Cisco Virtualization Experience Infrastructure Smart Solution

Introduction

The modern workplace is evolving. The workforce is increasingly diverse, geographically dispersed, and mobile. It can include offshore contractors, distributed call centers, knowledge and task workers, partners, consultants, and executives connecting from locations around the world at all times.

This workforce wants to use a growing array of client computing and mobile devices, such as laptops, ultrabooks, tablets, and smartphones. These trends increase pressure on IT to help ensure protection of corporate data and prevent data leakage or loss through any combination of user, endpoint device, and desktop access scenarios.

This evolution has the potential to benefit the organization by increasing responsiveness and productivity. However, to deliver on this potential, IT needs to implement a strategy that improves security, reduces costs, and enhances organizational flexibility and agility, while offering users ubiquitous access and choice.

To achieve these benefits, IT leaders need to develop a strategy that enables the organization to move from deskbound desktop and communications work environments to a model in which applications, content, and communications services can be delivered at any time, anywhere, and on any device. By evolving the infrastructure to support this new workspace strategy, IT can best support the diverse set of worker needs and work styles, while empowering the business with tools for growth, productivity, and agility (Figure 1).

Figure 1. Achieving User and Business Freedom with Confidence
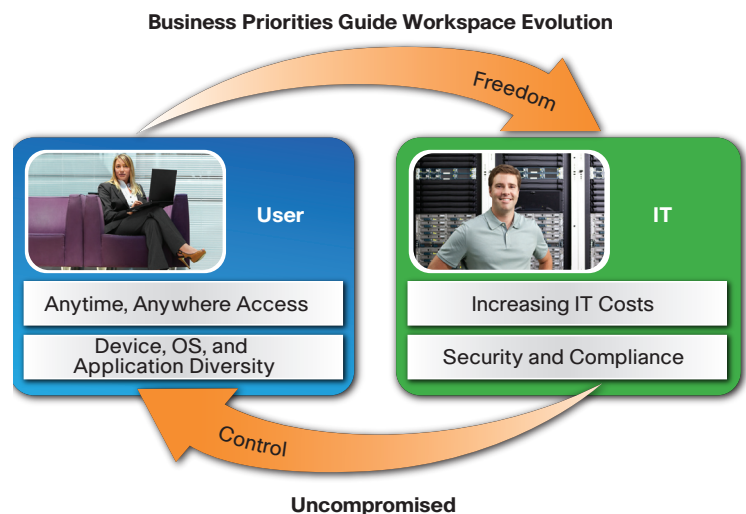
Challenge and Opportunity

The workforce is challenging the existing environment by demanding use of advanced personal devices and social media for work-related activities within and outside the business. The bring-your-own-device (BYOD) revolution is introducing new risks to corporate resources, networks, and data. At the same time, IT is facing expensive device and operating system refreshes, such as Microsoft Windows 7 and Windows 8 upgrades. In addition, immersive voice, video, conferencing, and messaging services are rapidly becoming integral parts of every work environment.
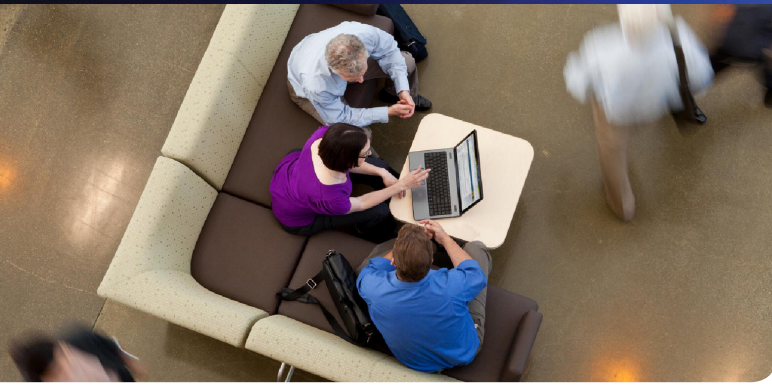
IT can transform these challenges into an opportunity by planning for a flexible unified workspace architecture that addresses immediate use cases as well as future workspace requirements. To address diverse user needs, IT will often need a combination of virtual and native approaches to deliver applications, content, and communications services to different devices. With the native delivery model, applications and data reside on the devices themselves. With the virtual delivery model, the virtualized desktop, applications, and data are centrally hosted and secured in the enterprise data center or cloud.

Cisco offers a complete end-to-end architecture that delivers an uncompromised desktop and application virtualization solution and addresses the sophisticated workspace demands of mobility, collaboration, and security. The Cisco Virtualization Experience Infrastructure (Cisco VXI™) Smart Solution, a main pillar of the Cisco® Unified Workspace strategy and vision, empowers IT departments to transform the workforce evolution into a strategic opportunity, making organizations more productive, efficient, and flexible. By helping companies develop a strategy and roadmap for a unified workspace, IT can proactively meet these challenges and create a situation for the business, IT, and end users in which everyone benefits.

A Virtualized Approach to the Unified Workspace

As devices proliferate and end users work in increasingly mobile and distributed environments, a complete workspace strategy is required for organizations to manage and control information assets and computing resources while providing connectivity, productivity, communications, and collaboration anywhere and at any time.

The benefits of taking a virtualized approach to a unified workspace strategy include:

- Secure access to centrally managed and secured corporate, productivity, and web- or cloud-based applications and data from any of the users' devices of choice
- Optimal virtual desktop experience for a broad set of workgroups and use cases
- Integrated virtual desktop, voice, and video capabilities for communication and collaboration, with a consistent user experience
- Transparent mobility and roaming between networks and devices, with a consistent user experience

The Cisco VXI Smart Solution

Cisco VXI delivers an end-to-end workspace solution that provides the security, scalability, and flexibility of desktop and application virtualization together with voice and video capabilities for an uncompromised and productive user experience. Using this virtual approach, desktops and complete unified workspaces, which combine all desktop, enterprise, software-as-a-service (SaaS), and mobile applications with communications and collaboration services, can be consistently delivered to both company-issued and user-owned devices in any location.

With Cisco VXI validated designs, IT can accelerate the successful adoption of desktop and application virtualization and a unified workspace with the world's first fully integrated and validated solution that addresses a broad set of use cases and work styles (Figure 2). Cisco addresses every dimension of planning, deployment, and support for the end-to-end infrastructure to implement virtualized workspaces across organizations, providing the architecture, expertise, and assistance from Cisco and its partners to stay ahead of evolving needs.

Figure 2. Cisco VXI: The Solution for Desktop Virtualization and the Unified Workspace
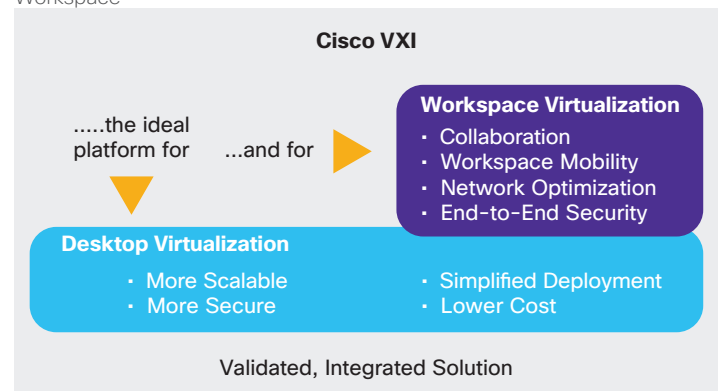
Cisco VXI is a holistic solution, delivering workspaces by combining best-in-class technologies and services from Cisco with technologies from industry-leading desktop virtualization software partners Citrix and VMware and ecosystem partners including NetApp, EMC, and Intel.

Cisco VXI delivers:

- A validated end-to-end system and roadmap that enables customers to evolve from virtual desktops to a unified workspace
- Advanced data center computing, fabric, and management optimized for desktop virtualization, with operational simplicity and a high density of virtual machines per server blade
- Superior network solutions, providing secure, optimized virtual desktop, voice, and video delivery alongside delivery of traditional traffic types
- Best-in-class collaboration solutions built on the most comprehensive portfolio delivered virtually or natively to meet the productivity and collaboration needs of diverse end users, from task workers to mobile and remote knowledge workers
- Support for both company-issued and user-owned devices

Architectural Pillars of Cisco VXI

Cisco VXI combines Cisco's industry-leading data center, networking, and collaboration technologies (Figure 3) with services, validated designs, and a robust partner ecosystem to help IT simplify deployment, reduce costs, and mitigate risk. Only Cisco offers organizations a complete workspace solution that empowers people to adopt highly productive, mobile, unbounded work styles.

The core of Cisco VXI is the highly scalable Cisco Unified Data Center, which securely and efficiently hosts virtual desktops and applications and dramatically simplifies deployment and management. The data center module can be optimized for medium-sized deployments up to 2000 virtual desktops or highly scalable deployments exceeding tens of thousands of desktops.

The centrally hosted virtual desktops are delivered to user devices at any location across a secure wired or wireless network infrastructure, optimized to deliver virtual desktop, communications, and collaboration services and based on the Cisco Borderless Network Architecture and the Cisco Unified Access solution.

The virtualized collaborative workspace can be delivered on a diverse range of company-issued and employee-owned devices that support virtual desktop clients and Cisco Collaboration solutions, including Cisco Jabber™, to enable a consistent application, desktop, and communications experience anywhere and on any device. These devices include thin clients, zero clients, laptops, ultrabooks, smartphones, tablets, and the innovative Cisco Virtualization Experience Client (VXC) portfolio, which combines virtual desktops with voice and video capabilities.
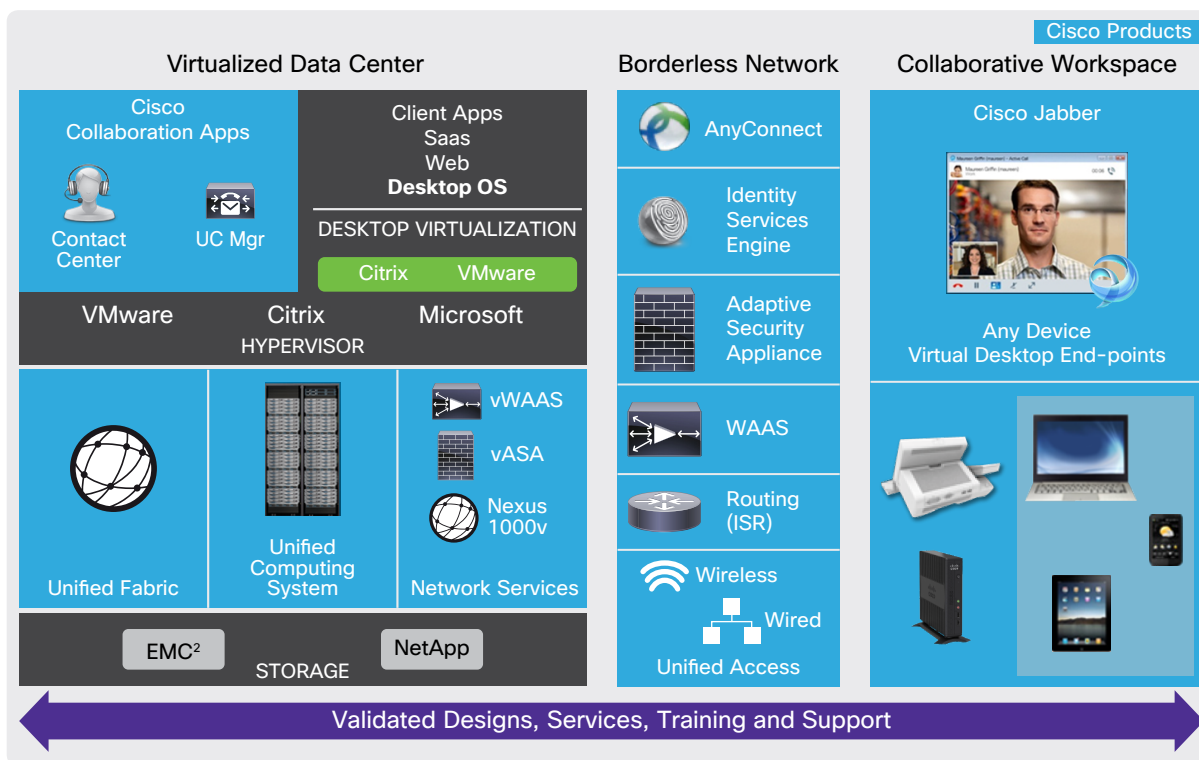
Cisco VXI Solutions Roadmap

Cisco is committed to the ongoing evolution of the Cisco VXI Smart Solution to address changing workspace and use case requirements and new technology advancements. The Cisco VXI solution roadmap is developed in collaboration with the Cisco partner ecosystem to ensure that organizations can benefit from key Cisco and industry innovations.

The Cisco VXI solution roadmap is aligned to a typical workspace journey, although different organizations apply the roadmap to their own unique needs as appropriate (Figure 4). The three key phases of the Cisco VXI solution roadmap are:

1. **Desktop Virtualization:** An integrated, validated infrastructure solution that provides a platform for hosting virtual desktops and applications with the required performance and scalability. The platform is open and flexible to meet different deployment scenarios and sizes. IT can deploy an infrastructure that is cost effective for initial work-group deployments, while scaling seamlessly to meet new work groups and use cases as the need arises. This also provides the foundation for the more extensive virtual workspace.

2. **Workspace Virtualization:** A virtualized approach to a complete unified workspace that supports a broad set of use cases by delivering integrated virtual desktop, voice, video, and collaboration services to any device in any location. This solution builds on the desktop virtualization infrastructure and delivers the hosted workspace across a network optimized for virtual desktop infrastructure (VDI) and multimedia traffic. This phase also includes end-to-end security policy and control that can be applied across both virtual and native environments for both fixed and mobile devices.

Figure 3. Cisco VXI Smart Solution Architecture

Figure 4. Cisco VXI Solution Journey and Roadmap
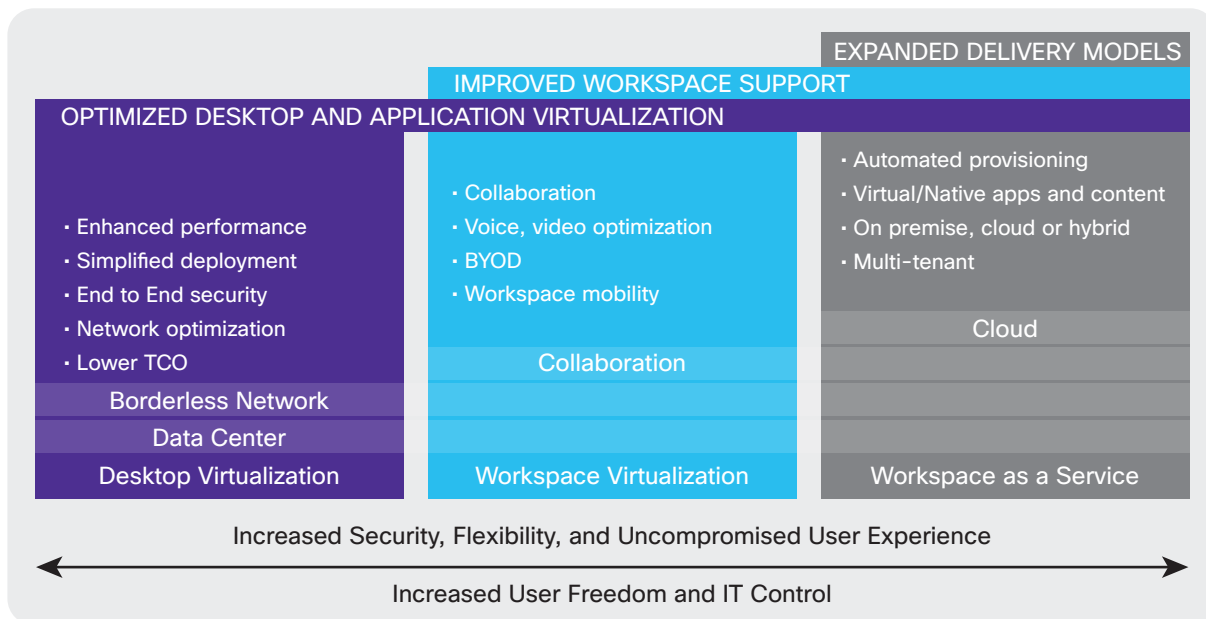
3. **Workspace-as-a Service:** Brings the innovations in cloud and desktop virtualization technologies together to deliver workspaces on demand from a private, public, or hybrid workspace cloud. Building on the previous two phases, customers can build toward the workspace-as-a-service solution incrementally or implement a cloud solution form the outset.

Each phase includes technology roadmaps, a broad partner ecosystem, validated system-level designs, and cross-domain professional services.

Cisco VXI: Common Desktop Virtualization and Unified Workspace Use Cases

Cisco VXI plays an important role in delivering access to data, applications, and a multimedia and collaborative workspace to a broad set of workgroups and industry types (Figure 5):

- **For field teams that need a mobile workspace:** Secure access to data, applications, and communications while at the office, in branch offices, engaging with customers, and on the road
- **For remote and branch-office users:** Access from their personal office spaces or shared flex-office spaces to the intranet, collaboration and enterprise systems, and shared resources
- **For teleworkers:** The same access at home as in the office to applications, desktops, and collaboration tools
- **For knowledge workers:** Nonstop access to their desktops, enterprise applications, and communications from a broad set of locations
- **For campus and conference-room professionals:** Portable voice, video, and data on laptops and tablets; onsite mobility is important to many workgroup types
- **For temporary workers, contractors, and partners:** Fast access from the campus or their own offices to many of the same systems that are available to permanent staff
- **For operating system migrations:** Acceleration and simplification of Microsoft Windows 7 and Windows 8 migrations

- **For security and compliance:** Protection of data and applications centrally in the secured data center
- **For new facilities:** Capability to rapidly open remote and branch offices and offshore facilities
- **For mergers and acquisitions:** Rapid integration of new, diverse workforces
- **For healthcare:** Clinician mobility between desktops and terminals, compliance, and cost-reduction initiatives
- **For federal government:** Teleworking initiatives, business continuance strategies, continuity of operations (COOP) strategies, agency IT consolidation, and training centers
- **For financial services:** Retail banks reducing IT costs, insurance agents, compliance initiatives, and privacy requirements
- **For education:** K-12 student access, higher education access, and remote learning
- **For state and local governments:** IT and service consolidation across agencies and interagency security initiatives
- **For retail:** Back-office, branch-office, and store IT cost reduction and remote access
- **For manufacturing:** Task and knowledge workers and offshore contractors

Cisco VXI Benefits

The Cisco VXI Smart Solution is built for:

- **Virtualization**, providing a highly secure, scalable, and simplified infrastructure for hosting and delivering virtual desktops and applications
- **Collaboration**, delivering an integrated and uncompromised multimedia user experience with an advanced communications and collaboration suite
- **Workspace mobility**, providing secure access to applications and communications transparently across corporate-issued and employee-owned devices in any location

Figure 5. Cisco VXI Provides Business Benefits Across Many Workgroups, Industries, and Segments

Healthcare
- Secure Access to Patient Data
- Regulatory Compliance
- Mobility for Doctors

Finance
- Secure, Flexible Computing
- Regulatory Compliance
- Disaster Recovery

Education
- Sharing of Computing Resources
- Collaborative Classroom
- Quick Provisioning
- Control of IT Costs

- Secure Anywhere Anytime Access
- Business Flexibility and Continuity
- Lower Desktop Refresh and Support TCO
- Easy and Centralized Management for IT
- Support for Mobile and Remote Workers
- BYOD Support

Government
- Secure Access to Sensitive Information
- User Authentication-based Authorization

Contact Center
- Reduced Agent Seat Cost
- Quick On-boarding
- Global Coverage

Retail
- Retail Kiosks and Displays
- Easy Management

- Cisco VXI is:
  - **Flexible:** Cisco VXI supports user choice to accommodate different work styles and combinations of company- and user-owned endpoint devices while enhancing the user experience for improved productivity and user satisfaction. It also provides a flexible, open virtual workspace platform that offers agility for a variety of deployment scenarios and enables rapid responses to changing business needs. It allows IT to achieve faster, more efficient provisioning and management of end-user services through centralized control of end-to-end virtual desktop and collaboration infrastructure and services.
  - **Secure:** Cisco VXI improves data confidentiality and integrity by centralizing, protecting, and controlling access to critical data and intellectual property at the data center rather than across diverse endpoints. Cisco VXI integrates policy-based identity services that enable device profiling and posture assessment and provide need-to-know access to centralized resources. This approach reduces exposure by protecting the organization from data loss, compliance litigation, loss of revenue, and brand damage. It also allows IT to respond quickly to security attacks and planned and unplanned disruptions: technical, natural, or human made.
  - **Uncompromised:** Cisco VXI delivers an optimal desktop virtualization user experience for campus, branch-office, and remote users. With Cisco VXI delivered with Cisco Unified Communications Manager and Cisco Jabber, users can have a high-definition voice and video collaboration experience on virtual desktops across diverse operating systems and devices. In addition, Cisco Virtualization Experience Media Engine (VXME) can intelligently route multimedia communications traffic directly between virtual desktop endpoints, bypassing the need for this bandwidth-intensive media to traverse the data center through the virtual desktop display protocol. This innovative approach uses intelligent media-processing capabilities on the endpoint, improving the quality of video and voice communications and providing a user experience equivalent in quality to a traditional video-enabled desktop or phone.

Cisco VXI delivers the best workspace solution:
- For end users, with a high-quality user experience on any device from anywhere
- For IT, providing a scalable and secure infrastructure to deliver IT as a service (ITaaS)
- For business, improving agility and productivity with lower operating costs

Cisco VXI Components

The Cisco VXI solution includes components from both Cisco and third-party technology partners. These include baseline components that provide the foundation for a virtualized desktop deployment:
- **Data center:** As part of the Cisco Unified Data Center, the Cisco Unified Computing System™ (Cisco UCS®) provides the foundational computing elements for Cisco VXI. Cisco UCS servers, available in blade or rack form factors, provide outstanding scalability, performance, and density for virtual desktops. The Cisco Unified Fabric includes Cisco Nexus® data center switches, SAN switches, and virtual switches. Cisco Unified Management simplifies the deployment and administration of the desktop virtualization infrastructure.
- **Network:** Cisco VXI network components include LAN switches, wireless access networks, Cisco Integrated Services Routers (ISRs) for the WAN, and Cisco Wide Area Application Services (WAAS).
- **Security:** Cisco Adaptive Security Appliances (ASA), Cisco AnyConnect® Secure Mobility Solution, Cisco Virtual Security Gateway (VSG), and Cisco Identity Services Engine (ISE) provide security.

- **Storage:** Cisco VXI supports SANs, direct-attached storage, and network-attached storage (NAS), including partner and Cisco VXI validated solutions from EMC and NetApp. Cisco VXI also supports a broad set of storage architectures and storage optimization technologies to help ensure the performance and costs efficiencies required for different deployments.
- **Hypervisor:** This component virtualizes host systems so that multiple virtual desktops, running as virtual machines, can share the same hardware resources. Supported hypervisors include Citrix XenServer, Microsoft Hyper-V, and VMware vSphere.
- **Desktop virtualization:** Desktop images are virtualized for deployment from centralized servers. Connection brokers automate the connection of client endpoints to virtual desktops. Solutions include Citrix XenDesktop and XenApp and VMware View.
- **Collaboration solutions:** Cisco VXI can serve as the foundation for Cisco Unified Communications, a platform that securely delivers the right forms of communication (instant messaging, presence, voice, and video) to the right endpoint (IP phones, Cisco Jabber on hosted virtual desktops [HVDs], desktop and mobile devices, and video endpoints).
- **Endpoints:** Endpoints are the means by which HVDs are accessed and used. Cisco VXI supports a broad range of thick clients, thin clients, zero clients, and mobile devices, such as, laptops, ultrabooks, tablets, and smartphones. These include Cisco VXME and Cisco VXC zero and thin clients.

Services

Cisco and its partners offer a comprehensive portfolio of services (Figure 6) to help customers successfully plan, build, and manage Cisco VXI solutions. These services help ensure effective solution design and deployment at any scale and optimize the data center, network, and collaboration architectures to accelerate return on investment (ROI). Cisco also offers technical support for the entire solution, providing one point of contact for managing technical support for Cisco and third-party products included

in Cisco Validated Designs. This approach helps alleviate the overhead associated with the management of complex solutions. Customers can use these Cisco Services for guidance through the system integration and operation processes associated with the adoption and evolution of their workspace solutions:
- Desktop Virtualization Strategy
- Desktop Virtualization Pilot and Assessment Services
- Desktop Virtualization Planning, Design, and Implementation
- Desktop Virtualization Optimization
- Cisco Solution Support Service for VXI (which provides solutionwide technical support across Cisco and third-party products)

Conclusion

Cisco VXI delivers an end-to-end solution that accelerates desktop and application virtualization deployments and goes beyond traditional approaches, which do not recognize the complete collaborative workspace in which many end users operate. Cisco VXI spans the entire virtualized infrastructure, from the endpoint to the data center, and delivers an improved virtual desktop and multimedia and collaborative experience, massive scalability, improved operation simplicity, and lower TCO than traditional virtual desktop solutions.

Only Cisco offers a comprehensive solution for delivering virtualized workspaces built on industry-leading solutions in unified computing, unified fabric, security, wide-area networking, unified communications, collaboration, and endpoint devices. Cisco's virtualization and collaboration technologies, services, and best practices provide an open, best-in-class approach to help customers achieve resource efficiency and control, simplified management, security, policy enforcement, collaboration, and desktop delivery optimization.

Go beyond basic desktop virtualization. Plan for the full range of use cases to improve business agility, make users more mobile and productive, and provide better business outcomes.

Figure 6. Cisco and Partner Services for Cisco VXI
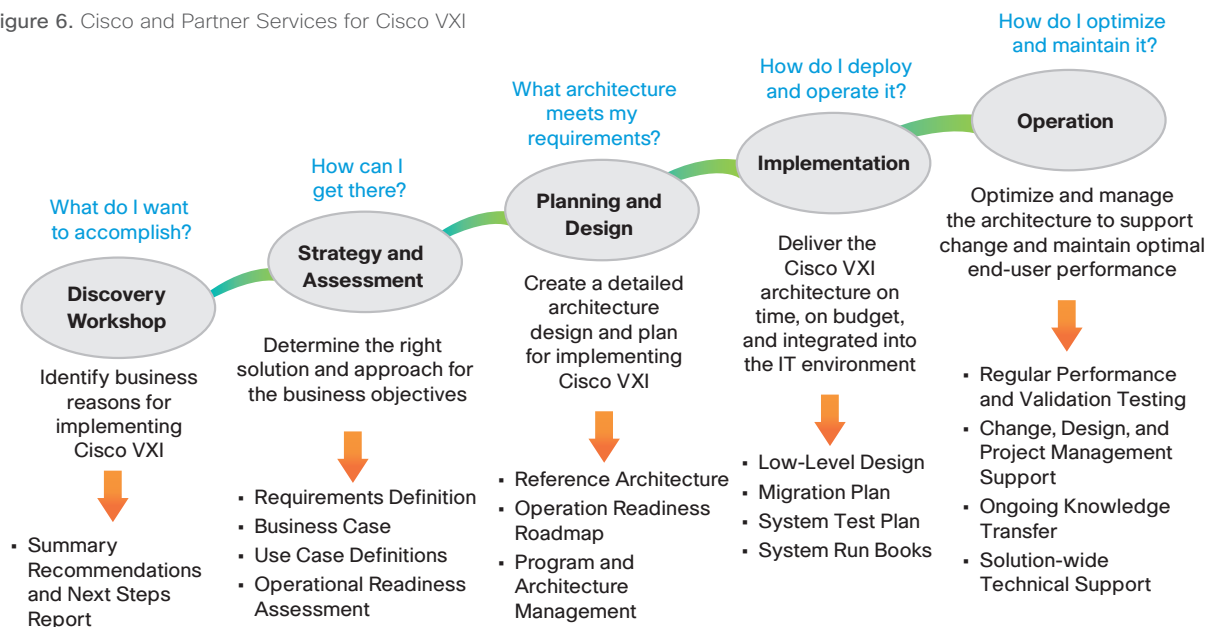
For More Information

Get more information about Cisco VXI:

- Learn more about Cisco VXI at
  www.cisco.com/go/vxi.

- Read the Cisco VXI design guides at
  www.cisco.com/go/designzone/vxi.

- Explore the latest Cisco VXI bundles and offers
  http://www.cisco.com/en/US/prod/ps10265/solution_
  paks.html.

- Get more information about Cisco Unified
  Data Center solutions for Desktop Virtualization at
  www.cisco.com/go/vdi.

- Contact a Cisco account manager or partner to discuss
  desktop virtualization and the Cisco Unified Workspace
  and learn about Cisco VXI Discovery Workshops.