XenApp 6, MDOP, and Configuration Manager

Introduction

The complexity of managing enterprise desktops and applications in the corporate environment is increasing over time. With an expanding mobile workforce and the trend to embrace more consumer oriented endpoint devices such as the NetBook and even Apple® MacBook®, a new generation of solutions has evolved to address these trends as a complement to existing enterprise solutions such as Microsoft System Center Configuration Manager and other management solutions. Citrix® XenApp™ and Microsoft® App-V™ have long complemented these more traditional approaches to management, but often as discrete systems used alongside one another instead of as an integrated system. With the release of XenApp 6 and its support for Microsoft Desktop Optimization Pack 2010 and its new System Center Configuration Manager Connector, enabled in Citrix Project Titan, enterprise administrators are now able to leverage a fully integrated solution that can be managed through the familiar user interface within Microsoft System Center, and optimized by various components of the Microsoft Desktop Optimization Pack for Software Assurance (MDOP), such as App-V and Advanced Group Policy Management (AGPM), while delivering applications and desktops to a broader class of users, devices, and access scenarios through XenApp on-demand application delivery.

The primary benefits for customers resulting from these new Citrix extensions to a broader range of Microsoft platform elements are:

- Increased IT efficiency, faster return on investment, and lower total cost of ownership (TCO) for Windows® applications and desktops.
- Simplified workflows enabled through a single console in System Center Configuration Manager where applications can be advertised to and installed on XenApp servers.
- XenApp publishing wizards embedded within the System Center Configuration Manager user interface to simplify that same workflow.
- Automated provisioning of applications to and through XenApp environments with zero impact to active users made possible by enhanced Citrix power and capacity management integration with System Center Configuration Manager.
- Application deployment status to XenApp servers can be monitored through System Center Configuration Manager reporting.
- Change management best practices can be enforced for XenApp 6 server and farm policies by Microsoft Advanced Group Policy Management.
- Increased application compatibility for XenApp environments, made possible through Microsoft’s mature Application Virtualization (App-V) technologies.
- Integrated publishing of and access to Microsoft virtual applications through XenApp for lightly managed endpoints such as non-domain joined laptops and non-Windows endpoints, for example Mac OS®- or Linux®-based NetBooks.
- App-V-enabled applications can now be subscribed to on demand through Citrix® Dazzle™, the first self-service storefront for enterprise applications.
The remainder of this document is broken into two sections:

- **Products overview** – A high-level overview of the individual products and components that integrate to provide the complete solution.
- **Bringing it together** – An overview of how the components come together to provide the broadest solution, all from within the Microsoft System Center Configuration Manager 2007 (ConfigMgr) user interface, to provide a robust but significantly more simplified experience for IT administrators and the users they service.

### Products overview

In this section we provide a high-level overview of the following products in preparation for the later discussion that brings them all together.

- On-demand application delivery: XenApp
- Application virtualization: Microsoft MDOP App-V
- Advanced Group Policy Management: Microsoft MDOP Advanced Group Policy Management (AGPM)
- Configuration Management: Microsoft System Center Configuration Manager 2007

### On-demand application delivery: XenApp

On-demand application delivery as provided in XenApp enables Windows applications to be delivered as an on-demand service to any device, over any connection. A short sampling of the device and OS types empowered by XenApp include Windows and non-Windows desktops and laptops, and hand-held devices based on Windows Mobile®, Blackberry®, Android® and the iPhone® to name just a few. These on-demand applications are delivered by Citrix Receiver™ for both online and offline use through the Citrix online and offline plug-ins, and subscribed to through Citrix Dazzle.

The benefits that businesses derive from XenApp on-demand applications are many, but fundamentally the delivery of applications to endpoints as a service provides the lowest TCO, a better than installed user experience for the user and more efficient workflows and resource utilization from an IT management perspective.

The primary delivery mechanisms within XenApp are session virtualization and application virtualization.
Session virtualization in XenApp

Formerly referred to as Microsoft Windows Terminal Services, now known as Microsoft Remote Desktop Services (RDS) Session Virtualization, this delivery method uses centralized servers to provide a shared host execution environment for Windows applications that are remotely displayed and interacted with through a remote display protocol on an endpoint PC, thin client, laptop, or mobile device.

How XenApp session virtualization works

In session virtualization, applications are hosted and execute in a centralized location, rather than on endpoint devices. Users remotely access them via a client-side software agent or ordinary web browser, and interact by exchanging mouse, keyboard, and screen updates over the network.
An important distinction is that XenApp extends beyond ordinary RDS-based session virtualization by layering in additional functionality required by enterprises. Key strengths and capabilities of XenApp in this regard include the following.

- **Intelligent application delivery** – System intelligence coupled with configurable access controls enable automatic selection of the most optimal and secure virtualization method for delivering each application. Preconfigured policies deliver set levels of access based on the user scenario, device capabilities, network performance, connection location, and security profile.

- **Citrix Receiver** – Today’s digital workforce demands the flexibility to work from anywhere at any time using any device. Leveraging Citrix Receiver as a lightweight universal client, XenApp users can access their corporate applications from any PC, Mac, thin client, or smartphone. This enables complete workplace flexibility, business continuity, and user mobility.

- **Citrix® HDX™** – XenApp delivers a high-definition user experience for every user with Citrix HDX, a set of network and display optimizations, and performance-boosting technologies that deliver high-performance experiences over any network, including low bandwidth and high-latency WAN connections. Users enjoy better reliability and higher availability, even when using multimedia, real-time collaboration, and 3D graphics, while using up to 90 percent less bandwidth compared to alternative solutions. Webcam and VoIP support, improved audio, 3D graphics support, and the ability to use USB peripherals freely make XenApp a highly functional solution for every user.

- **Citrix Dazzle** – The first self-service storefront for enterprise applications, Dazzle gives corporate employees 24x7 access to the applications they need to work. Dazzle offers a rich, intuitive user experience that requires no training. With Dazzle, self-service IT becomes a reality; users obtain simple access to applications while the economics of the web are brought to enterprise IT.

- **Delivery that is secure by design** – With session virtualization, sensitive applications and data remain in the datacenter, rather than being distributed to high-risk endpoints. In addition, centralized password control, multi-factor authentication, encrypted delivery, and a robust SSL VPN solution featuring host-inspection capabilities help further minimize the chance for loss or theft of data.

For more information on how Citrix XenApp extends the capabilities of Microsoft Remote Desktop Services – Session Virtualization, please go to http://www.citrix.com/xenapponwindowsserver2008.
Application virtualization in XenApp

Within XenApp, application virtualization is enabled by the Citrix Offline Plug-in for Citrix Receiver and is now extended by the broader class of isolation and streaming capabilities enabled through integration with Microsoft App-V and the App-V Plug-in for Citrix Receiver.

The primary benefits of application virtualization as a component of XenApp on-demand application delivery are:

- Increased application compatibility within XenApp execution environments.
- The ability to execute different versions of the same Windows applications within the same user context.
- Better application cohabitation enables server silo consolidation, further lowering TCO for session virtualization implementations.
- The ability to use centrally managed applications offline by virtue of the Citrix Offline Plug-in for Citrix Receiver.

Application virtualization:  
Microsoft MDOP App-V

Microsoft Application Virtualization or App-V is a solution within the Microsoft MDOP that turns applications into centrally managed services that are never installed, never conflict, and are streamed on demand to users. The result is the dynamic delivery of software that reduces the time associated with application to application compatibility testing and application deployment. Users and their application environments are no longer machine-specific, and the machines themselves are no longer user-specific.
Applications are virtualized with the Application Virtualization Sequencer, a wizard-based tool that packages applications for real-time streaming. The Sequencer uses a once-per-application process to protect the application’s integrity and does not modify its source code. Rather than pushing down and loading the entire package the first time an application is requested by users, the App-V client pulls only the code needed to start the program, typically 20-40 percent. The remainder of the application is streamed in the background without any impact to the users, enabling them to start working immediately. When the application closes, associated settings and profiles are saved in a per-use, per-application cache, providing instant access for subsequent use. For mobile users who need access without reconnecting to the network, App-V allows offline use once the application is streamed into cache. Alternately, administrators can configure the system to push an entire application package to the PC using a download and execute approach so that it resides in cache and is fully available at first launch. The net result: users have the flexibility to run the applications they need, without administrative installation privileges, and without the risk of conflicts.

**Standard operating system environment:** In standard OS environments, applications install their settings onto the host operating system, hard-coding the entire system to fit that application’s needs. Other applications’ settings can be overwritten, possibly causing them to malfunction or break.

**The virtual application environment:** With application virtualization, each application brings down its own set of configurations on demand, and executes in a way so that only it sees its own settings.

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**How App-V Works**

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Advanced Group Policy Management: Microsoft MDOP AGPM

Another component of the Microsoft Desktop Optimization Pack, Advanced Group Policy Management provides change management capabilities for Microsoft Active Directory-based Group Policies.

Microsoft Advanced Group Policy Management (AGPM) helps customers overcome challenges that affect Group Policy management in any organization, particularly those with complex IT environments. A robust delegation model, role-based administration, and change-request approval provide granular administrative control. For example, administrators can delegate Reviewer, Editor, and Approver roles to other administrators—even administrators who do not have access to production group policies (GPOs). The Editor role can edit GPOs but not deploy them; the Approver role can deploy GPO changes. AGPM also helps reduce the risk of widespread failures. You can use AGPM to edit GPOs offline, outside of the production environment, and then audit changes and easily find differences between GPO versions. In addition, AGPM supports effective change control by providing version tracking, history capture, and quick rollback of deployed GPO changes. It also supports a management workflow by allowing you to create GPO template libraries and send GPO change e-mail notifications.

Figure 6: Advanced Group Policy Management change management

Microsoft System Center Configuration Manager 2007 R2

Microsoft System Center Configuration Manager 2007 R2 (ConfigMgr) provides a comprehensive solution for change and configuration management for the Microsoft platform, enabling organizations to provide relevant software and updates to users quickly and cost effectively.

ConfigMgr provides the following capabilities:

- Collecting hardware and software inventory.
- Distributing and installing software applications.
- Distributing and installing updates to software, for example security fixes.
• Restricting computers from accessing the network if they do not meet specified requirements, together with Windows Server® 2008 operating system Network Policy Server to restrict computers from accessing the network if they do not meet specified requirements, for example having certain security updates installed.

• Deploying operating systems.

• Specifying what the desired system configuration and then monitoring adherence to that configuration.

• Metering software usage.

• Remotely controlling computers.

These features require a ConfigMgr client to be installed on the Windows-based computers you want to manage. The ConfigMgr client can be installed on regular desktop computers, servers, portable computers such as laptops, mobile devices running Windows Mobile or Windows CE, and devices running Windows XP Embedded such as automated teller machines.

ConfigMgr sites provide a way to group user and machines into manageable units with similar requirements for feature sets, bandwidth, connectivity, language, and security. ConfigMgr sites can match your Active Directory sites or be totally independent of them. Clients can move between sites or even be managed from remote locations such as home offices.
Bringing it together

Now that we have discussed the component products let’s look at how these systems come together to provide a system that is greater than the sum of its parts for on-demand application delivery and management.

In the integrated solution each product plays a vital role in providing their individual best of breed capabilities, a simple outline of these roles is as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft System Center Configuration Manager 2007</td>
<td>Unified deployment of physical and virtual applications, and integration with automated OS deployments targeted to users or machines with integrated reporting and dashboards for status tracking and troubleshooting.</td>
</tr>
<tr>
<td>Microsoft Advanced Group Policy Management</td>
<td>Enterprise-wide group policy change management</td>
</tr>
<tr>
<td>Microsoft Application Virtualization 4.6</td>
<td>Isolation and Streaming of virtualized applications for enterprise-wide deployment</td>
</tr>
<tr>
<td>Citrix XenApp 6</td>
<td>On-demand application delivery and user self service to managed and lightly managed, Windows and non-Windows endpoints over LAN, WAN, and public network connections.</td>
</tr>
</tbody>
</table>
**XenApp and Configuration Manager**

As the central management console and reporting hub, Configuration Manager is the hub for managing operating systems and applications across the enterprise.

Citrix recently introduced the XenApp connector for System Center Configuration Manager 2007 (Project Titan). In concert with XenApp Power and Capacity Management, it enables System Center administrators to advertise and deploy System Center applications to XenApp servers and to install those applications and any other updates in a manner that presents no impact to XenApp user sessions. In complement to System Center’s ability to deploy applications to XenApp servers, XenApp publishing parameters for applications are now integrated within the System Center application wizards. This provides a single integrated view and management of all applications whether they are hosted or delivered directly to managed and unmanaged devices through XenApp from within the Configuration Manager console.

**XenApp and App-V**

The delivery of Microsoft App-V sequences as enabled within Configuration Manager provides comprehensive support for advertising those applications to managed endpoints including XenApp servers, which in turn deliver the App-V sequences to managed and lightly managed Windows and non-Windows endpoints through the App-V Plug-in for Citrix Receiver.

The App-V Plug-in for Citrix Receiver enables the delivery of the App-V Client for Desktops to be silently installed on lightly managed endpoints. A lightly managed endpoint is any device that is not managed directly by Microsoft’s Configuration Manager. These devices may exist for a number of reasons within an enterprise, two examples would be: 1) in a Bring Your Own Computer (BYOC) environment where some users are encouraged to provide and use noncorporate assets that are not joined to the Active Directory domain to access applications, and 2) in the case of contractor workers using their own endpoint that may or may not be capable of joining the corporate Active Directory. In these situations, delivering applications is still a necessity and, in some cases delivering virtualized applications through App-V may also be required. The App-V Plug-in for Citrix Receiver can deliver the App-V Client on demand in order to facilitate endpoint execution of an App-V sequence. As may be desired in the contractor scenario or for students in a university, the App-V Client can be decommissioned through Citrix Receiver when the term of the contract or term of education has been completed.

An additional capability enabled by this integrated system is made possible through XenApp dual-mode streaming. This dual-mode functionality within XenApp presents users with a consistent list of applications and access to those applications, regardless of the hardware or software capabilities, or the operating system on the endpoint. This capability now enables App-V applications to be accessed from any device; managed, lightly managed, or un-managed—even if the endpoint is a MacBook running a non-Windows operating system, or a mobile device such as a Blackberry. Simply put, XenApp dual-mode streaming detects whether or not an endpoint is capable of using or is authorized to use the Microsoft App-V Client agent and if it is to deliver the App-V plug-in and then the requested App-V sequence as advertised through Citrix Dazzle or Web Interface. If the endpoint is not
capable or is not authorized to use the App-V plug-in, the Citrix Offline Plug-in will begin a XenApp server session to which the App-V sequence will then stream in order to be presented to the endpoint over session virtualized delivery. The benefit of dual-mode is that authorized users will always have access to the applications they need, regardless of how they are trying to access those applications.

**XenApp and AGPM**

With the latest release of XenApp 6, Citrix has moved all server and farm configuration settings into policies that can be managed by Microsoft Advanced Group Policy Management, enabling centralized Active Directory based configuration and management of all Citrix XenApp servers, across farms, enterprise wide. The efficiency and power of this combined solution is significant since a single policy setting can affect the experience for users, for better or for worse, at a single click. The administrative control and balance of power enabled by Microsoft AGPM enables XenApp administrators to propose policy changes offline that will then be reviewed and approved by policy administrators with a greater understanding of their impact to the enterprise as a whole. This check and balance enables more granular administration while increasing the speed at which XenApp farm-wide changes can be made accurately for an organization.

**Conclusion**

Citrix XenApp and Microsoft App-V have long complemented more traditional approaches to desktop and application management, but often as discrete systems instead of as an integrated solution. With the release of XenApp 6 and its support for Microsoft Desktop Optimization Pack 2010, the App-V Plug-in for Citrix Receiver and the new System Center Configuration Manager Connector enabled in Citrix "Project Titan", enterprise administrators now have a fully integrated solution that can be managed through the familiar user interface within System Center, optimized by various components of MDOP such as App-V and AGPM, while delivering applications and desktops with a high-definition experience to a broader class of users, devices, and access scenarios through XenApp on-demand application delivery.

We encourage you to begin investigating the power of this integrated solution within your environment through the following links and downloading the Project Titan technical preview when it is made available.

- For more information or to download XenApp, please visit http://www.citrix.com/XenApp.
- For more information on App-V and MDOP please visit the MDOP Blog at http://blogs.technet.com/mdop/.
- To download Microsoft App-V, please visit the Microsoft Volume Licensing Center at https://www.microsoft.com/licensing/servicecenter/.