AUTODESK UNIVERSITY 2015

IT10958 Using IT Technology for Robust, Professional CAD/BIM Administration

Instructor:

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Learning Objectives

- Discover IT specific technologies and how they may be of benefit
- Discover why as back-end IT, technology matters to our daily work
- Discover best IT practices for managing CAD/BIM technologies
- Engage your counterparts in IT or CAD/BIM management to provide a best in-class experience to your users

Description

Most IT professionals struggle to understand CAD, Building Information Modeling (BIM), or engineering workflow, not to mention manage those specialized technologies. Most CAD/BIM managers/administrators are power users who started as a drafter or engineer but lack advanced IT skills. Both skill sets are highly valued assets in any organization, but when the two come together, some amazing things can start to happen—Distributed File System Replication, Domain Name System (DNS), Active Directory, Group Policy, Security Groups, Sites and Services, User Account Control, DNS Aliases, Shadow Copy, and the list goes on. As an IT professional, do you understand how these technologies can affect and benefit your CAD/BIM users? As a CAD/BIM manager/administrator, do you know how to capitalize on these technologies or even what they are or why you should care? This session will explain how these 2 groups can come together and capitalize on IT to accelerate your users and not hinder them.

Your AU Experts

A Midwestern transplant now based in Southern California, veteran Autodesk University speaker Darren Young has held a variety of positions over the last 20 years, including CAD and CAM engineer, CAD administrator, and CAD/CAM systems developer. Currently Darren is the systems integration manager for Southland Industries, one of the largest mechanical engineering and construction companies in the United States. Darren manages one of the largest installations of Fabrication software licenses in the world. While Darren's true interest is the automation of manufacturing systems, his experience ranges from lean manufacturing to architecture, and this has led him to projects varying in scope from dress patterns to gas turbine piping. He has founded a consulting and development business, and he has been a technical editor and publication author.

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Philosophy

- Minimize user exposure to technology environment and processes
- Provide more than is needed, before it's needed
- Centralize administration
- Make your environment more complicated if it makes the users less complicated
- Build self-help portals for users
- Take control of the environment
- Get to know your server and networking (CAD/BIM mgrs./admins)
- Polish your solutions (from user's perspective)
- Think about failover and redundancy
- Think about what could go wrong
- Make small improvements w/each touch
- Minimize maintenance

Technology

Virtual Servers

Virtual machines are a great way to segregate IT services to separate machines. This prevents multiple services being impacted if a particular server does down. It also minimizes hardware cost. Most enterprise virtual environments offer automatic failover and redundancy so if the hardware the Virtual machines are running on fails, it'll automatically migrate to other hardware.

Additionally, virtual machines are easy to backup, copy, restore and recreate seeing as no physical hardware is needed for that machine. Best of all, you can "Snapshot" the state of a virtual machine, update it and if something fails, roll it back to its prior state very easily.

Some of the major players are…

- VMWare
- Hyper-V (Microsoft)
- Oracle

DNS Aliases

A DNS alias is just a bogus name that gets directed to another alias, server or IP address. Use it to reference servers where possible (file servers, license servers, etc.) A simple update of DNS records can migrate an entire enterprise to a new server with virtually zero client interaction.

Example:

Alias: **ADSK-FLEXLM** Server Name: **X452-W2k8** IP Address: **123.42.45.02**	Update DNS Records when moving to new server. 	Alias: **ADSK-FLEXLM** Server Name: **X452-W2k12** IP Address: **123.42.45.17**

Active Directory - Security Groups

Active Directory defines the organizational structure of your networking environment. Within Active Directory, you can create "Security" groups. You place users into these groups and assign the groups to other things like Folder permissions or permission to Remote Desktop into a system to grant access.

Nested groups should be avoided unless you have a clearly documented naming standard and structure. In no case should you grant an individual access to anything, it should be granted to 1 or more security groups. If done properly, any request for access to almost any resource should be able to be granted (or revoked) by adding or removing users from security groups.

Active Directory – Distribution Groups

Active Directory defines the organizational structure of your networking environment. Within Active Directory, you can create "Distribution" groups. You place users into these groups for purposes of Emailing groups of users.

Nested groups should be avoided unless you have a clearly documented naming standard and structure. You may be tempted to mix security groups and distribution groups by creating a group that serves both purposes. This is not recommended as there's always exceptions and it's rare these 2 groups are the same.

E.g. Manager needs Email notification of service interruption but doesn't need access or administration folks need access but don't want notifications.

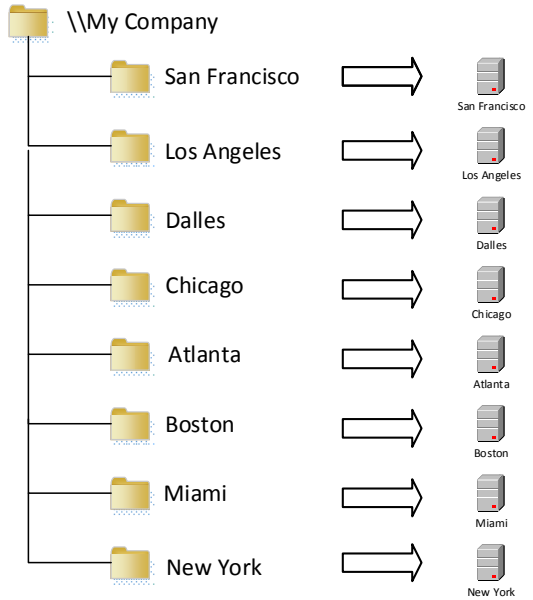
Shadow Copy

Takes snapshots @ pre-defined intervals of folders/files. Used for several purposes….

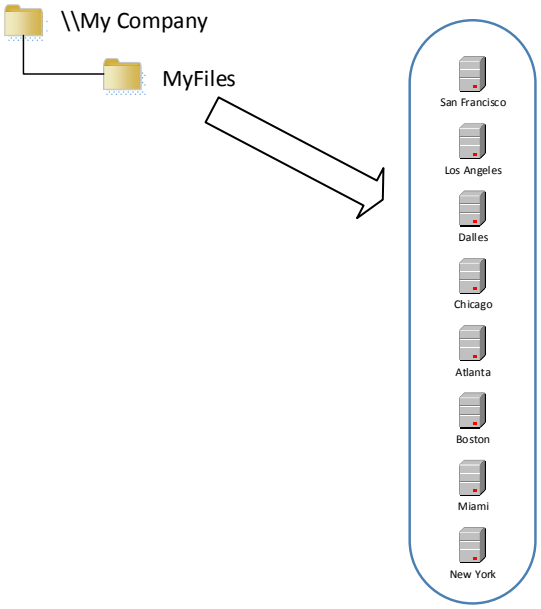
- Allow users to restore their own deleted files
- Provide interim backups of files before traditional tape/network backups occur
- Provide a faster way to restore files than working through IT.

DFS (Distributed File System)

DFS is a great tool for quickly navigating multiple servers in multiple locations via a single directory structure. This eliminates multiple drives to multiple servers and can remove a user's need to know where data is physically located.



Additionally, DFS can be used with replicated datasets across location. Using in this manner allows a single path to point to multiple servers. The user is transparently routed to the server in their location (based on Active Directory Sites and Services configuration)



As DFS itself is simple however it's highly dependent on a healthy network environment like a well-managed Active Directory structure, Sites and Services setup properly. If there are issues with DFS routing you to incorrect servers, it's typically a symptom of some other network deficiencies.

DFSR (Distributed File System Replication)

DFSR is the replication component of DFS. It does not need to be used for replication. It will work best with static or read-only datasets (like CAD/BIM configurations). It does NOT offer real time file locking across servers. You also don't have very much control over how it determines backlogs of data to transfer or their status.

If you have a need to replicate enterprise data (drawings, models, documents) you are likely better off using only DFS for access to the folders but deploying a third party replication solution for those purposes.

Alternative Replication Technologies

When DFSR isn't suitable to data replication, or you have a need to replicate DFS outside of a DFS folder structure, there are several other technologies that can be used. Some of the more popular are as follows…

- Peer Sync
- Global Scape
- Panzura
- Autodesk Vault
- Bentley Projectwise

Registry Edits

Registry edits are perhaps the easiest way to configure a system. A simple shortcut that imports a *.REG file or calls a script/batch file that sets registry settings can do wonders. Another trick is to configure the *.REG files as read-only and hidden so most users don/t see them. They then only see the shortcuts that import them. Building a folder structure of these is one way to provide a "self-help" configuration menu for users.

Shortcut Target to import a *.REG file…

%windir%\Regedit.exe /S "\\myserver\share\cad support\Clear Defaults.reg"

Depending on the registry location for the edit, you may need to configure the shortcut to "run as administrator".

Path Variables

Path variables can be used in shortcuts, batch files, scripts, etc. They are variables that automatically resolve to different path location. Here are some examples…

%commonprogramfiles%	C:\Program Files\Common Files
%commonprogramfiles(x86)%	C:\Program Files (x86)\Common Files
%computername%	*<computer>*
%localappdata%	C:\users*<user>*\AppData\Local
%programfiles%	C:\Program Files
%programfiles(x86)%	C:\Program Files(x86)
%system%	

%username%	*<user>*
%userprofile%	C:\Users*<user>*
%windir%	C:\windows

Offline Files

Offline files is likely the most hated Windows feature by IT professionals. And for good reason. It has a poor interface, prone to issues and isn't well understood what it should or should not be used for. However if you take the time to use and learn it, it can provide some great benefits.

When dealing with read-write data, Offline Files should ONLY be used for user data (not needed by other users).

When dealing with enterprise data, it should be a primarily static, read-only or one way push resource so that user changes do not occur off line. When used in this way, all your network based CAD customization (acad blocks, revit families, fonts, etc.) can be accessed whether online or offline without creating an additional profile, or syncing.

For more control of offline files (preventing users from doing in appropriate things) consider using group policy to control how it operates. Another option is using a utility like RoboCache (www.manusoft.com) which is much like Microsoft's popular RoboCopy utility only it works with Offline files caches.

Scheduled Tasks

Scheduled tasks should not be overlooked. They can run automated tasks when logged on or off at pre-determined intervals. Not are commonly used on a desktop operating system, they're more useful in a server environment. If you run a nightly replication script, you're likely already using scheduled tasks.

Note however that powerful scripting technologies like PowerShell or WMI Scripting can be used to create a single run scheduled task on remote systems that does things like install software.

Login Scripts

Logon scripts are a great way to ensure a systems stays current as well as updated with user specific settings no matter who logs on. When calling network based scripts, you can easily push changes to users in an automated manner as the user logs on the next time.

There are several options for logon scripts.

- Can use the "Startup" folder
- Can use the registry…
  - HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
  - HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\RunOnce
- Group Policy
  - Computer Configuration -> Windows Settings -> Scripts
  - User Configuration -> Windows Settings -> Scripts

Group Policy

Group policy is a set of rules that your administrator can push to your users that control all aspects of your system. If not controlled by your network administrator, you can make changes locally to achieve the same control.