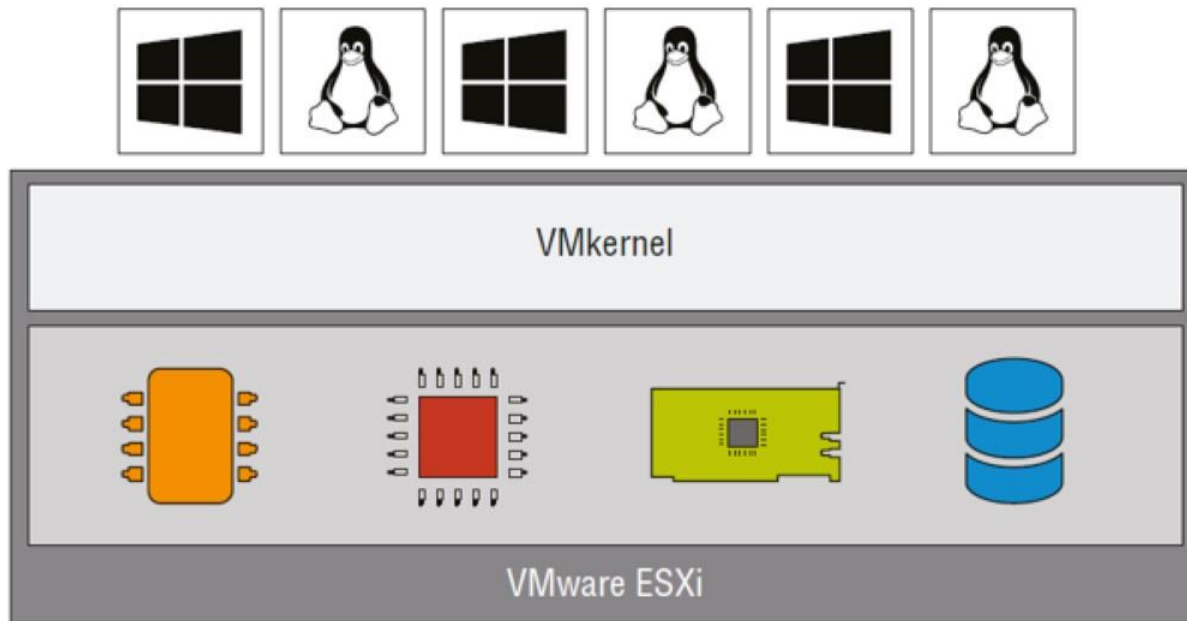


2.VMware vSphere 6.7

2.2VMware ESXi

FIGURE 1.1

The VMkernel is the foundation of the virtualization functionality found in VMware ESXi.



2.VMware vSphere 6.7

2.2VMware ESXi

VMware ESXi Maximums

COMPONENT	VMWARE ESXi 6.7	VMWARE ESXi 6.5	VMWARE ESXi 6.0	VMWARE ESXi 5.5	VMWARE ESXi 5.0
Number of virtual CPUs per host	4,096	4,096	4,096	4,096	2,048
Number of logical CPUs (hyperthreading enabled)	768	576	480	320	160
Number of virtual CPUs per core	32	32	32	32	25
Amount of RAM per host	16 TB	12 TB	6 TB	4 TB	2 TB
Number of virtual machines per host	1,024	1,024	1,024	512	512
Number of virtual CPUs per virtual machine	128	128	128	64	32
Amount of RAM per virtual machine	6 TB	6 TB	4 TB	1 TB	1 TB



2.VMware vSphere 6.7

2.3VMware vCenter Server

- ❑ vCenter Server allows IT administrators to deploy, manage, monitor, automate, and secure a virtual infrastructure in a centralized fashion. To help provide scalability, vCenter Server leverages a backend database that stores all the data about the hosts and VMs.
- ❑ In previous versions of VMware vSphere, vCenter Server was a Windows-only application. Version 6.7 of vSphere still offers this Windows-based installation of vCenter Server, but this will be the last release available for Windows. VMware offers a prebuilt vCenter Server Appliance that is based on Photon, a thin and lightweight Linux distribution.
- ❑ The Linux-based vCenter Server appliance, or vCSA, is now a more feature-rich version of vCenter since development of new features has ceased on a Windows version.



2.VMware vSphere 6.7

2.3VMware vCenter Server

- vCenter Server not only provides configuration and management capabilities—which include features such as VM templates, VM customization, rapid provisioning and deployment of VMs, role-based access controls, and fine-grained resource allocation controls—it also provides the tools for the more advanced features of vSphere vMotion, vSphere Distributed Resource Scheduler, vSphere High Availability, and vSphere Fault Tolerance.



2.VMware vSphere 6.7

2.3VMware vCenter Server

- In addition to vSphere vMotion, vSphere Distributed Resource Scheduler, vSphere High Availability, and vSphere Fault Tolerance, using vCenter Server to manage ESXi hosts enables a number of other features:
 - **Enhanced vMotion Compatibility (EVC)**, which leverages hardware functionality from Intel and AMD to enable greater CPU compatibility between servers Host profiles, which allow you to bring greater consistency to host configurations across larger environments and to identify missing or incorrect configurations
 - **Storage I/O Control**, which provides cluster-wide quality of service (QoS) controls so you can ensure critical applications receive sufficient storage I/O resources even during times of congestion vSphere Distributed Switches, which provide the foundation for networking settings and third-party virtual switches that span multiple hosts and multiple clusters



2.VMware vSphere 6.7

2.3VMware vCenter Server

- In addition to vSphere vMotion, vSphere Distributed Resource Scheduler, vSphere High Availability, and vSphere Fault Tolerance, using vCenter Server to manage ESXi hosts enables a number of other features:
 - **Network I/O Control**, which allows you to flexibly partition physical NIC bandwidth and provide QoS for different types of traffic
 - **vSphere Storage DRS**, which enables VMware vSphere to dynamically migrate storage resources to meet demand, much in the same way that DRS balances CPU and memory utilization



2.VMware vSphere 6.7

2.4vSphere Update Manager

- vSphere Update Manager is a component of vCenter Server that helps users keep their ESXi hosts and select VMs patched with the latest updates.
 - vSphere Update Manager provides the following functionality:
 - Scans to identify systems that are not compliant with the latest updates
 - User-defined rules for identifying out-of-date systems
 - Automated installation of patches for ESXi hosts
 - Full integration with other vSphere features like Distributed Resource Scheduler
 - vSphere Update Manager works as an installable package with the Windows-based installation of vCenter Server as well as the prepackaged feature pre-installed in the vCenter Server virtual appliance.



2.VMware vSphere 6.7

2.5VMware vSphere Client and vSphere Host Client

- vCenter Server provides a centralized management framework for VMware ESXi hosts, but it's the web-based vSphere Client (like its predecessor, the Windows-based vSphere Desktop Client) where you will spend most of your time.
 - With the release of vSphere 5, VMware shifted its primary administrative interface to a web-based vSphere Client built on Adobe Flash. The "vSphere Web Client" provided a web-based user interface for managing a virtual infrastructure and enabled you to manage your infrastructure without needing to install the Windows-based vSphere Desktop Client on a system. Unfortunately, the Flash-based client was not well received and ultimately VMware decided to move to the HTML5 web standard. This transition took a number of releases, and as a result, multiple clients could be used to do some (but not all) administrative tasks.



2.VMware vSphere 6.7

2.5VMware vSphere Client and vSphere Host Client

- Initially, the HTML5-based vSphere Web Client (simply known as the “vSphere Client”) offered only a subset of the functionality available to the “Flash” vSphere Web Client. However, in subsequent releases—including the 6.7 release—the vSphere Client has been enhanced and expanded to include most of the functionality you need to manage a vSphere environment.
- Further, VMware has stated that the Flash-based vSphere Web Client and the Windows-based vSphere Desktop Client are now end-of-life. Luckily, the step-by-step procedures for the Flashbased vSphere Web Client and the HTML5-based vSphere client are usually identical.



2.VMware vSphere 6.7

2.5VMware vSphere Client and vSphere Host Client

- Administering hosts without vCenter has also changed. You now access the user interface by browsing to the URL of each ESXi host. This loads an HTML5-based user interface (UI) but only for that particular host. No client installation is needed.
 - The vSphere Web Client, based on Flash, has been deprecated.
 - The Windows-installable vSphere Desktop Client (for connecting to vCenter and hosts) has been deprecated.
 - To administer vCenter, and hosts attached to a vCenter Server, use the new HTML5-based vSphere Client or the Flash-based **vSphere Web Client**.
 - To administer ESXi hosts directly, without vCenter, use the HTML5-based **vSphere Host Client**.



3.Features

3.1vSphere Virtual Symmetric Multi-Processing

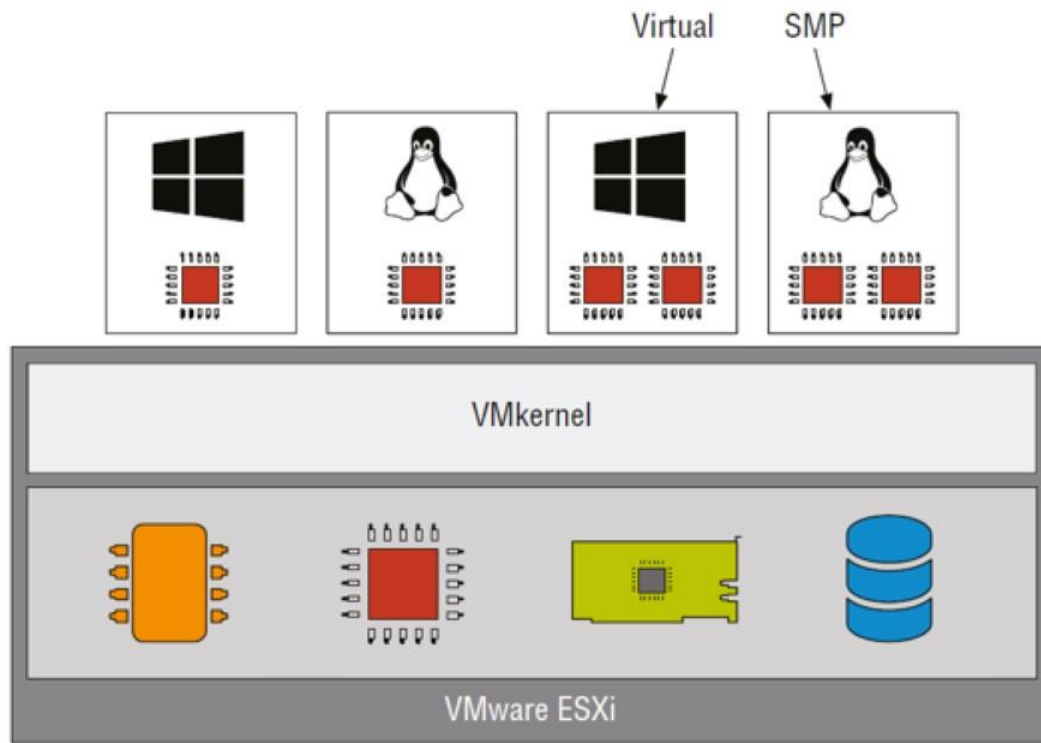
- The vSphere Virtual Symmetric Multi-Processing (vSMP or Virtual SMP) product allows you to construct VMs with multiple virtual processor cores and/or sockets.
- vSphere Virtual SMP is not the licensing product that allows ESXi to be installed on servers with multiple processors; it is the technology that allows the use of multiple processors inside a VM.



3.Features

3.1.vSphere Virtual Symmetric Multi-Processing

FIGURE 1.2
vSphere Virtual SMP
allows VMs to be created
with more than one
virtual CPU.



3.Features

3.1vSphere Virtual Symmetric Multi-Processing

- With vSphere Virtual SMP, applications that require and can actually use multiple CPUs can be run in VMs configured with multiple virtual CPUs. This allows organizations to virtualize even more applications without negatively impacting performance or being unable to meet service-level agreements (SLAs).
- This functionality also allows users to specify multiple virtual cores per virtual CPU. Using this feature, a user could provision a dual “socket” VM with two cores per “socket” for a total of four virtual cores. This approach gives users tremendous flexibility in carving up CPU processing power among the VMs.



3.Features

3.2vSphere vMotion and vSphere Storage vMotion

- vSphere vMotion, also known as live migration, is a feature of ESXi and vCenter Server that allows you to move a running VM from one physical host to another physical host without having to power off the VM.
 - This migration between two physical hosts occurs with no downtime and with no loss of network connectivity to the VM.
 - The ability to manually move a running VM between physical hosts on an as-needed basis is a powerful feature that has a number of use cases in today's datacenters.



3.Features

3.2vSphere vMotion and vSphere Storage vMotion

- Suppose a physical machine has experienced a nonfatal hardware failure and needs to be repaired.
 - You can easily initiate a series of vMotion operations to remove all VMs from an ESXi host that is to undergo scheduled maintenance.
 - After the maintenance is complete and the server is brought back online, you can use vMotion to return the VMs to the original server.



3.Features

3.2vSphere vMotion and vSphere Storage vMotion

- Even in normal day-to-day operations, vMotion can be used when multiple VMs on the same host are in contention for the same resource (which ultimately causes poor performance across all the VMs).
 - With vMotion, you can migrate any VMs facing contention to another ESXi host with greater availability for the resource in demand.
 - For example, when two VMs contend with each other for CPU resources, you can eliminate the contention by using vMotion to move one VM to an ESXi host with more available CPU resources.



3.Features

3.2vSphere vMotion and vSphere Storage vMotion

- vMotion moves the execution of a VM, relocating the CPU and memory footprint between physical servers but leaving the storage untouched. Storage vMotion builds on the idea and principle of vMotion:
 - you can leave the CPU and memory footprint untouched on a physical server but migrate a VM's storage while the VM is still running.
 - With the ability to move storage for a running VM between datastores, **Storage vMotion** lets you address all of these situations without downtime.
 - This feature ensures that outgrowing datastores or moving to new storage hardware does not force an outage for the affected VMs and provides you with yet another tool to increase your flexibility in responding to changing business needs.



3.Features

3.3vSphere High Availability

- In many cases, high availability—or the lack of high availability—is the key argument used against virtualization.
 - The most common form of this argument more or less sounds like this:
 - Before virtualization, the failure of a physical server affected only one application or workload.
 - After virtualization, the failure of a physical server will affect many more applications or workloads running on that server at the same time.
 - We can't put all our eggs in one basket!



3.Features

3.3vSphere High Availability

- VMware addresses this concern with another feature present in ESXi clusters called vSphere High Availability (HA).
 - Once again, by nature of the naming conventions (clusters, high availability), many traditional Windows administrators will have preconceived notions about this feature.
 - Those notions, however, are incorrect in that vSphere HA does not function like a high-availability configuration in Windows.
 - The vSphere HA feature provides an automated process for moving and restarting VMs that were running on an ESXi host at a time of server failure.

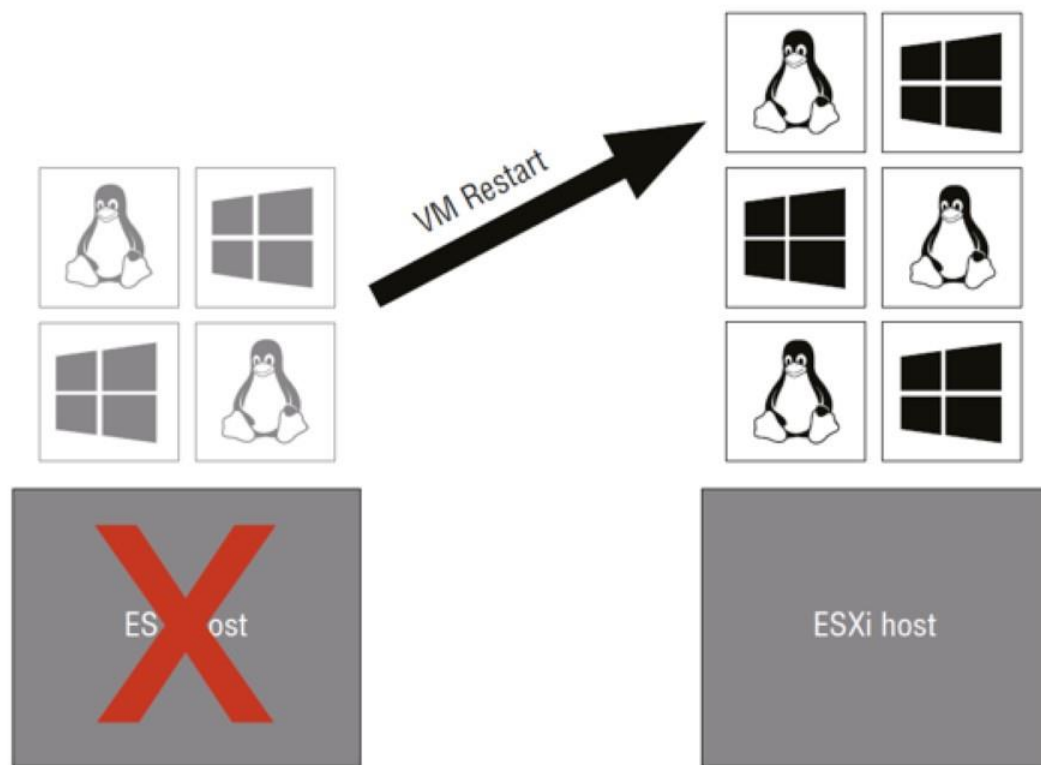


3.Features

3.3vSphere High Availability

FIGURE 1.3

The vSphere HA feature will restart any VMs that were previously running on an ESXi host that experiences server or storage path failure.



3.Features

3.3vSphere High Availability

- The vSphere HA feature, unlike DRS, does not always use the vMotion technology as a means of migrating servers to another host.
 - vMotion applies only to planned migrations, where both the source and destination ESXi host are running and functioning.
 - In a vSphere HA failover situation, there is no anticipation of failure; it is not a planned outage, which means there is no time to perform a vMotion operation.
 - vSphere HA is intended to minimize unplanned downtime because of the failure of a physical ESXi host or other infrastructure components.



3.Features

3.3vSphere High Availability

- By default, vSphere HA does not provide failover in the event of a guest OS failure, although you can configure vSphere HA to monitor VMs and restart them automatically if they fail to respond to an internal heartbeat.
 - This feature is called VM Failure Monitoring, and it uses a combination of internal heartbeats and I/O activity to attempt to detect if the guest OS inside a VM has stopped functioning.
 - If the guest OS has stopped functioning, the VM can be restarted automatically.



3.Features

3.3vSphere High Availability

- With vSphere HA in a failure scenario, it's important to understand that there will be an interruption of service.
 - If a physical host or storage device fails, vSphere HA restarts the VM, and while the VM is restarting, the applications or services provided by that VM are unavailable.
 - The only time that this is not true is if Proactive HA is enabled on the host. Proactive HA uses hardware monitoring to proactively move VMs from a host that is suffering from hardware issues.



4. Licensing

4.1 VMware vSphere Product Editions

概述 聚焦 用户场景 比较 资源 升级

试用动手实验室

用户场景

数据中心整合与业务连续性

通过虚拟化来简化数据中心运维和规模化管理，提升业务效率，同时降低 CAPEX 和 OPEX。将本地部署环境延展至基于 vSphere 的公有云（例如 VMware Cloud on AWS），并享受精简的混合云体验。

增强的应用性能和可用性

利用最新硬件技术创新增强现有应用的性能。支持新的工作负载和用户场景，例如机器学习、人工智能、大数据和高性能计算。均衡工作负载并确定资源分配的优先顺序，以确保关键应用的最佳性能。在整个混合云环境中无缝调配和部署工作负载。

虚拟化大数据

简化大数据基础架构管理，同时提高其成本效益。VMware 不仅是传统应用的最佳平台，更是大数据的最佳平台。

从旧版 Unix 迁移到虚拟 Linux

将旧版 Unix IT 基础架构迁移到虚拟化 Linux。获取卓越的性能、更高的可用性、更大的虚拟机容量，以及灾难恢复功能。

应用和基础架构安全性

通过全面的内置安全体系结构和操作简便的策略驱动型模式确保应用、基础架构、数据和访问的安全。利用机器学习和行为分析来监控威胁并自动响应，从而保护在 vSphere 上运行的应用的完整性。通过简单的可扩展安全解决方案提供更好的可见性和保护。无需由代理执行管理，开销极低。提高了检测和分析的准确性和速度，并缩短了对安全威胁的响应时间。

智能运维管理和自动化

通过 vSphere with Operations Management 给您的数据中心带来智能运维管理和自动化功能。在利用与您的环境相适应的自学习算法和预测性分析的同时，监控和管理运行状况，发现性能瓶颈和容量短缺，在需求高峰到来之前重新均衡工作负载，从而提高应用性能。

容器化的现代应用

依靠 vSphere Integrated Containers 搭建连通 IT 与开发人员的桥梁。借助 vSphere 的核心功能，您的 IT 团队可以在同一基础架构中并行运行传统应用和容器化应用，而无需额外的工具或培训。

支持远程办公室和分支机构

对本地 IT 人员寥寥无几的远程办公室和分支机构实施管理。通过虚拟化，最大限度降低主机配置偏差以及提高合规可见性，实现在多个站点间快速调配服务器。

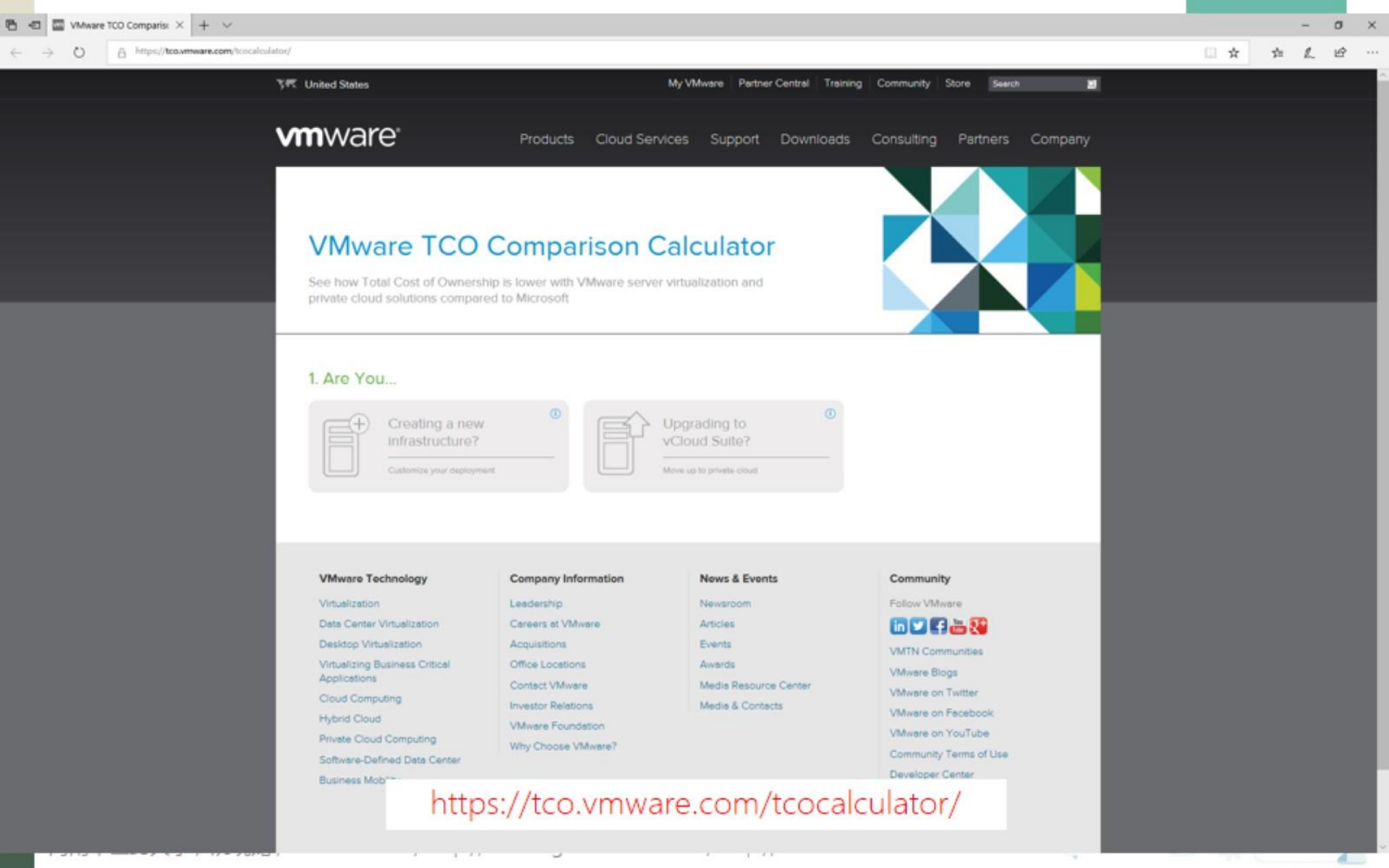


	vSphere Basic 仅在中国大陆地区通过服务器厂商 (OEM合作伙伴) 销售	vSphere Standard	vSphere Enterprise Plus	vSphere with Operations Management Enterprise Plus	vSphere Platinum
概述	服务器整合与业务连续性	资源管理, 增强的应用 可用性和性能	利用预测性分析 实现智能运维管理 和自动化	利用预测性分析 实现智能运维管理 和自动化	提高了安全性和可见性, 由机器学习提供技术支持, 并且已集成到 hypervisor 中
许可证授权	按 GPU 数量	按 GPU 数量	按 GPU 数量	按 GPU 数量	按 GPU 数量
vCenter Server (单独销售)	vCenter Server Standard	vCenter Server Standard	vCenter Server Standard	vCenter Server Standard	vCenter Server Standard
vSphere Integrated Containers		不适用			
vRealize Operations		不适用	不适用	vRealize Operations Standard	不适用
vRealize Log Insight for vCenter Server*	每个 vCenter Server Standard 实例 25 件装 OSI 包	每个 vCenter Server Standard 实例 25 件装 OSI 包	每个 vCenter Server Standard 实例 25 件装 OSI 包	每个 vCenter Server Standard 实例 25 件装 OSI 包	每个 vCenter Server Standard 实例 25 件装 OSI 包
VMware AppDefense	不适用	不适用	不适用	不适用	VMware AppDefense

*适用于 Log Insight for vCenter Server 4.6 版或更低版本, 直到 2019 年 8 月 23 日针对 vRealize Log Insight 4.6 的标准技术支持终止。



- 扩展阅读:
 - pdf: 比较 VMWARE VSPHERE的各个版本
 - [vmw-flyr-comparevsphereeditions-uslet.pdf](#)
 - pdf: VMWARE VSPHERE 和VSPHERE WITH OPERATIONS MANAGEMENT许可、定价和包装
 - [vmware-vsphere-vsom-pricing-whitepaper.pdf](#)
 - pdf: vSphere and vSphere with Operations Management Packaging & Pricing 2016 FAQ




VMware TCO Comparison Calculator

See how Total Cost of Ownership is lower with VMware server virtualization and private cloud solutions compared to Microsoft



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Customize your deployment

 **Upgrading to vCloud Suite?** ⓘ
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- Cloud Computing
- Hybrid Cloud
- Private Cloud Computing
- Software-Defined Data Center
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- Why Choose VMware?

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- Articles
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- Awards
- Media Resource Center
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- VMware Blogs
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- VMware on YouTube
- Community Terms of Use
- Developer Center

<https://tco.vmware.com/tcocalculator/>



- 演示：VMware TCO
 - TCO (Total Cost of Ownership) ，即总拥有成本。
 - 包括产品采购到后期使用、维护的成本。
 - 是一种公司经常采用的技术评价标准。
 - VMware TCO
 - <https://tco.vmware.com/tcocalculator/>

4. Licensing

4.2 Trial and Free & Hands-on Labs

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vSphere Installation and Setup

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