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Citrix XenDesktop Architecture Deep Dive

Part II

CITRIX

Citrix XenDesktop Install

XenDesktop Implementation

- Desktop Delivery Controller
- Web Interface
- Virtual Desktop Agent

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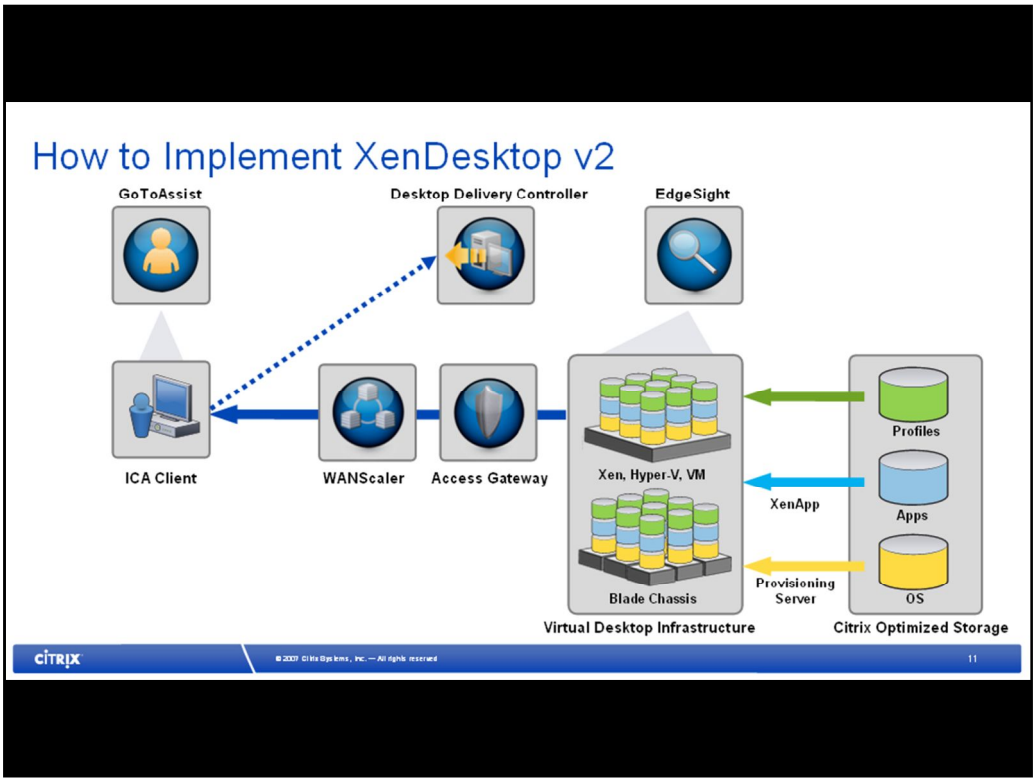

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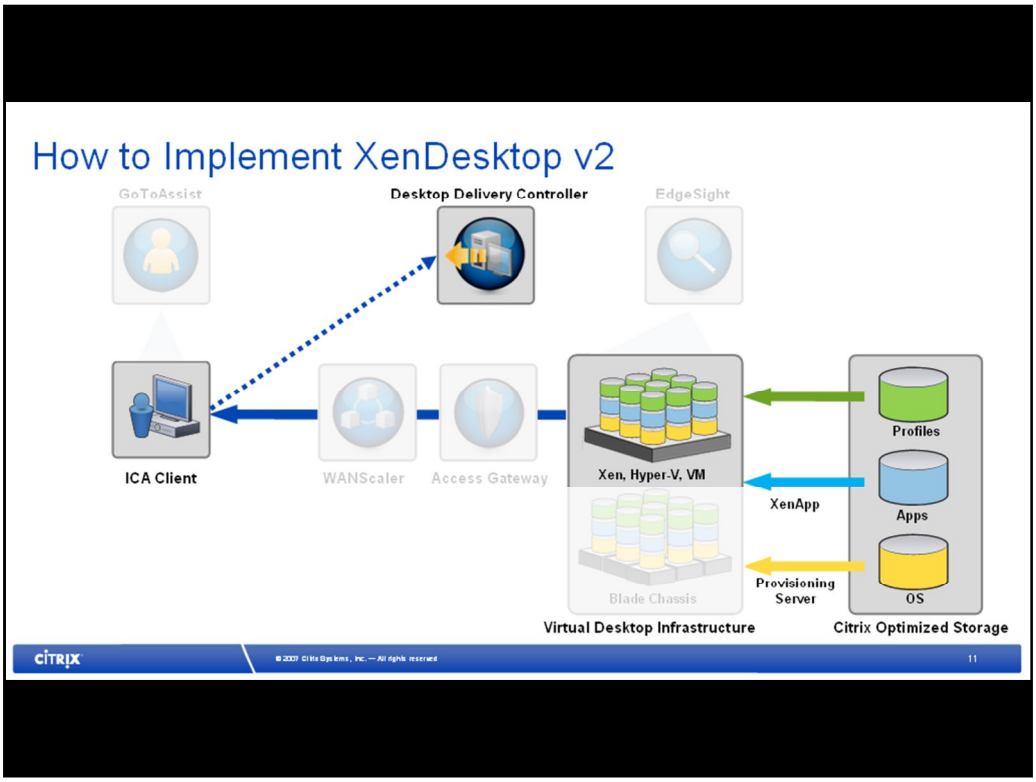

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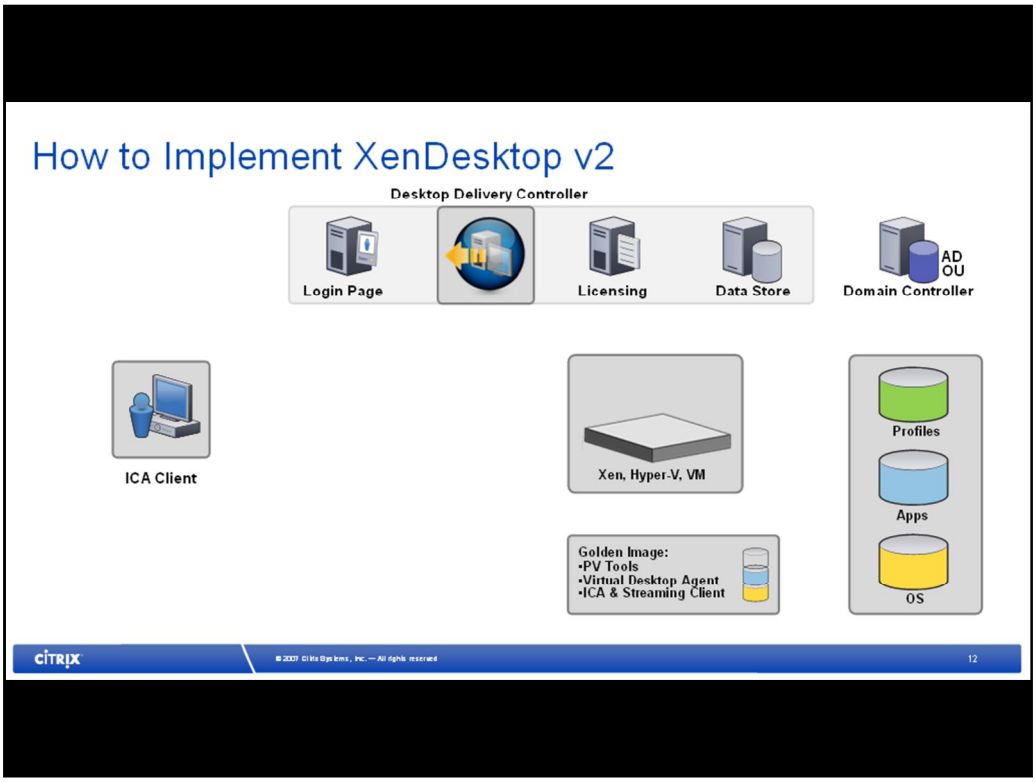

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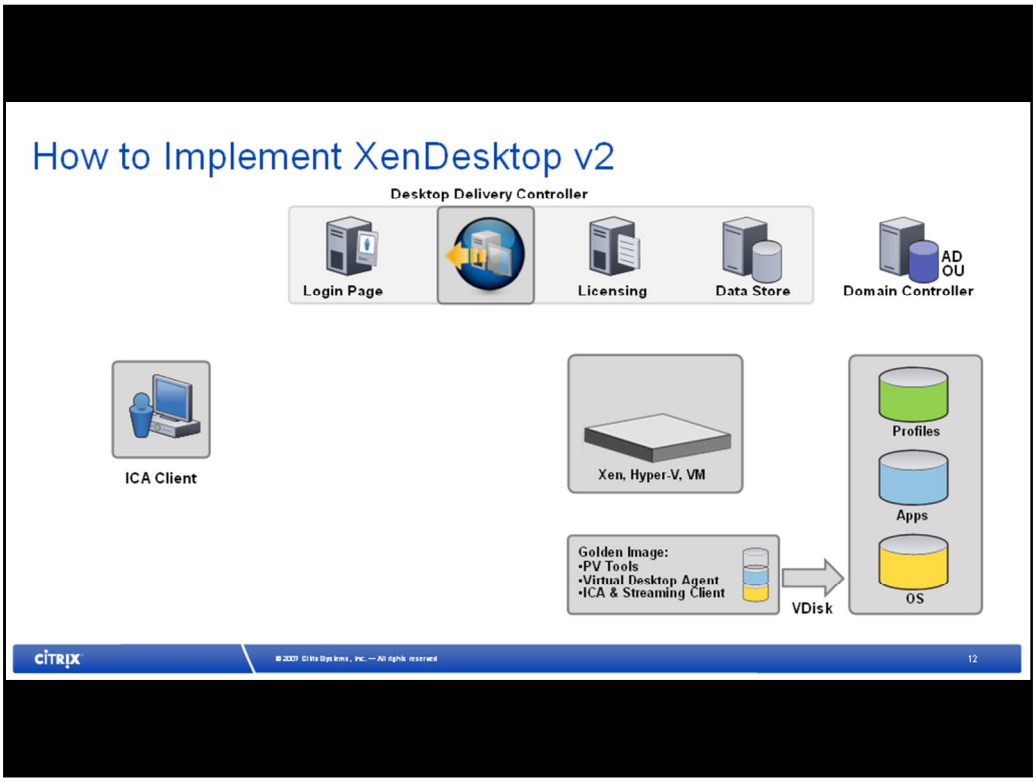

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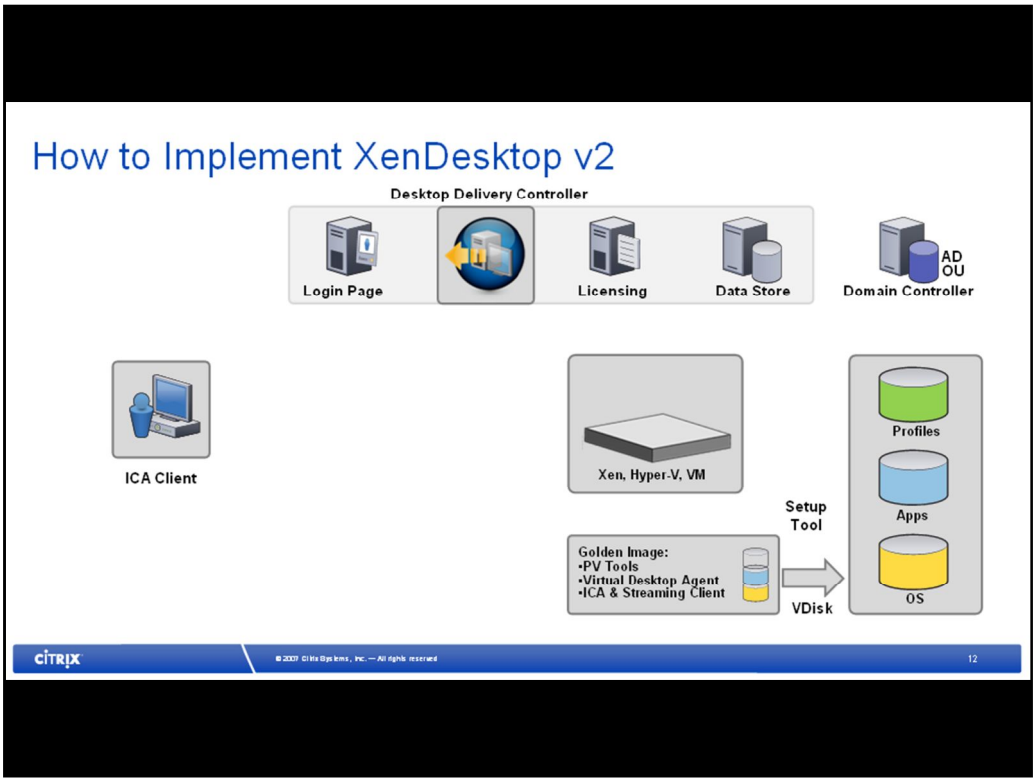

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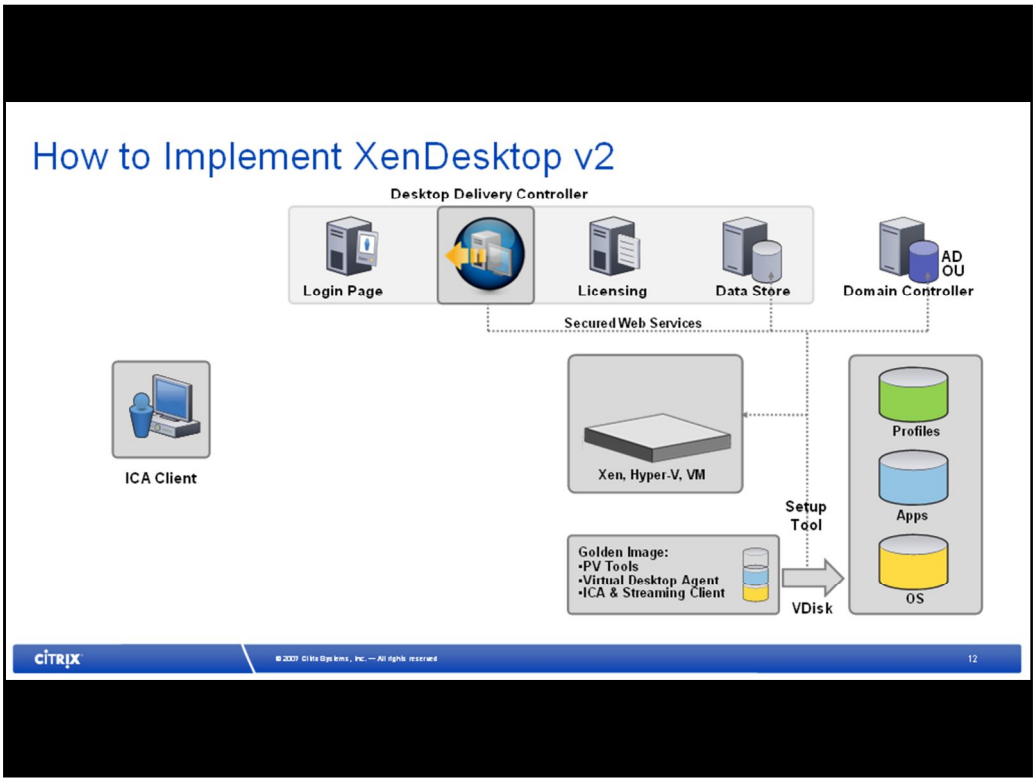

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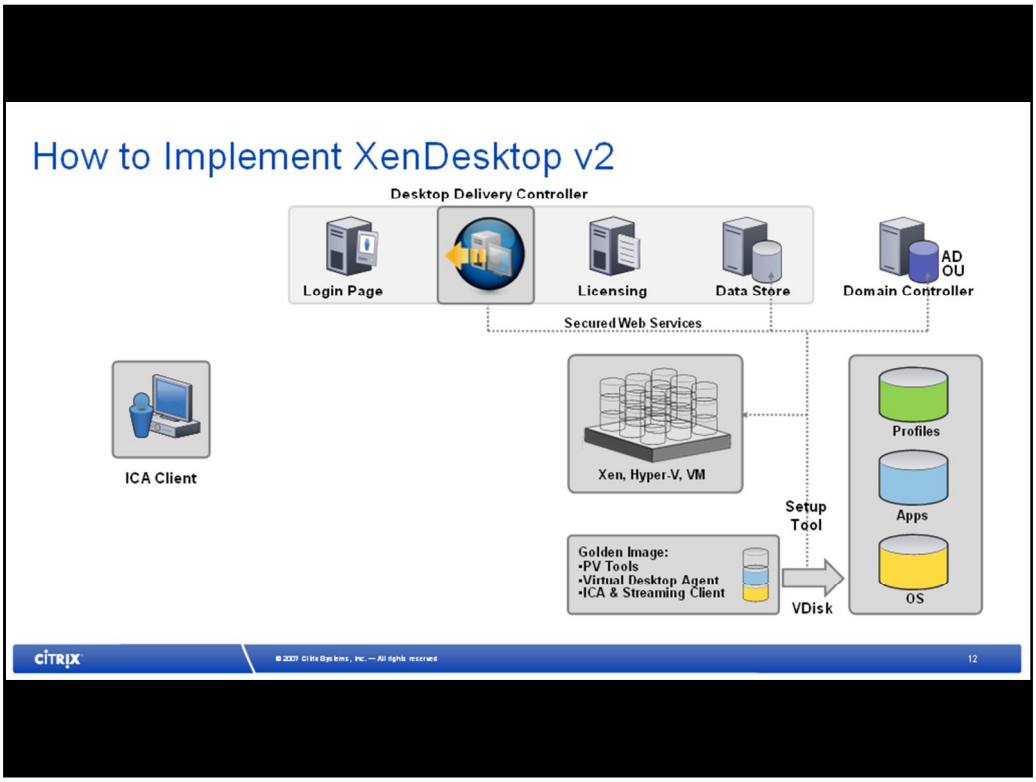

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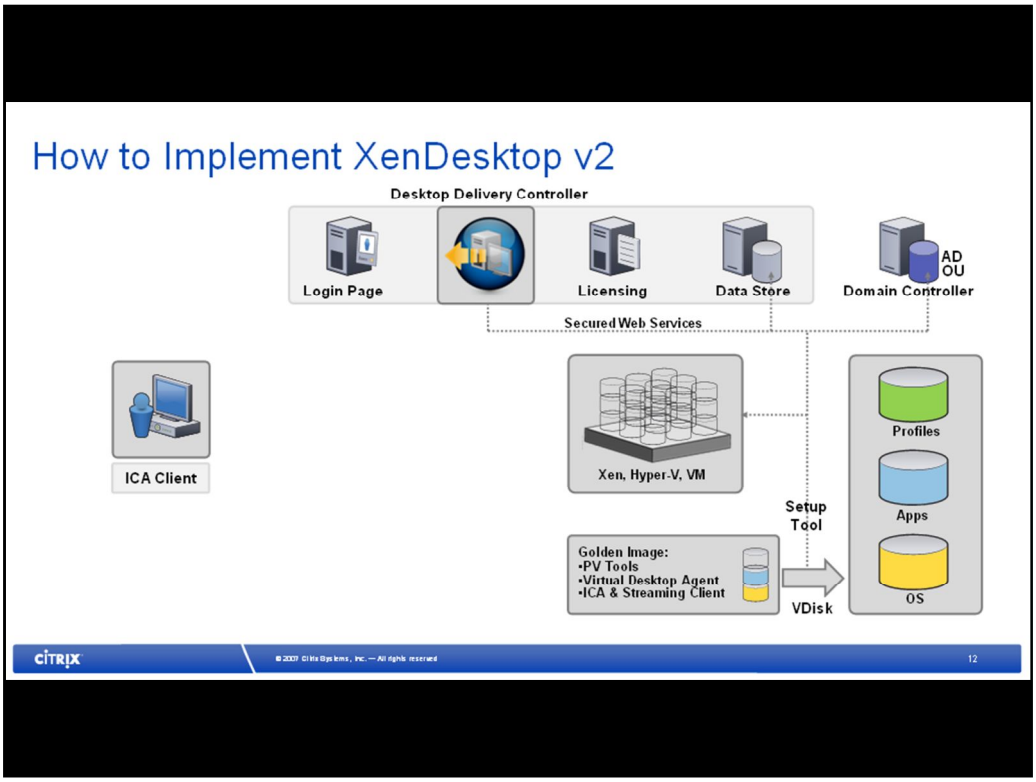

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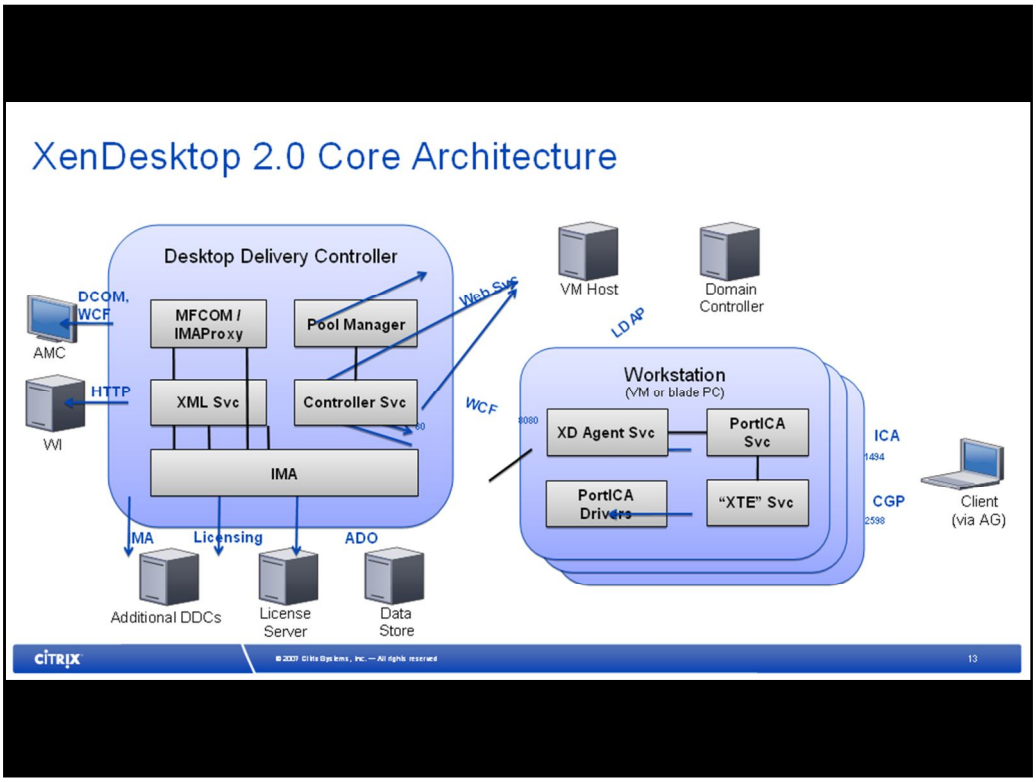

The Desktop Deliver Controller (DDC) is based on CPS (XenApp) technology.

MFCOM/IMAProxy is used to communicate with the Access Management Console (AMC), which uses DCOM and Windows Communication Foundation (WCF). The DDC communicates with Web Interface using the XML Service, just as Xen App does. The IMA service is used to communicate with other DDCs in the farm, with the License server, and the Data Store, just as with XenApp.

The Pool Manager and the Controller Service are WCF web services that require .NET 3.0.

The Pool Manager has plug-ins that make it capable of working with XenServer, VMware, and (coming soon) Microsoft Hyper-V. The Pool Manager is responsible for choosing a VM from the Desktop Group and assigning it to a user.

The Controller service manages querying Active Directory for user authorization and then setting up the PortICA user connection to the VM.

The Virtual Desktop Agent (VDA) provides the XD Agent service on the VM that communicates via port 8080 (default, can be changed) with the Controller Service on the DDC. The VDA queries LDAP for XD farm information only on installation or reconfiguration. The VDA also provides the PortICA, and XTE services, and PortICA drivers necessary for the endpoint device using the ICA client to communicate with the VM over 1494 or 2598.

DDC System Requirements

Operating System

- Windows 2003 SP2 or Windows 2003 RC2 (32 / 64 bit)
  - Terminal Services in “Application Mode” (No TSCALs required)
  - Microsoft .NET Framework, Version 3.5
  - Java Runtime Environment (JRE) Version 1.5.0_15
  - Microsoft Internet Information Services (IIS) Version 6.0 and ASP.NET (for Web Interface)
  - Microsoft Visual J# 2.0 Redistributable Package, Second Edition

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DDC System Requirements

Data Store

- Microsoft Access Jet Database Engine
  - Windows Server 2003 SP1 (*or x64*)
- Microsoft SQL Server
  - SQL 2005 Express Edition SP2 (*or x64*)
  - SQL Server 2005 with SP2 (*or x64*)
  - SQL Server 2000 with SP4
- Oracle Enterprise
  - 10.2.0.1.0 for Windows Server 2003 (*or x64*)
  - 11.1.0.6.0 for Windows Server 2003 (*or x64*)

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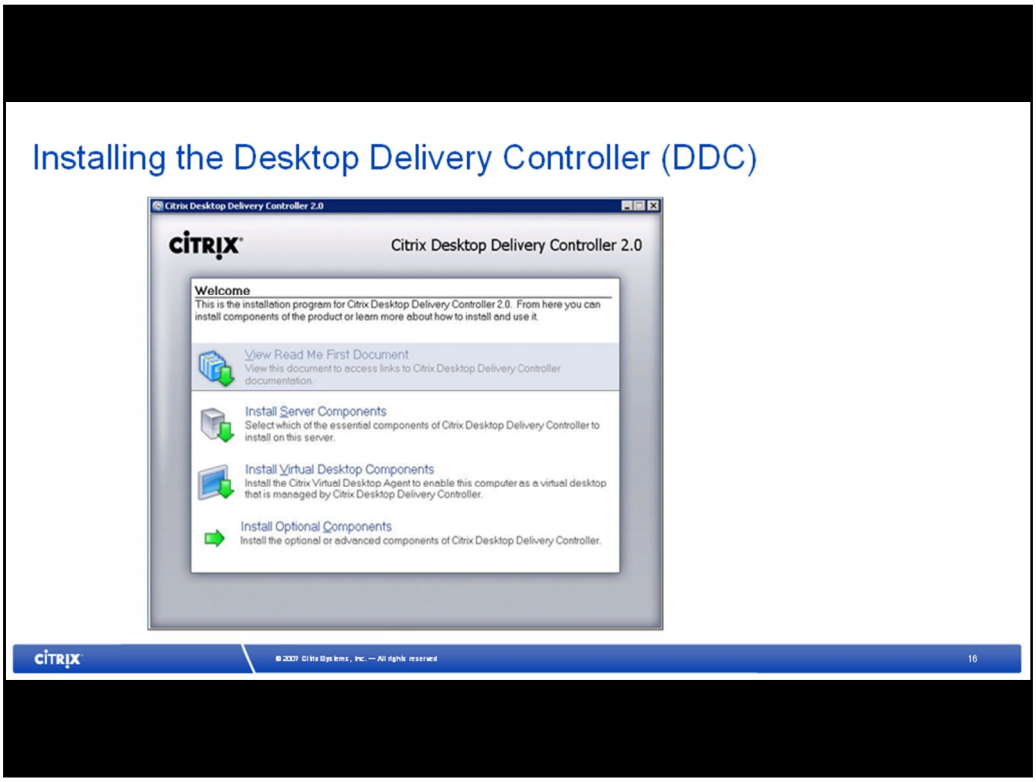
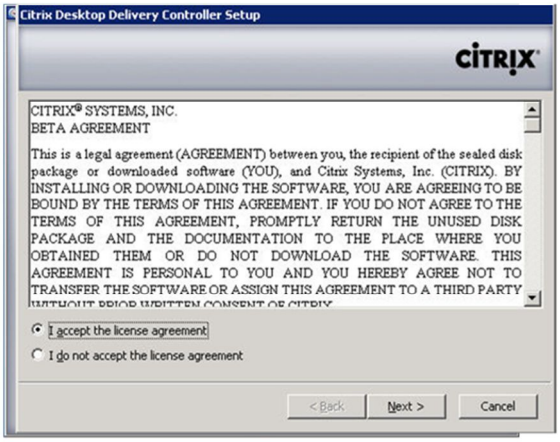


During installation, the computer must be restarted. When it starts again, you must log on as the same user that started the installation.

Installing the Desktop Delivery Controller (DDC)



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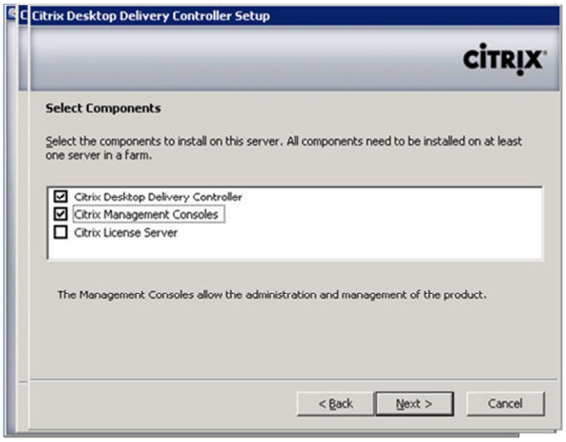

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Installing the Desktop Delivery Controller (DDC)

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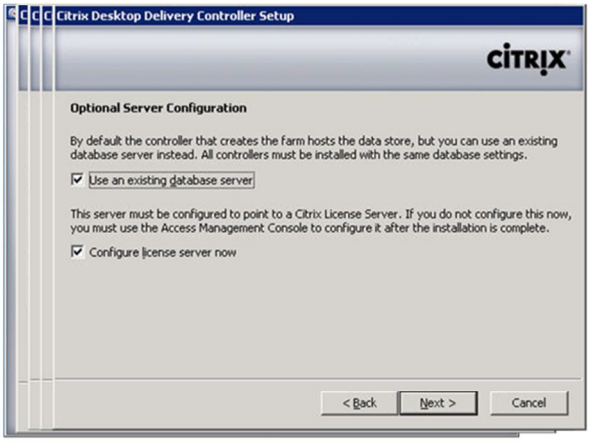

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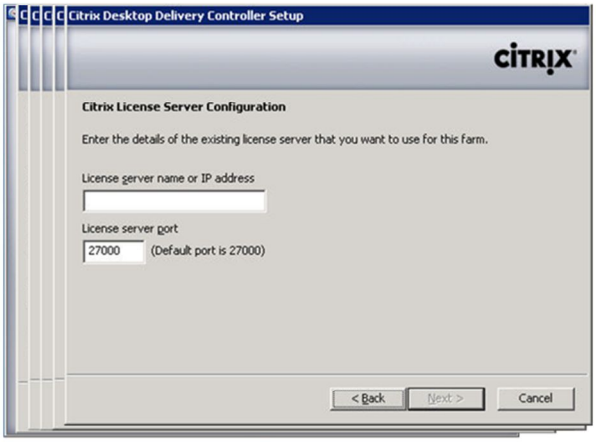

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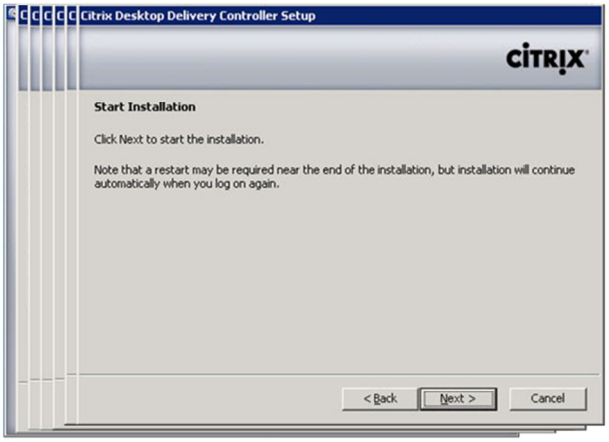

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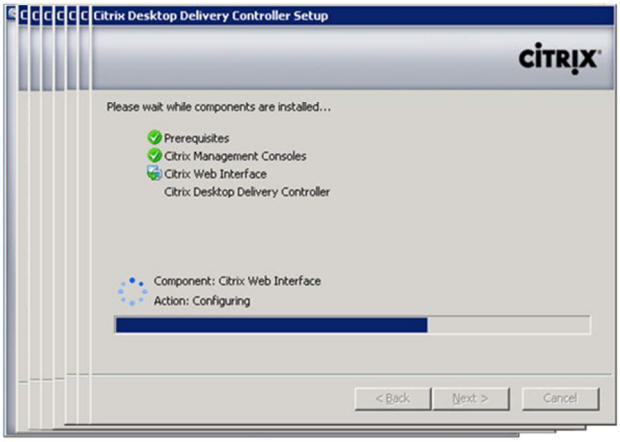

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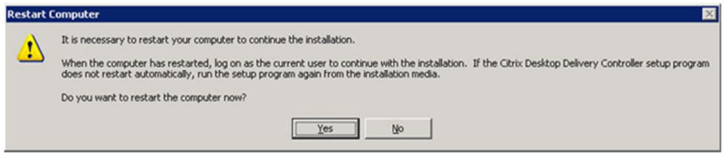

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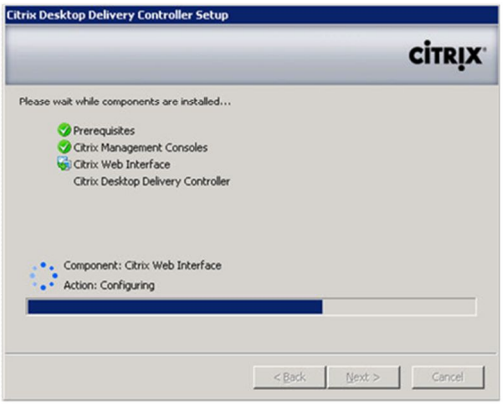
Installing and configuring the DDC (continued)



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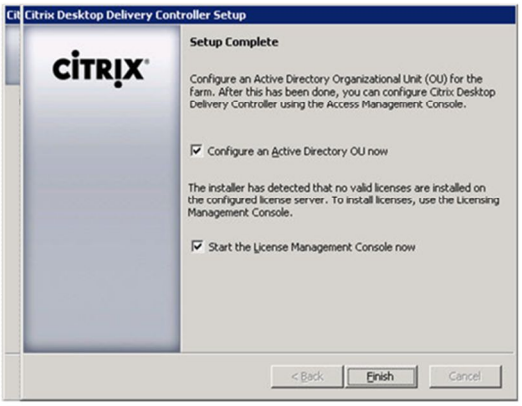

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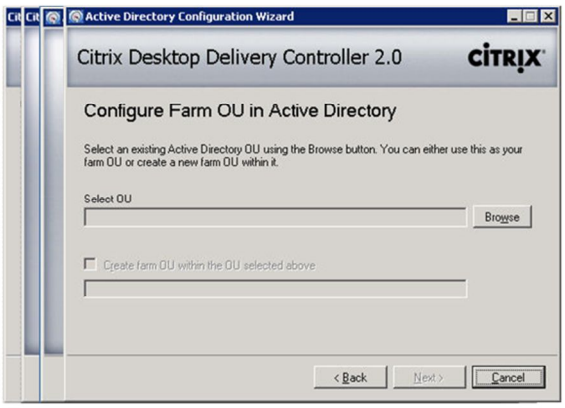

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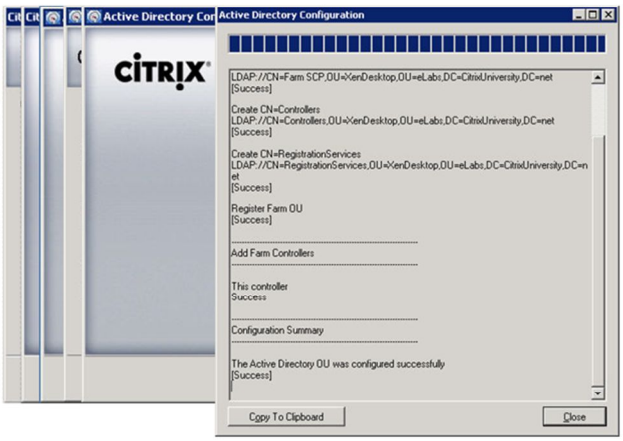

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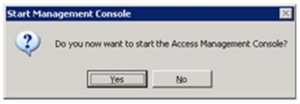

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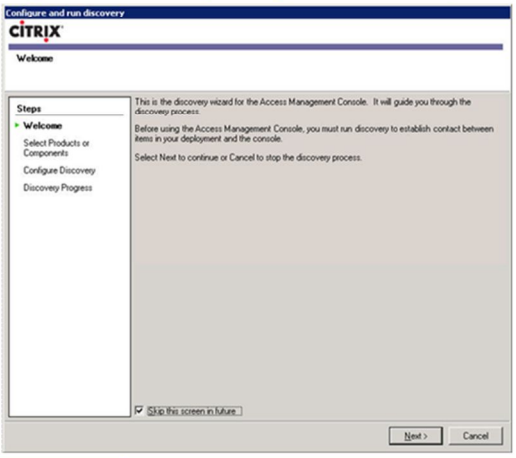

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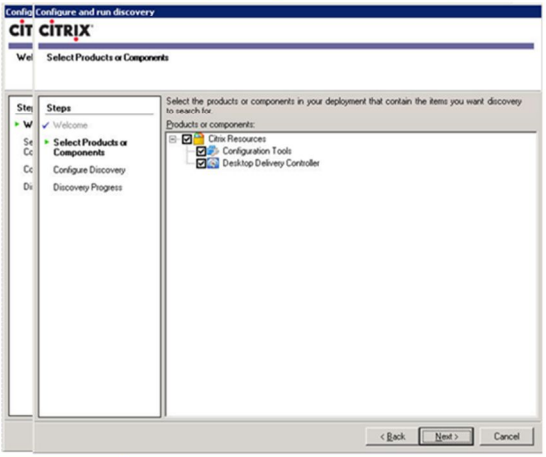

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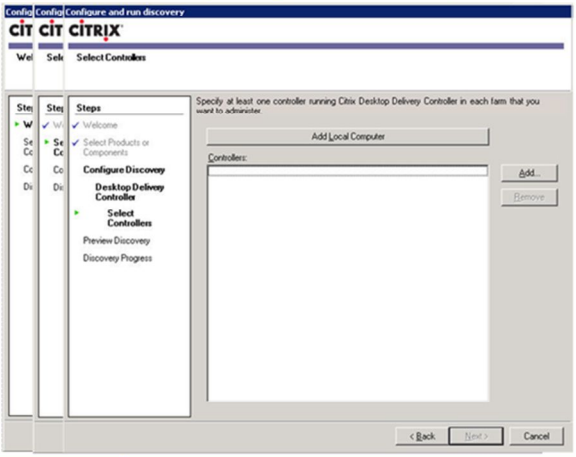

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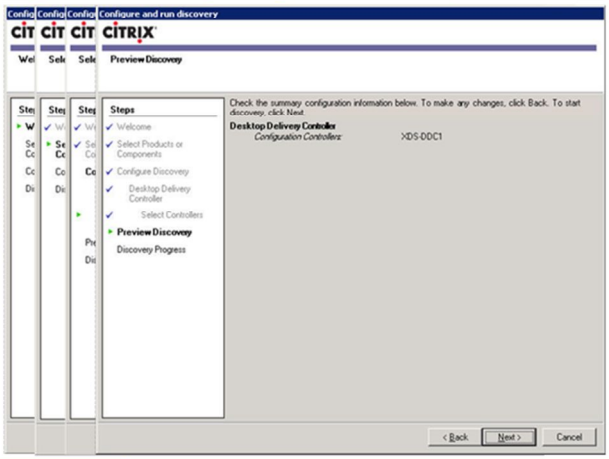

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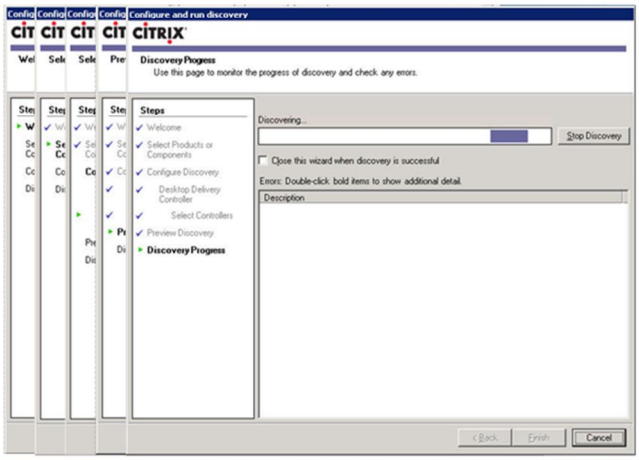

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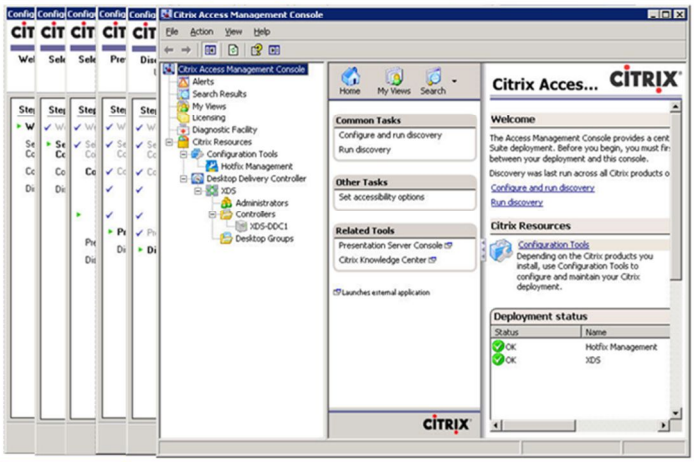
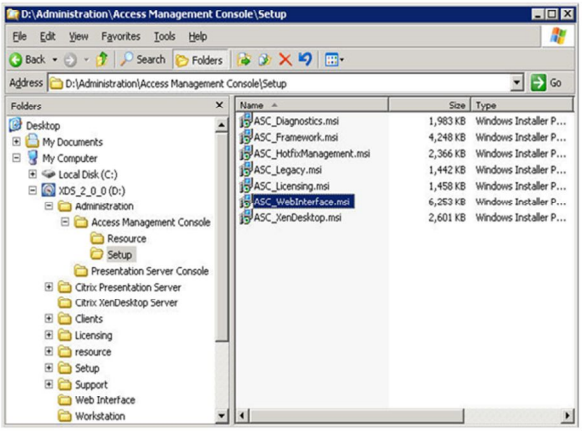


Installing the Web Interface snap-in for XenDesktop



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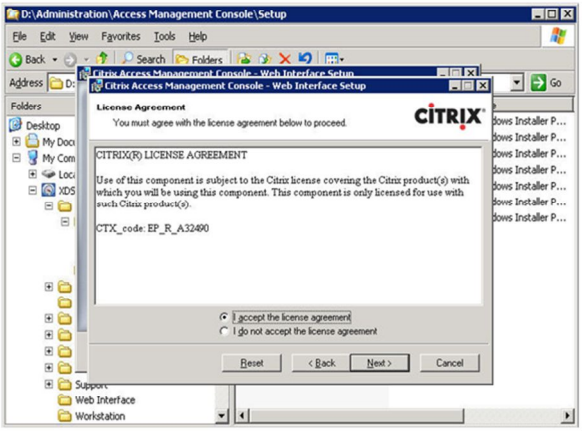

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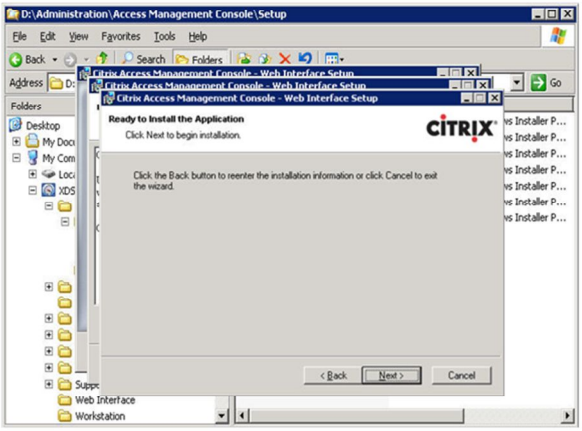

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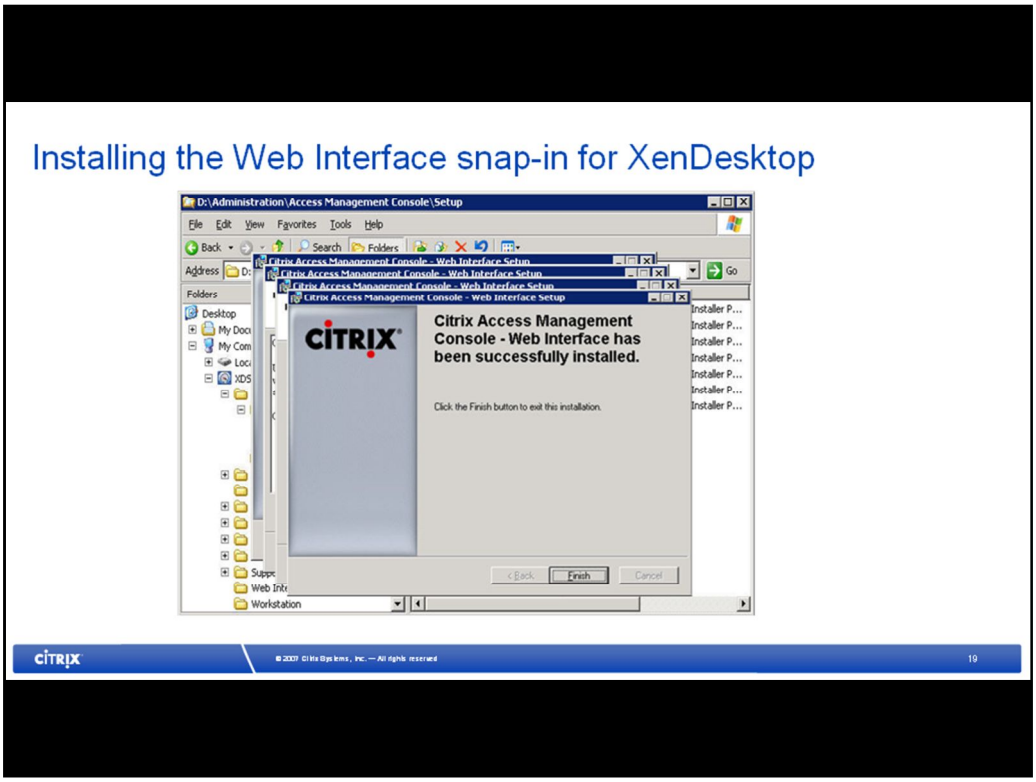
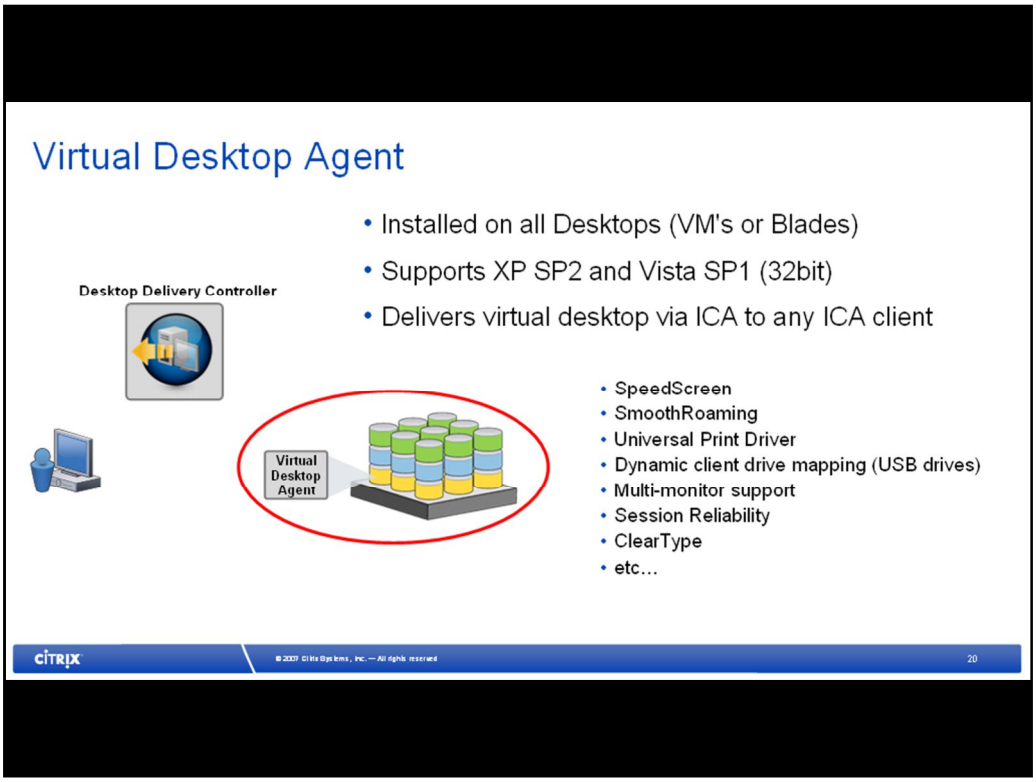
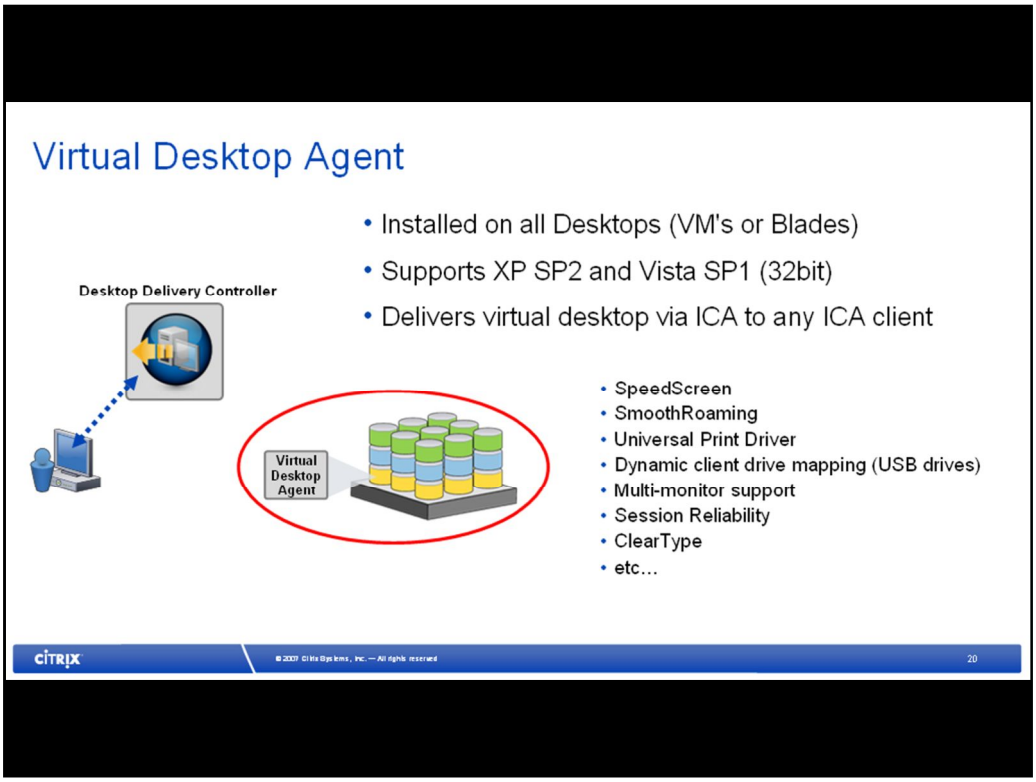


Almost all of the components of Web Interface are installed when the DDC is installed. The only thing missing is the MMC snap-in for WI, which must be installed separately. Here are the steps.

Installing the Web Interface snap-in for XenDesktop



We've been looking at the installation of the DDC. Now, we're switching gears and looking at the installation of the Virtual Desktop Agent – the piece that goes on the virtual machines or the physical machines to which the end user will get connected by the DDC.



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Virtual Desktop Agent

- Installed on all Desktops (VM's or Blades)
- Supports XP SP2 and Vista SP1 (32bit)
- Delivers virtual desktop via ICA to any ICA client

We've been looking at the installation of the DDC. Now, we're switching gears and looking at the installation of the Virtual Desktop Agent – the piece that goes on the virtual or physical machines to which the end user will get connected by the DDC.

- SpeedScreen
- SmoothRoaming
- Universal Print Driver
- Dynamic client drive mapping (USB drives)
- Multi-monitor support
- Session Reliability
- ClearType
- etc…

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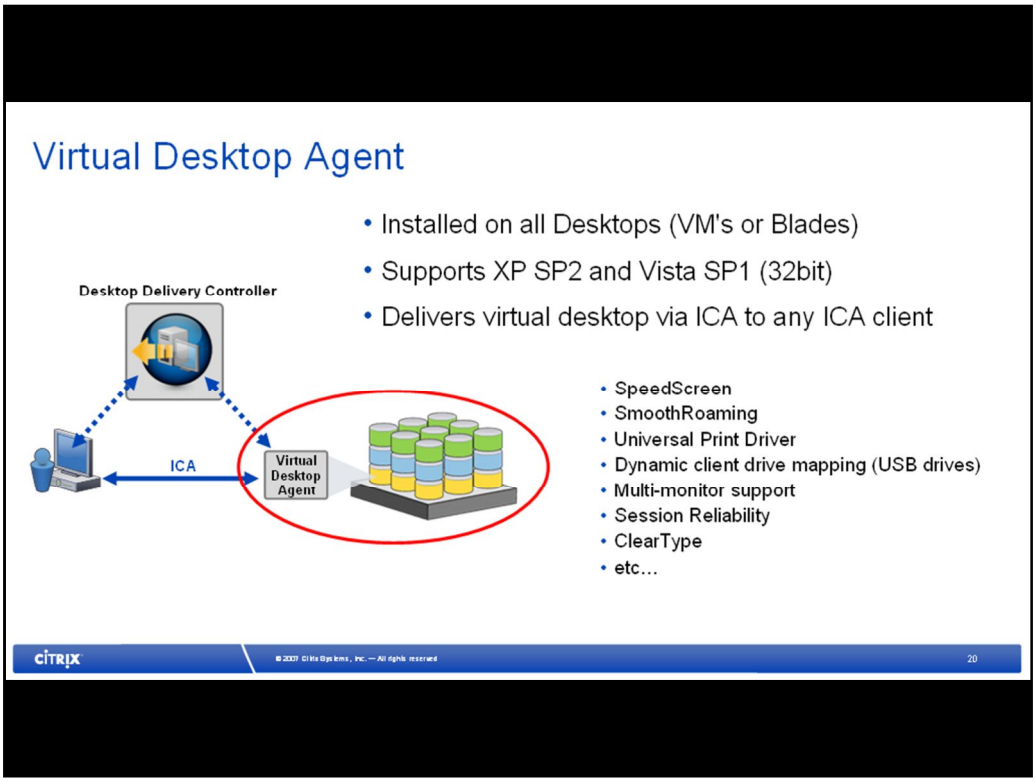

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Virtual Desktop Requirements

Supported Desktop Operating Systems

- Windows XP Professional 32-bit with Service Pack 2 or later
- Windows Vista 32-bit Business, Ultimate, or Enterprise Editions

Virtual Desktop Agent Prerequisites

- .NET Framework 3.5
- Visual C++ 2005 Runtime Library
- Both are auto detected and installed

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Installed Services

- Additional Services Installed by the Virtual Desktop Agent

Citrix CGP Server Service	Reliable connection endpoint	Started	Automatic
Citrix Desktop Service	The Citrix Desktop Service ma...	Started	Automatic
Citrix Encryption Service	Secure ICA encryption	Started	Automatic
Citrix ICA Service	The Citrix ICA Service manag...	Started	Automatic
Citrix Print Manager Service	This service supports the Citri...	Started	Automatic
Citrix XenServer WinGuest Service	Monitors and provides variou...	Started	Automatic

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The **Citrix ICA Service** manages communication between the endpoint device and the virtual desktop. It handles the remoting of graphics from the workstation to the client and the remoting of input from the client to the workstation. ICA on XenDesktop is unofficially known as “PortICA”. There is no “Double Hop”, nor any RDP support, and it does NOT require a TSCAL!

The **Citrix Desktop Service** manages communication between the delivery controller and virtual desktops. It handles initial brokering of connections, settings for connections, and interaction with sessions from the Access Management Console.

The other supporting services help with other features such as auto-reconnections, printing and encryption.

Installing the Virtual Desktop Agent

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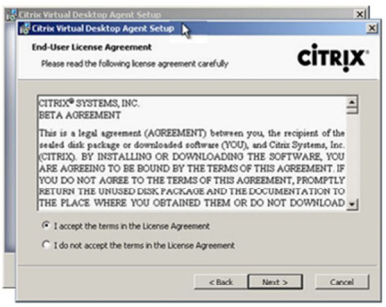
These steps are done on the virtual or physical machines that will be delivered to the end user.

Installing the Virtual Desktop Agent



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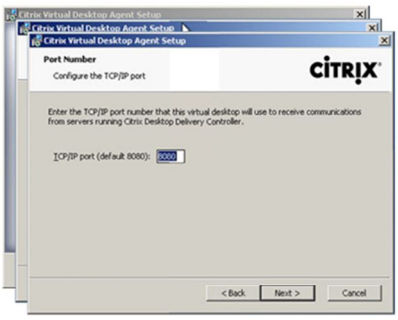
Installing the Virtual Desktop Agent



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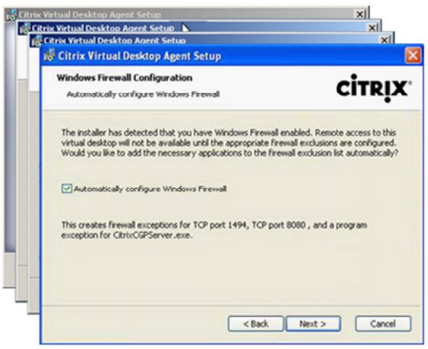
These steps are done on the virtual or physical machines that will be delivered to the end user.

Installing the Virtual Desktop Agent



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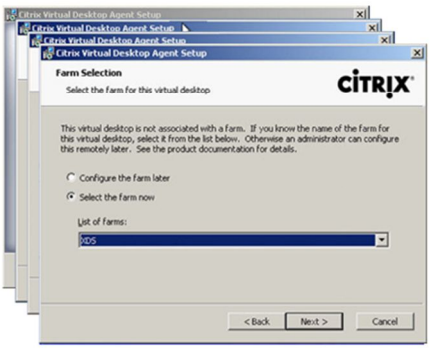
Installing the Virtual Desktop Agent



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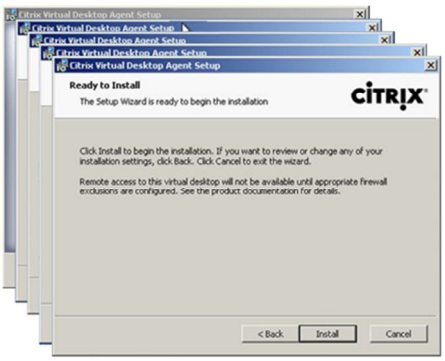
Installing the Virtual Desktop Agent



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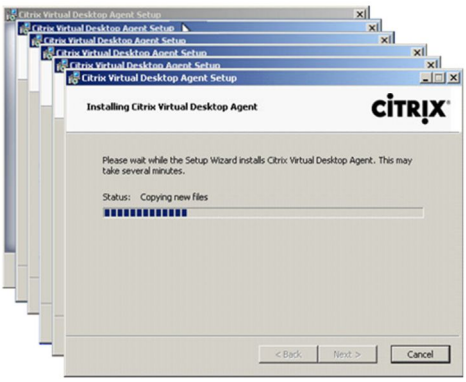
Installing the Virtual Desktop Agent



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Installing the Virtual Desktop Agent

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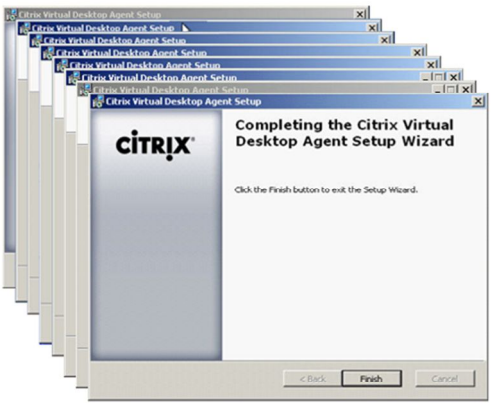

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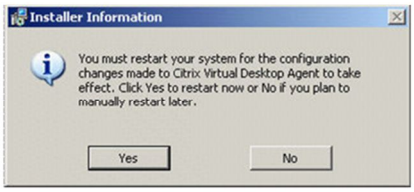

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These steps are done on the virtual or physical machines that will be delivered to the end user.

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Citrix XenDesktop Management Tools

AMC Changes for XenDesktop

- "Create Desktops" instead of Publish Applications
- Web Interface node not installed by default
- No preference setting for Data Collector
- No Zone Preference Failover support
  - DDC is not designed for cross-site deployments
  - Zones & zone masters have been removed from the AMC
  - Best practice for multiple sites is to create a separate XD farm on every site and aggregate through WI

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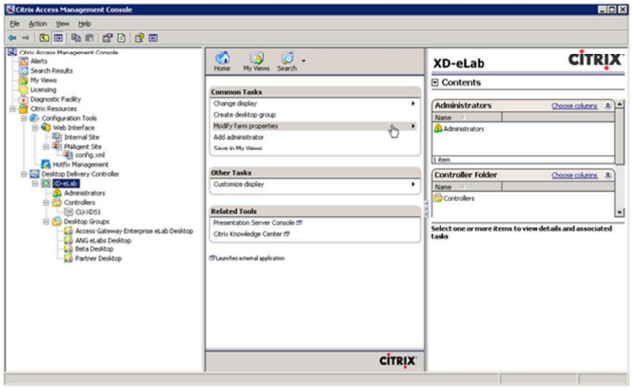
We're shifting gears again. We've just covered the installation of pieces, now we're talking about administration, specifically the Access Management Console. Zone management changes can be done through the registry if desired, otherwise 1st DDC installed is Zone Data Collector.

XenDesktop Administration – Farm Properties



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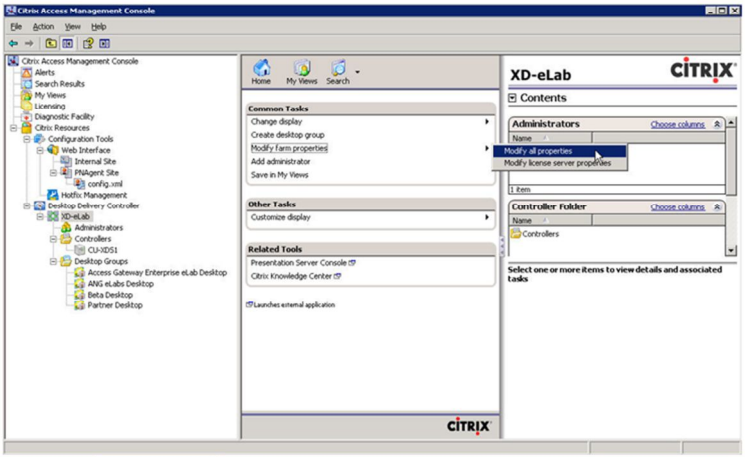

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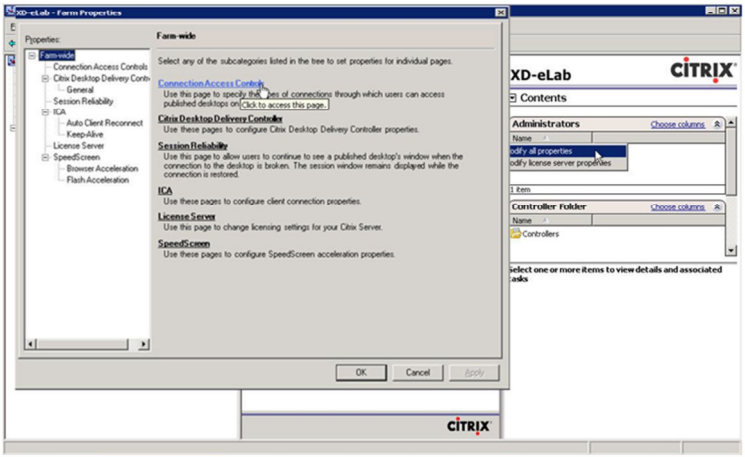

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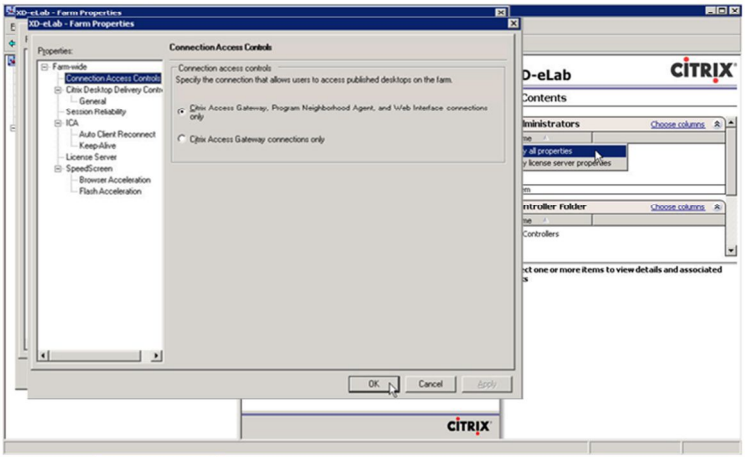

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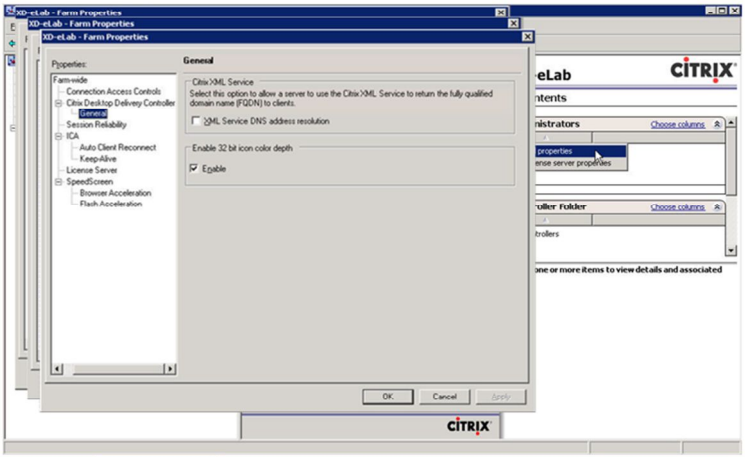

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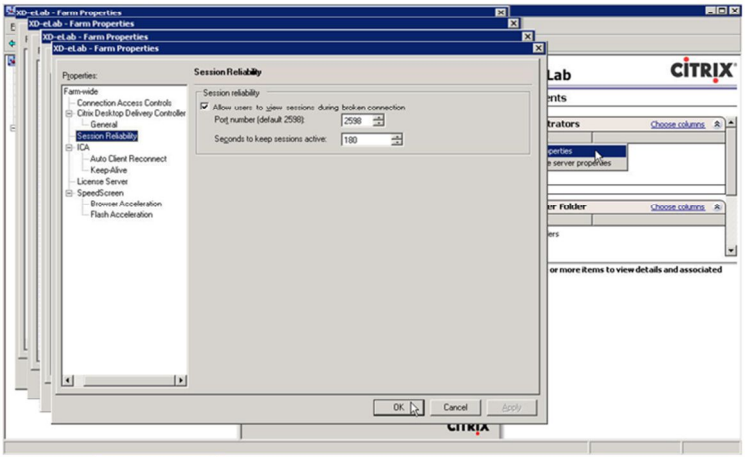

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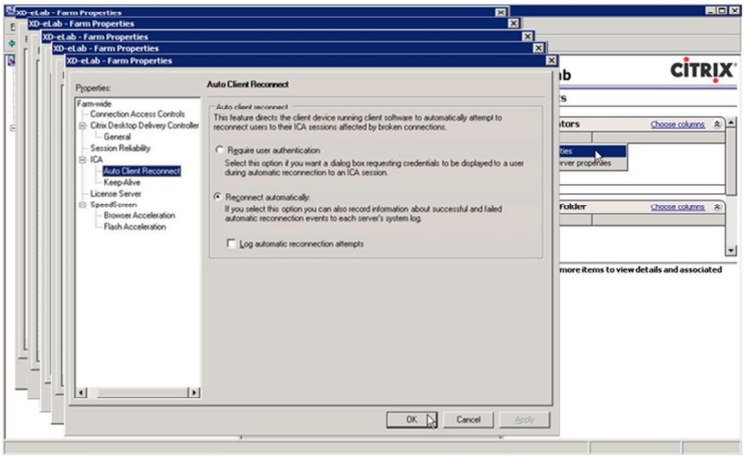

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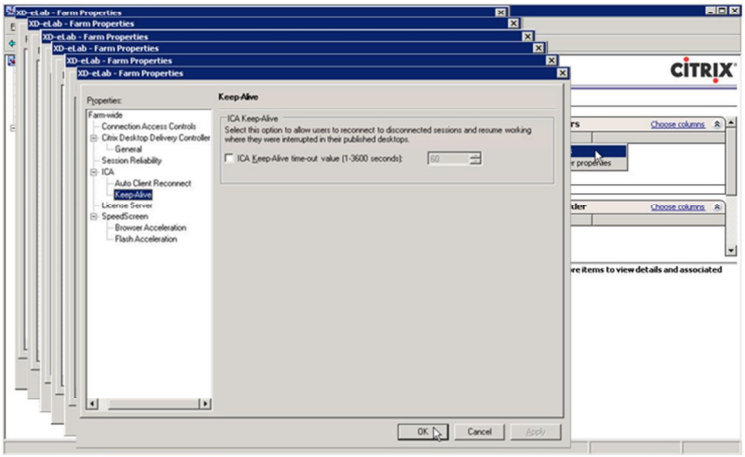

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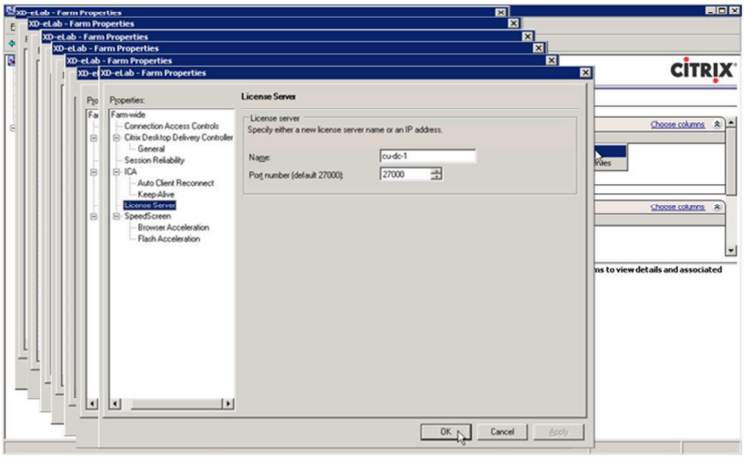

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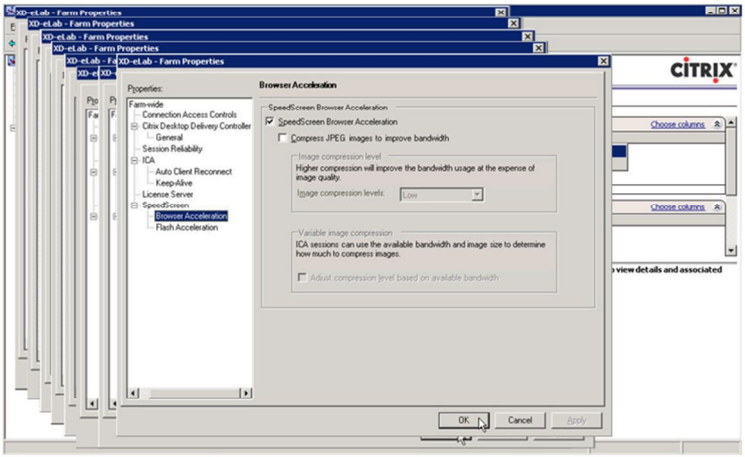

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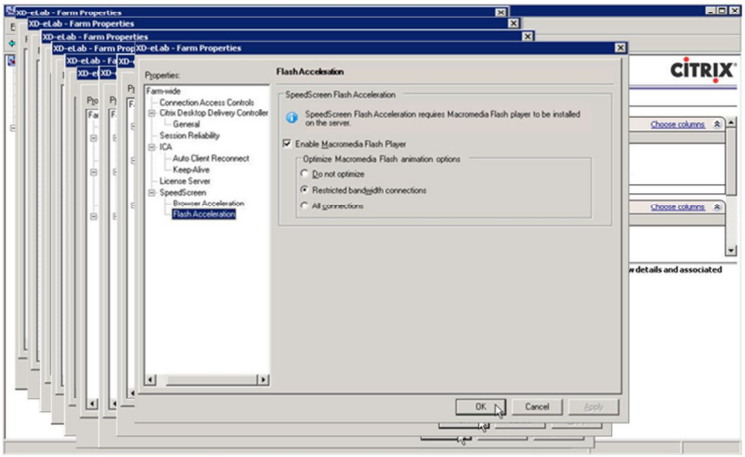

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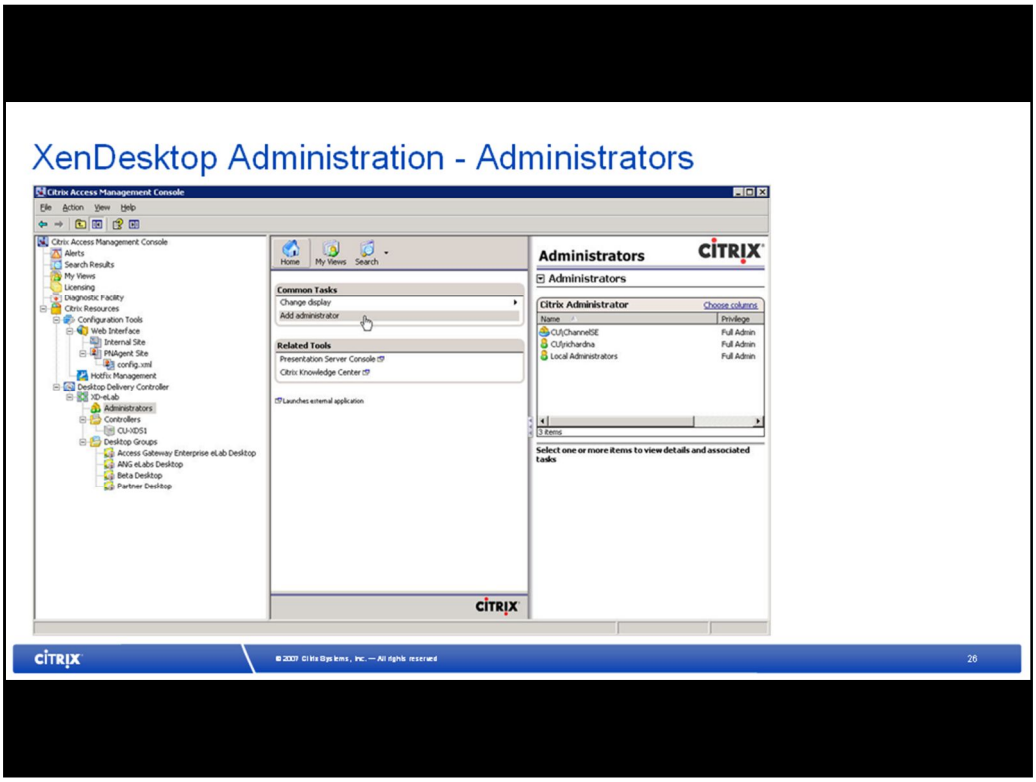

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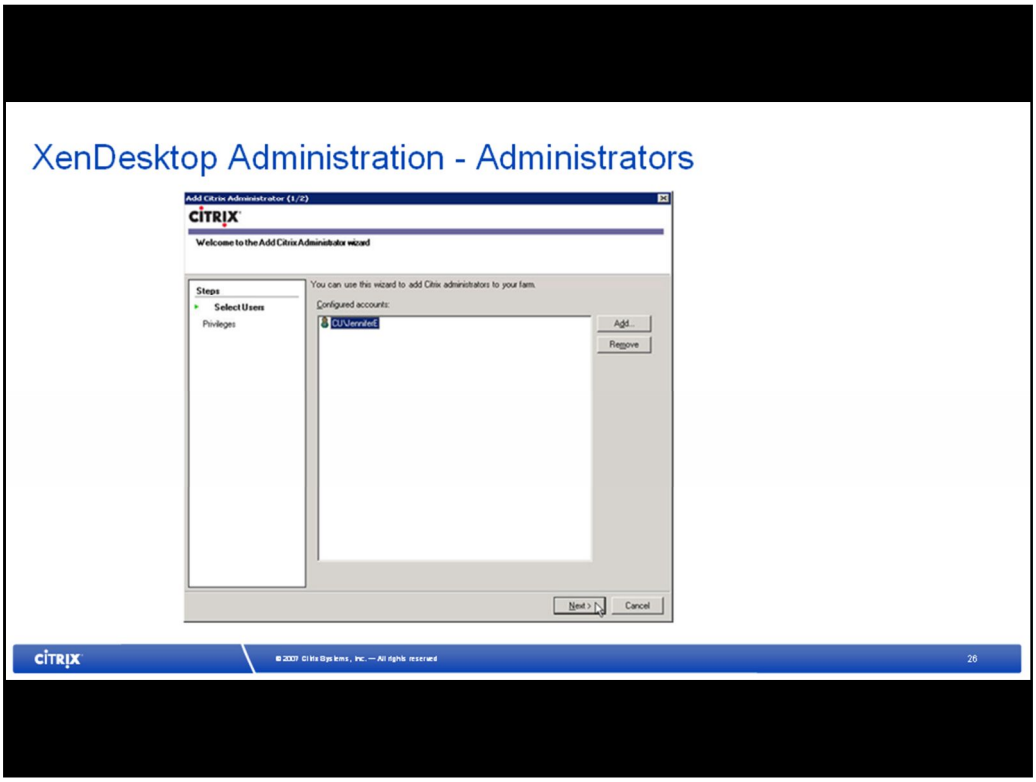
Future plans call for more granularity and choices in a later version.



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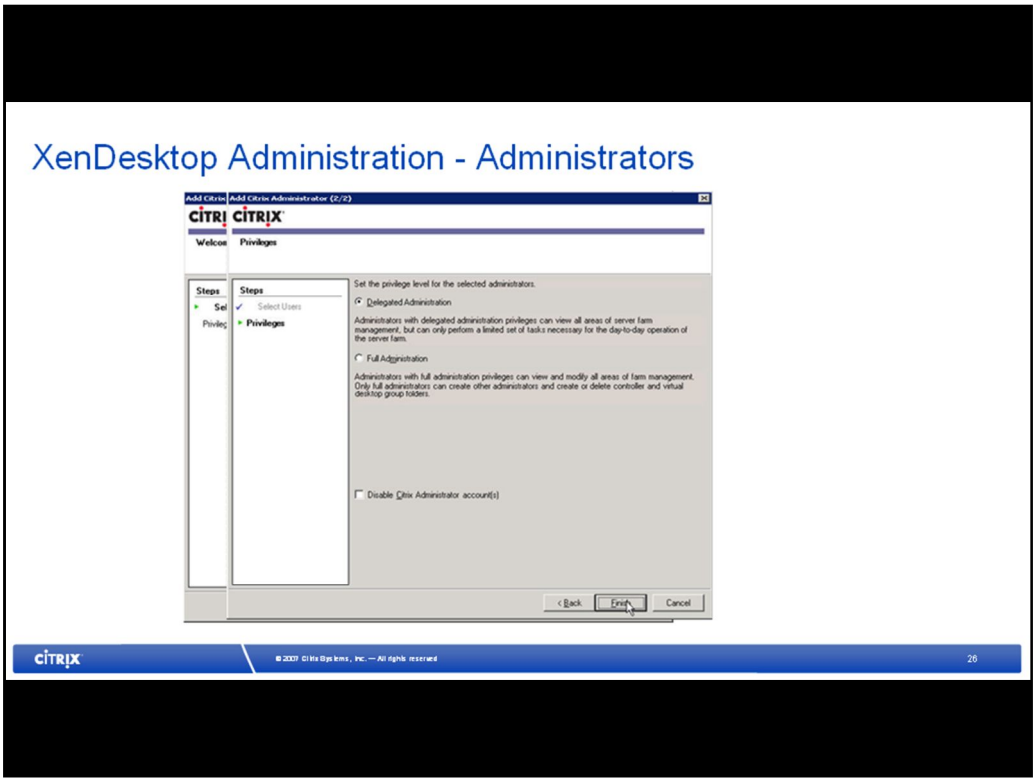

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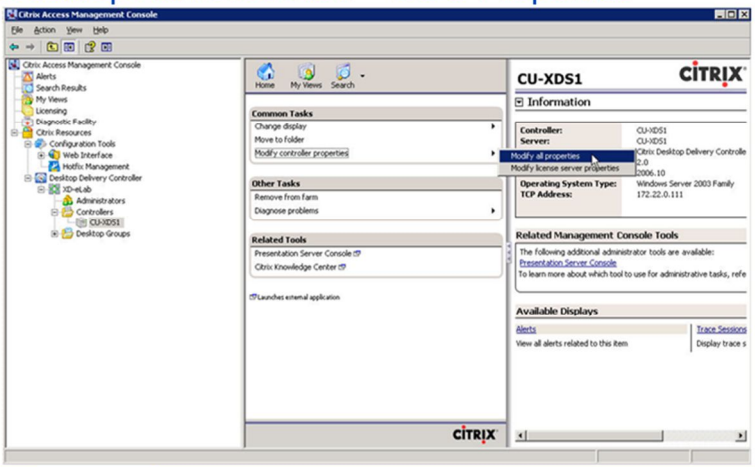

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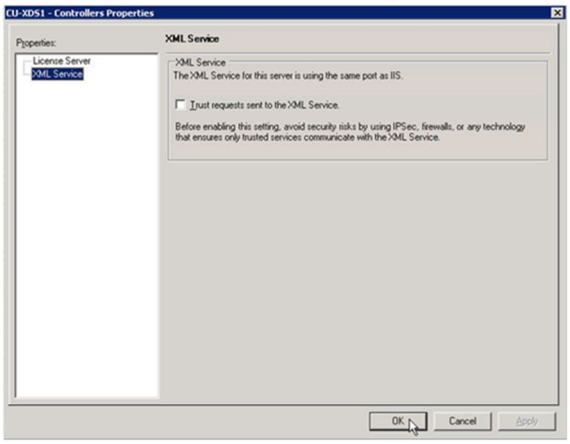
XenDesktop Administration – DDC Properties



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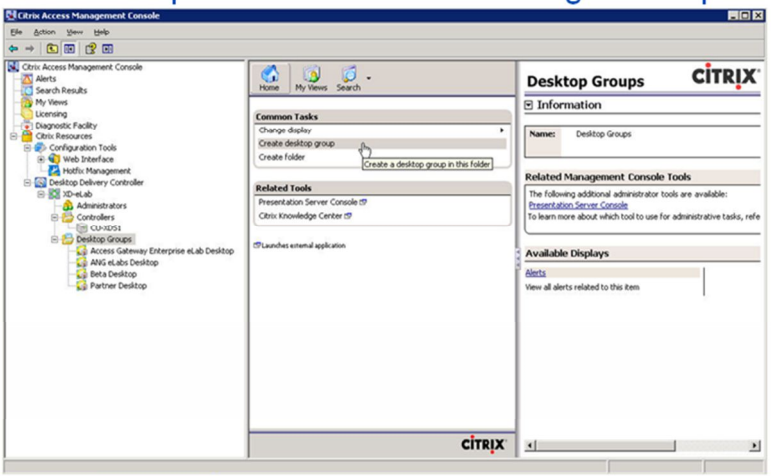
XenDesktop Administration – Creating Desktop Groups



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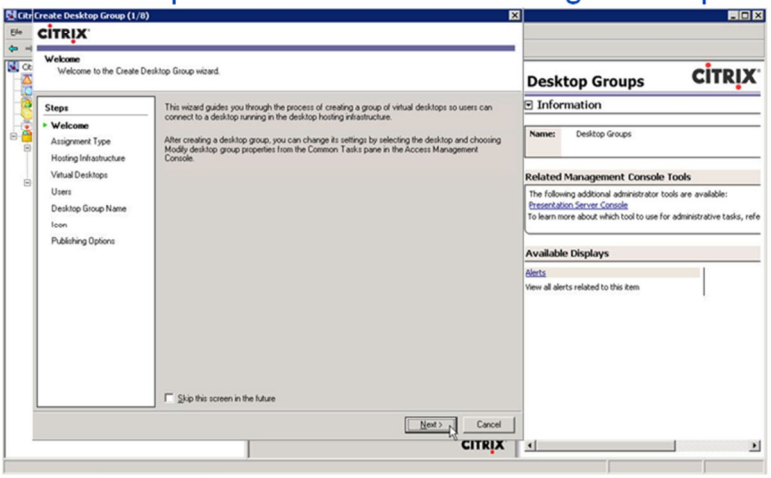

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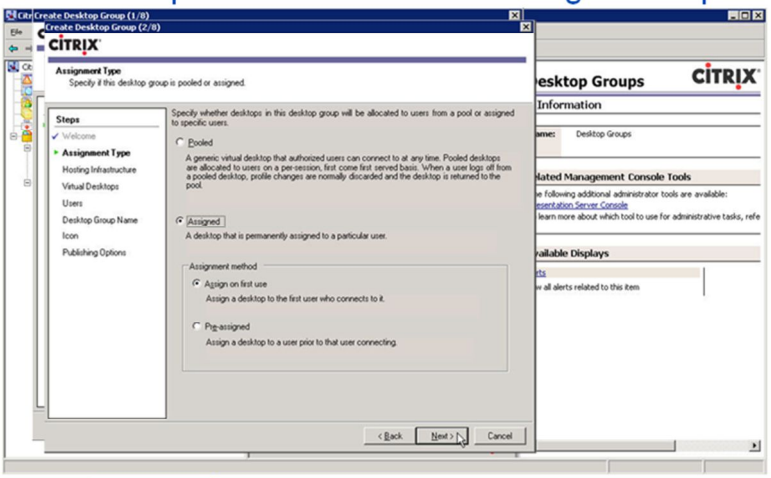

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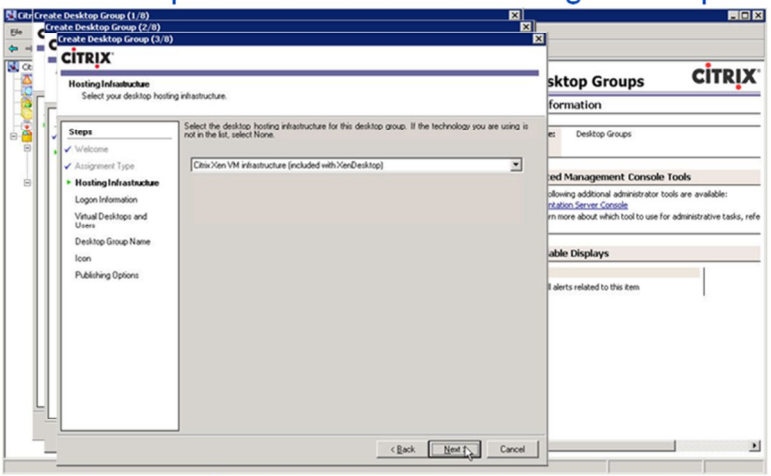

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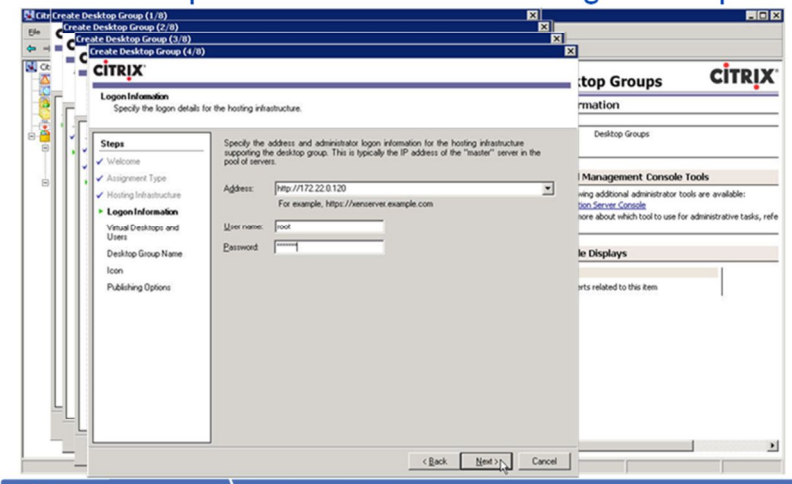

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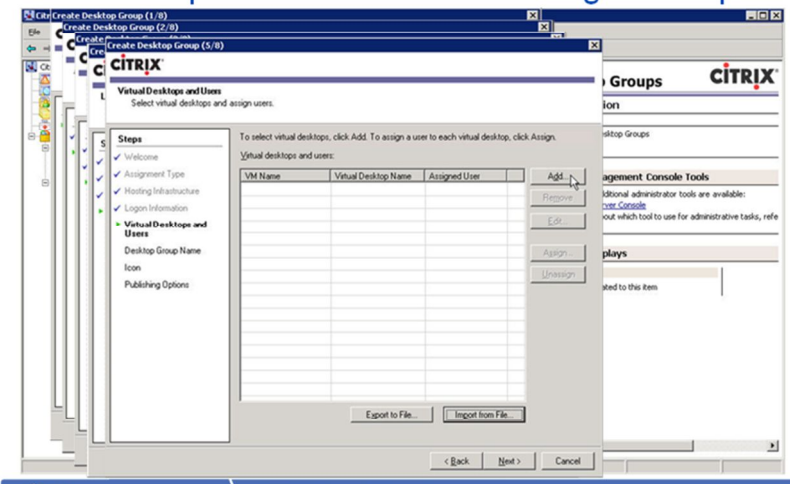

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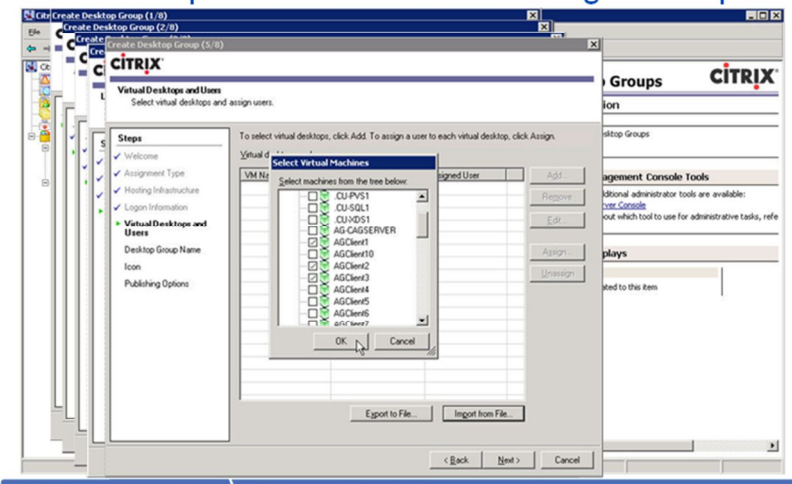

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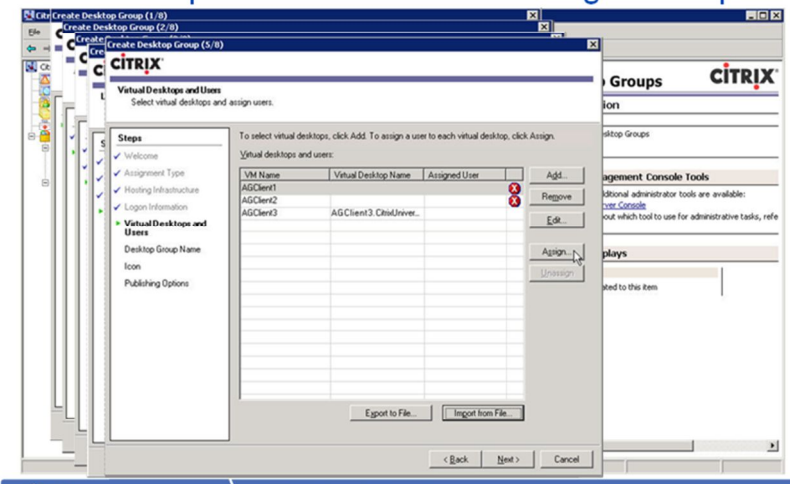

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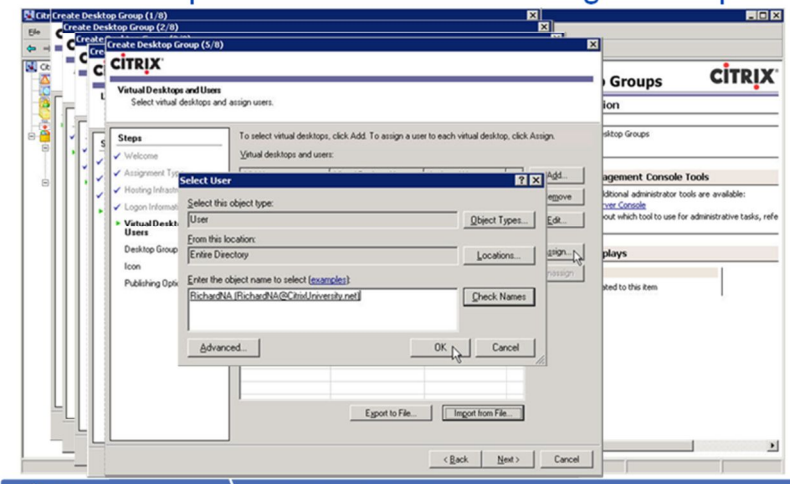

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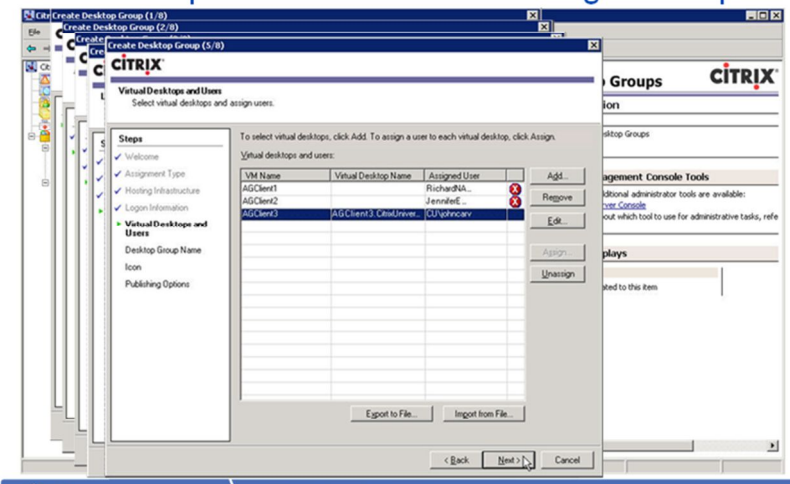

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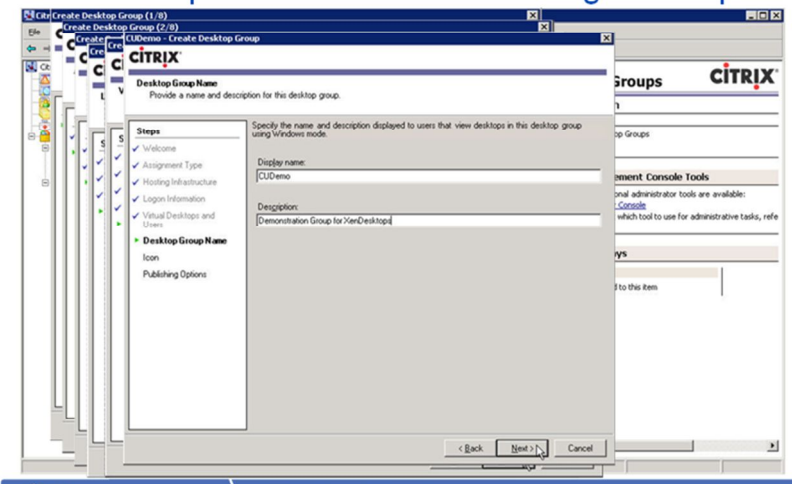

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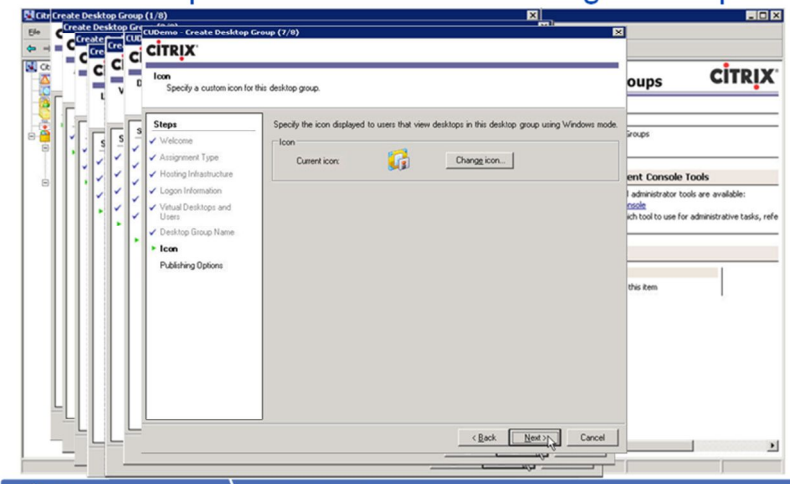

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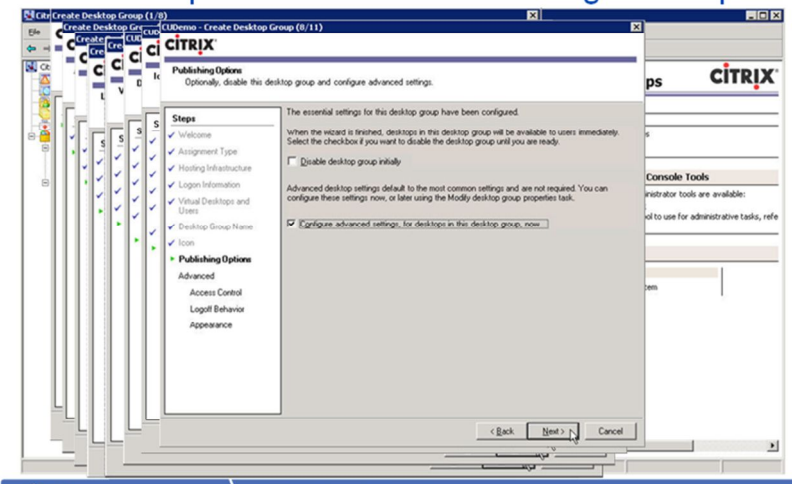

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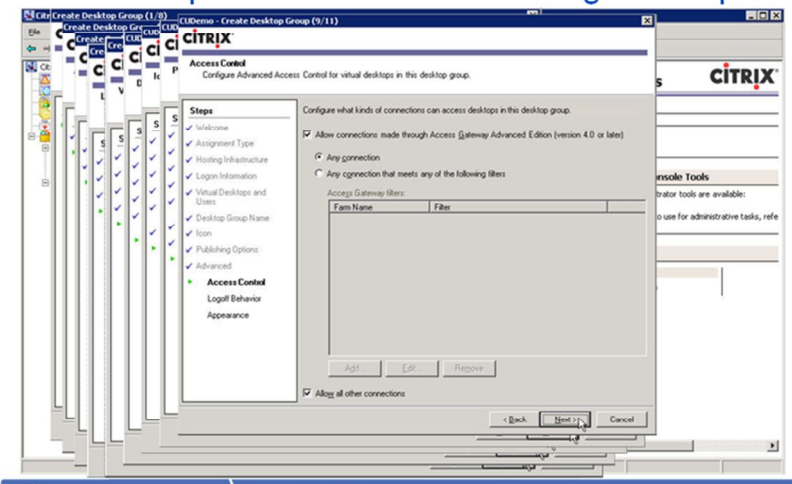

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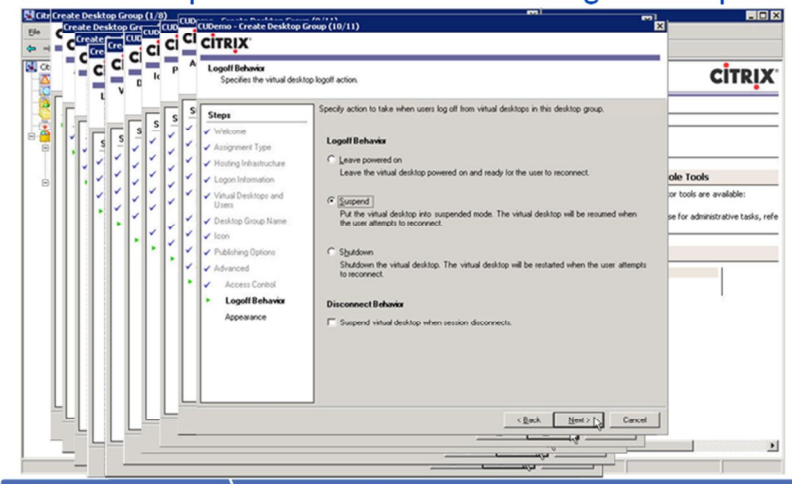

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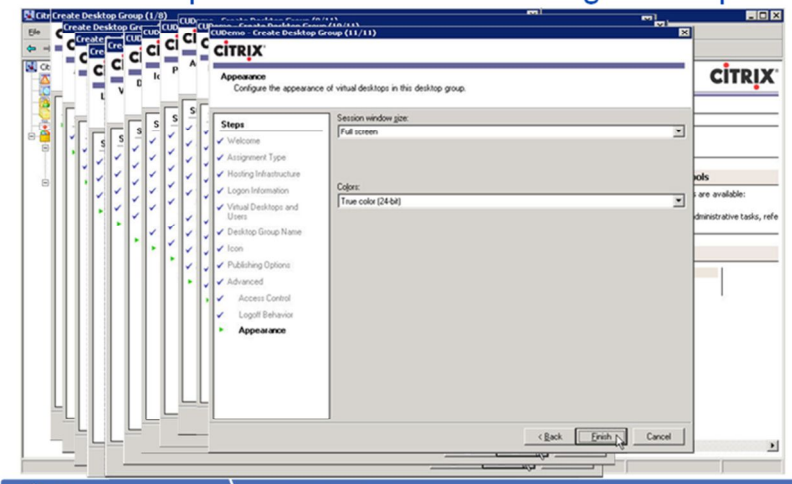

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Disconnect and Logoff

- Disconnect from desktop keeps the virtual running
- Logoff behavior can be configured to
  - Restart the virtual
  - Do Nothing
  - Leave On (For Assigned Only)
  - Suspend (For Assigned Only)
  - Shutdown (For Assigned Only)
  - Disconnect (For Assigned Only)
- Logoff Disconnected Sessions is a desktop (PortICA) setting
- Note: Assigned Virtual Desktops run for 5 minutes after disconnects before Pool Management suspends it

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Disconnecting from a published desktop

Pooled virtual desktop group

A virtual machine will remain running when a user disconnects; the pool manager will not attempt to suspend or shut the machine down.

The desktop has a setting (described in the PortICA Feature Specification) to logoff disconnected sessions. Once logoff has occurred, the workstation

will follow the same behavior as if the user or administrator had initiated the logoff.

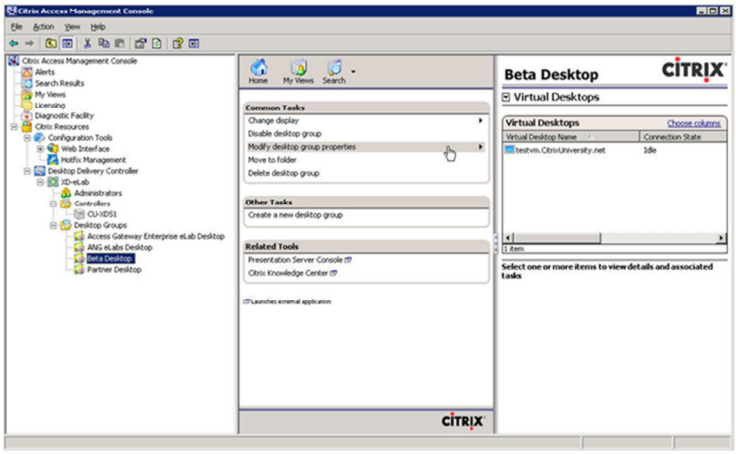
Assigned (Pre-assigned, Assign on first use)

A virtual machine will remain running for 5 minutes after a user disconnects; the pool manager will then suspend it. This behavior can be changed by

the administrator via the AMC, where the user can determine if they want disconnected machines to be left running or to be suspended after a short

delay.

XenDesktop Administration – Modifying Desktop Groups



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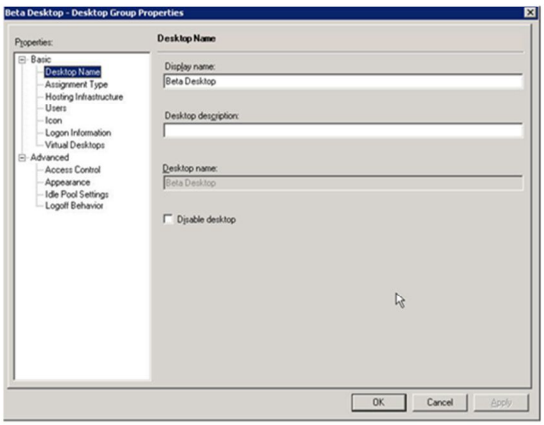

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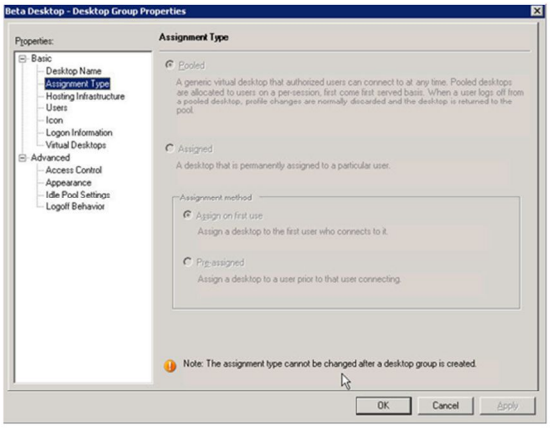

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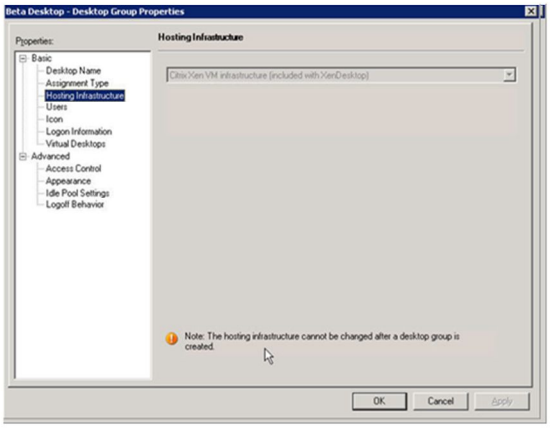
XenDesktop Administration – Modifying Desktop Groups



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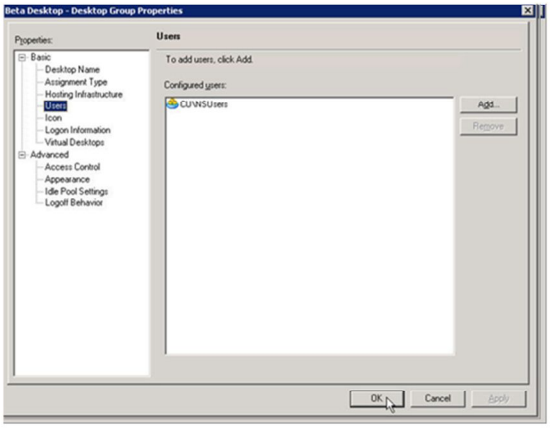

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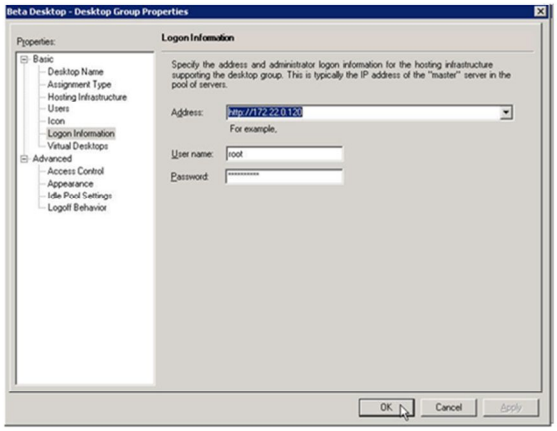

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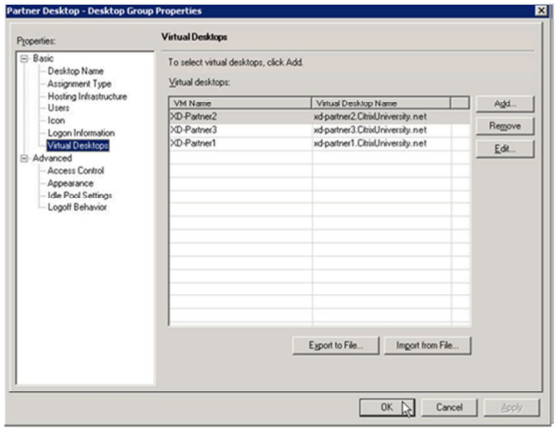

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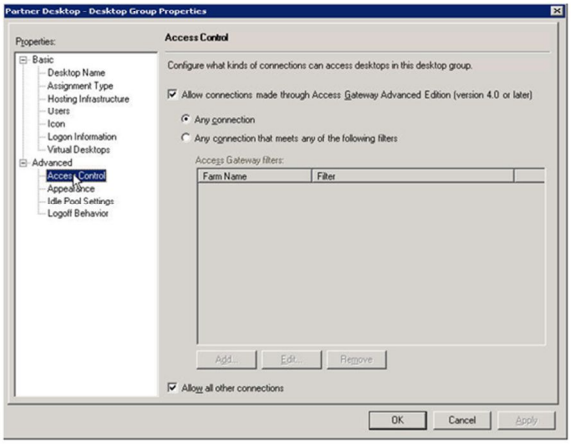
XenDesktop Admin – Advanced Desktop Group Settings



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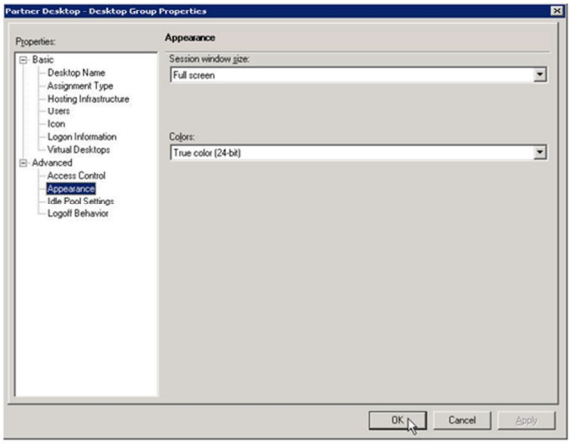

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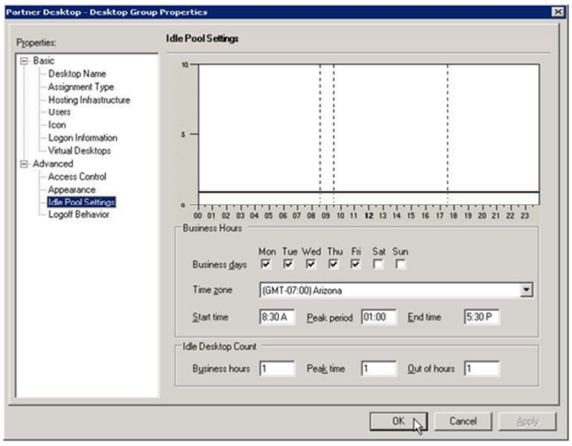

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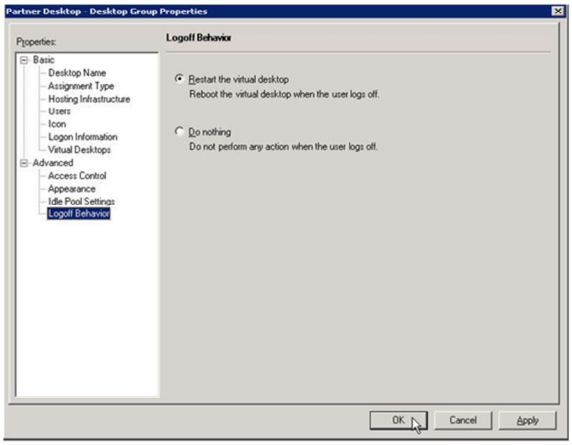
XenDesktop Admin – Advanced Desktop Group Settings



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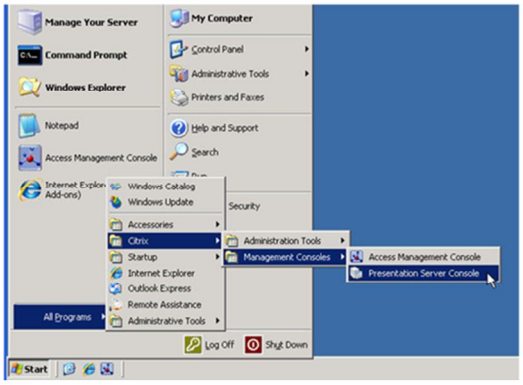
XenDesktop Admin – Presentation Server Console



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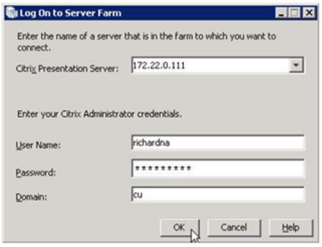
XenDesktop Admin – Presentation Server Console



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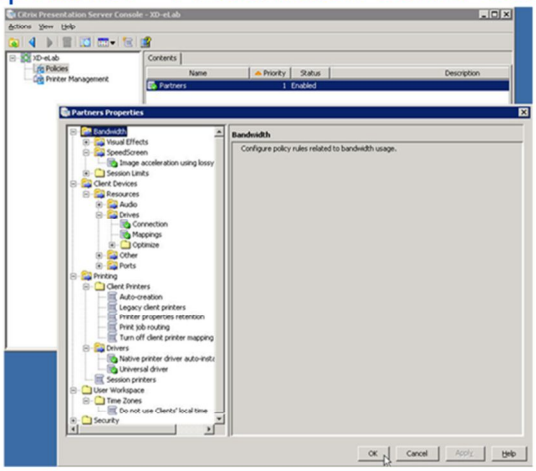
XenDesktop Admin – Presentation Server Console



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XenDesktop Setup Tool

- Must run on the Provisioning Server
- Simplifies and automates Desktop creation
- Can create one to many Desktops in seconds
- Command Line Interface MCLI.exe (PVS 4.5 SP1)
- Requires Domain Admin rights

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Full Screen Only Mode

- Steps to perform
  - Run *liveindesktop.msi* on endpoint after running Ica32pkg.msi (PNAgent)
- Liveindesktop.msi changes default shell from explorer.exe to PNAgent.exe.
- PNAgent.exe running as shell at logon
  - Immediately tries connecting user to its virtual desktop
  - Assumption: Single Sign-on enabled and desktop assigned to user
- User is completely unaware of any local desktops or local OS's

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"Full Screen only" mode (previously called "Live-in Desktop") is an entirely transparent connection to a Xen Desktop. It was originally planned for thin client access but now covers desktops from both XP or XPe hosts.

If desired, the user's device can be configured to run XenDesktop only in Full-Screen mode, turning it into a XenDesktop appliance or kiosk. When liveindesktop.msi is installed, the PNAgent becomes the OS's shell with a config URL that cannot be changed by the user. The Config URL can be edited using GPO or through the PNAgent config.xml redirection.

PNAgent will use single sign on and then will request ICA files. The response should be limited to 1 XenDesktop resource, which will be automatically launched. If more than one XenDesktop ICA file is returned the alphabetically first desktop resource will be launched. If none are returned an error message will be displayed and the user logged off. This is not standard PNAgent behavior and will be switched on by the fact that PNAgent is the default shell in the registry.

Steps to setup for full-screen only mode:

•On the endpoint device, log on as a local administrator account.

•Download or run the appropriate language version (for example, fullscreenonly_en.msi) and double-click the file. The Citrix Full-Screen-Only Desktop Setup wizard appears.

•On the **License Agreement** page, read and accept the Citrix license agreement and click **Install**. The Installation Progress page appears.

•In the **Installation Completed** dialog box, click **Close**.

•When prompted, restart the endpoint computer. If you have been granted access to a full-screen-only desktop and you log in as a domain user, the computer will restart in full-screen-only mode.

PortICA connections will support Cascading Logoff and cascaded lock. (Explained on next slide.)

Cascading Logoff

- Desktops can be configured so that
  - When user logs off of the virtual desktop
  - User is also logged off of the end point device seamlessly
- Full Screen Only Mode will support
  - Cascading Logoff
  - Cascading Lock

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Citrix Desktop Toolbar

- Administrators can allow end users to be able to control virtual workstation (stop, start, minimize)
- Similar to the RDP client

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ICA Client Feature Mapping

Client	Full Screen Mode	Dynamic USB Drive Mapping	Desktop Toolbar
Win32 (WinXPe)	●	●	●
WinCE	●	●	
Linux for XD (RTM May 2008)	●	●	

The following client versions are also supported, but do not support the Citrix Desktop Toolbar, fullscreen-only mode, or dynamic client drive mapping:

Client for Java 9.*x*
Client for Linux x86 10.*x*
Client for Solaris SPARC 8.*x*
Client for Solaris x86 8.*x*
Client for Macintosh OS X 10.*x*

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Linux ICA Client

A Linux XD ICA client will be released in May 08 to coincide with the XenDesktop release. This release will contain the Live-In-Desktop and Dynamic CDM (USB Drive mapping) functionality to provide live-in-desktop functionality to linux clients and linux based Desktop Appliances.

WinCE ICA Client

The WinCE ICA client will also be released in May 08 to coincide with the main XenDesktop release. This client will contain only the LID and DCDM functionality.

The following client versions are also supported, but do not support the Citrix Desktop Toolbar, fullscreen-only mode, or dynamic client drive mapping:

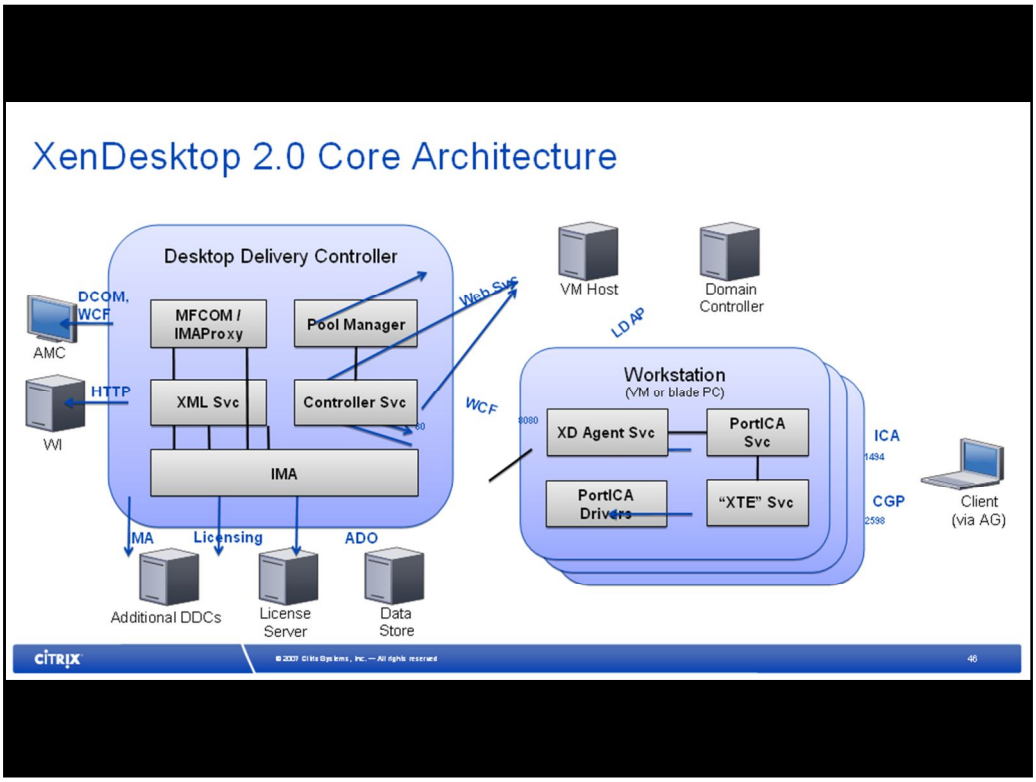
Client for Java 9.*x*

Client for Linux x86 10.*x*

Client for Solaris SPARC 8.*x*

Client for Solaris x86 8.*x*

Client for Macintosh OS X 10.*x*



The Desktop Deliver Controller (DDC) is based on CPS (XenApp) technology.

MFCOM/IMAProxy is used to communicate with the Access Management Console (AMC), which uses DCOM and Windows Communication Foundation (WCF). The DDC communicates with Web Interface using the XML Service, just as Xen App does. The IMA service is used to communicate with other DDCs in the farm, with the License server, and the Data Store, just as with XenApp.

The Pool Manager and the Controller Service are WCF web services that require .NET 3.0.

The Pool Manager has plug-ins that make it capable of working with XenServer, VMware, and (coming soon) Microsoft Hyper-V. The Pool Manager is responsible for choosing a VM from the Desktop Group and assigning it to a user.

The Controller service manages querying Active Directory for user authorization and then setting up the PortICA user connection to the VM.

The Virtual Desktop Agent (VDA) provides the XD Agent service on the VM that communicates via port 8080 (default, can be changed) with the Controller Service on the DDC. The VDA queries LDAP for XD farm information only on installation or reconfiguration. The VDA also provides the PortICA, and XTE services, and PortICA drivers necessary for the endpoint device using the ICA client to communicate with the VM over 1494 or 2598.

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