

Top 10 Challenges with Softgrid

(and other application virtualization technologies)

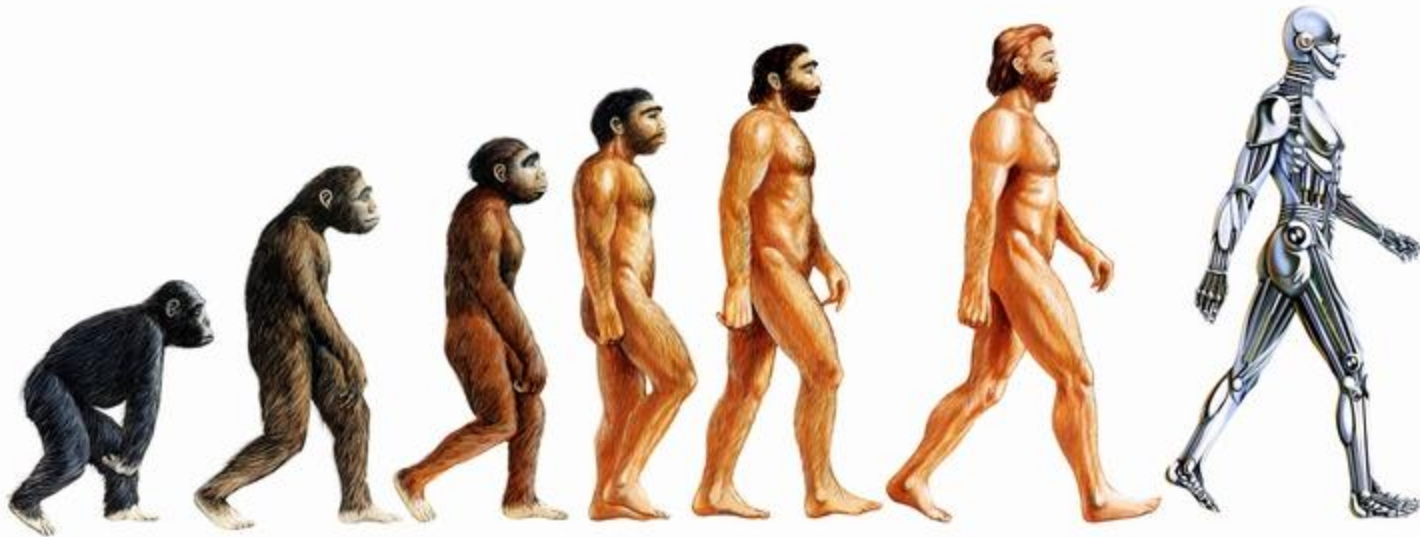
Shawn Bass

Ruben Spruijt

Streaming vs Virtualization

And how did we get here anyway?

Software Deployment



What's wrong with ESD?

- ✓ Machine vs User – Not agile
- ✓ Scheduled delivery vs JIT
- ✓ Re-targeting – not 100% saturation
- ✓ Most ESD not well equipped for VPN / low bandwidth

Software Streaming Principles

- Target the user
- JIT Delivery
- Enables the dynamic desktop / stateless
- Deliver only what's needed

Who's in this space

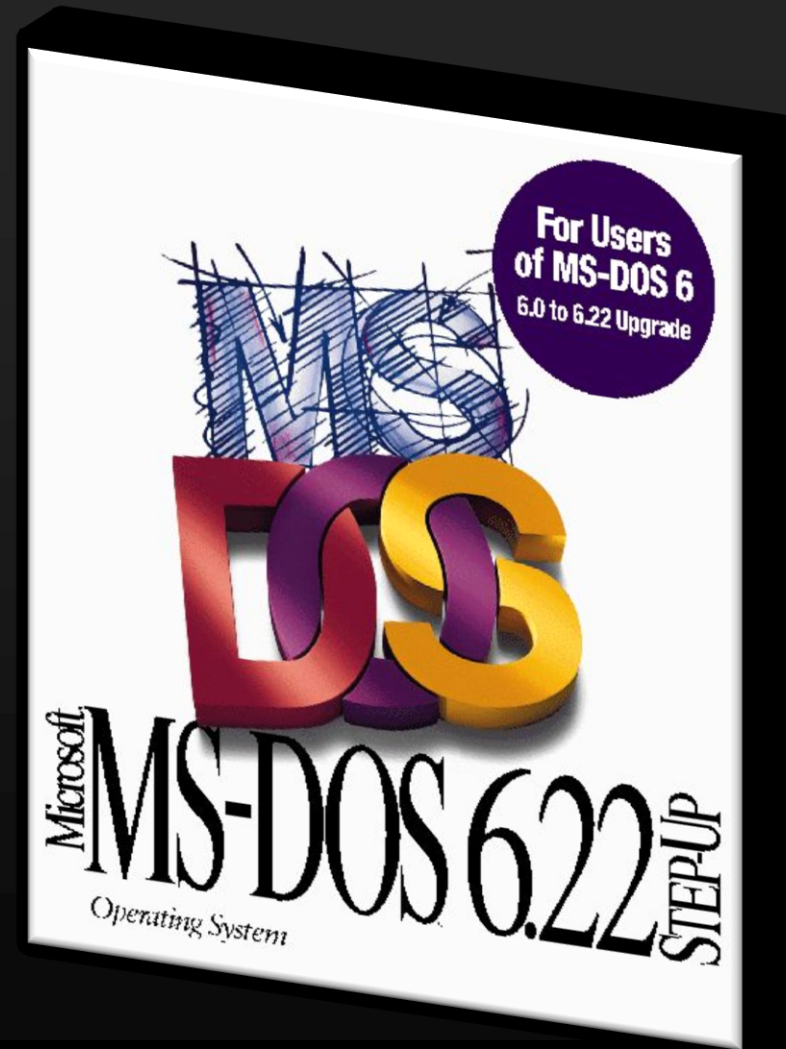


That explains streaming, but...

Why virtualization?

MS-DOS

- ✓ Directories
- ✓ EnvVars
- ✓ System Path
- ✓ INI Files



Windows 3.1

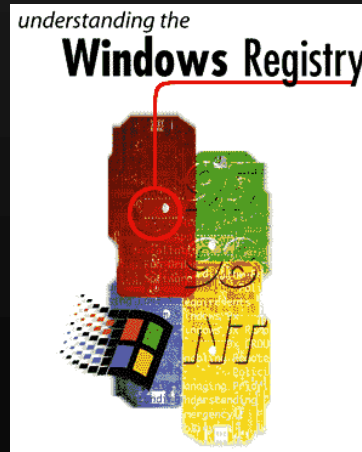
✓ Same baggage as MSDOS



✓ Intros DLL Hell



✓ Intros Registry



Windows 9x / NT

✓ Same baggage as DOS/3.1



✓ Registry is multi-user



✓ Intro of .NET Framework



Solving DLL Hell – Public Enemy #1

✓ Merge Modules

✓ Specialized Installer Engines

✓ Windows File
Protection

✓ DLL /COM
Redirection

✓ Static Binding

✓ SxS Component
Sharing / Registration-
free COM

✓ .NET Framework

✓ Application
Virtualization

What about other issues?

✓ Vista UAC

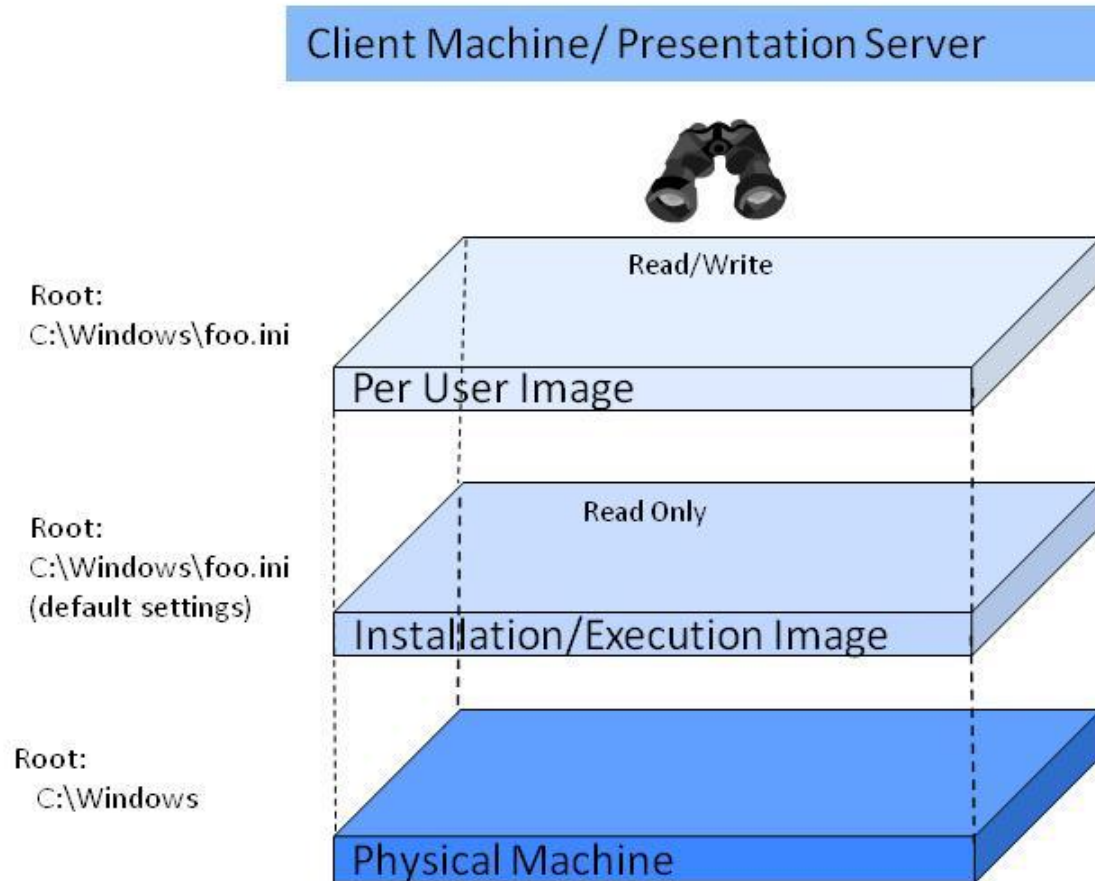
✓ User rights to Program
Files, etc

✓ Apps polluting other
apps registry settings

✓ Improper use of HKLM
registry

✓ Application Virtualization

Conceptual view of App Virtualization



Application Virtualization Principles

- ✓ Isolate applications from each other
- ✓ Reduce regression testing time
- ✓ Allow non-multiuser apps to function
- ✓ Allows multiple versions of apps to run simultaneously (NOTE: Process name issues)
- ✓ Allow for easy rollback to prior versions
- ✓ Allow for easy repair of user changes to settings

Situations that could have been avoided with App Virtualization

- ✓ MDAC Data Access Key
- ✓ System Environment Path / Oracle Bin
- ✓ OLEAUT32.DLL from wrong XP Service Pack crashing IE

Who's in this space?



Microsoft®
SoftGrid® Application
Virtualization



Let's get on with it then



Challenges with SoftGrid (and other application virtualization)

#1 – OS / Shell Integration

Direct published application executable

#1 – OS / Shell Integration

Desktop Shortcuts

Quick Launch Shortcuts

Send To Shortcuts

Start Menu Shortcuts

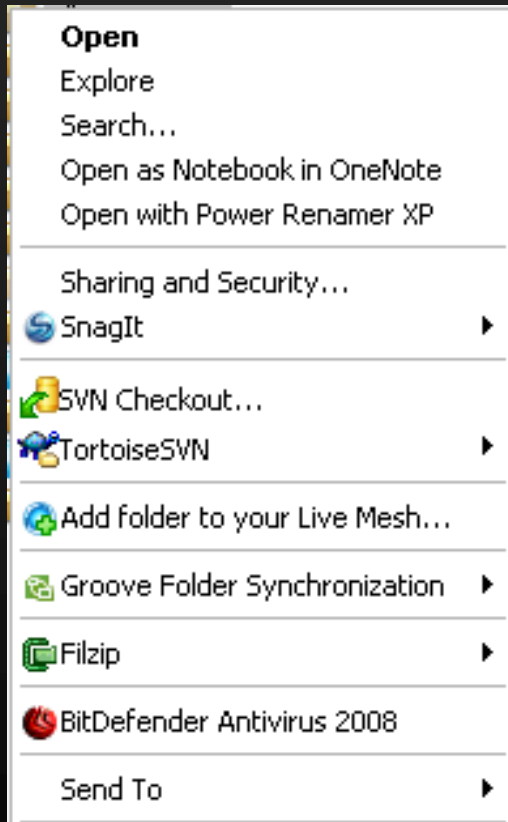
Be aware of shortcut_ex.dat issues

#1 – OS / Shell Integration

File Type Association

NOTE: App/FTA relationship

#1 – OS / Shell Integration



Shell Context Menus

#1 – OS / Shell Integration

Open via Protocol Handlers

Not outside of virtualization layer by default,
need to alter host OS

#1 – OS / Shell Integration

Application invoked via COM Object

Sharepoint / PWA

Need to alter the host OS

#1 – OS / Shell Integration

Hardware Triggered Launch

#1 – OS / Shell Integration

RunAs

#2 – Core vs Virtual – App Interop

100% virtualization is a blessing and a curse

Database Clients

Security Patches

#2 – Core vs Virtual – App Interop

Reason 1 for core: App not compatible with SG /
application virtualization

Tied tightly to OS / Shell integration

Drivers / Services (boot-time)

Over 4 GB in size

COM+ / COM Surrogate (DLLHost)

#2 – Core vs Virtual – App Interop

Reason 2 for core: Large number of apps
interoperate with it

#2 – Core vs Virtual – App Interop

Reason 3 for core: Frequent security-related hotfixes (side effect suite'ing from 2)

#2 – Core vs Virtual – App Interop

Suite'ing vs Dynamic Suite Composition

#3 – IE, WMP, and Plugins

Generally, pre-existing core components of the OS like IE and Windows Media Player can't be installed in a virtual environment

#3 – IE, WMP, and Plugins

They can, however, be executed in a virtualized environment

#3 – IE, WMP, and Plugins

Common plugin tricks – IE ActiveX Controls,
Media Player Codecs, Acrobat Reader plugins,
etc.

#3 – IE, WMP, and Plugins

But what if your users need to mix and match
plugins?

Suite'ing

Dynamic Suite Composition

#3 – IE, WMP, and Plugins

Providing Virtualized IE

Need to hide existing shortcuts

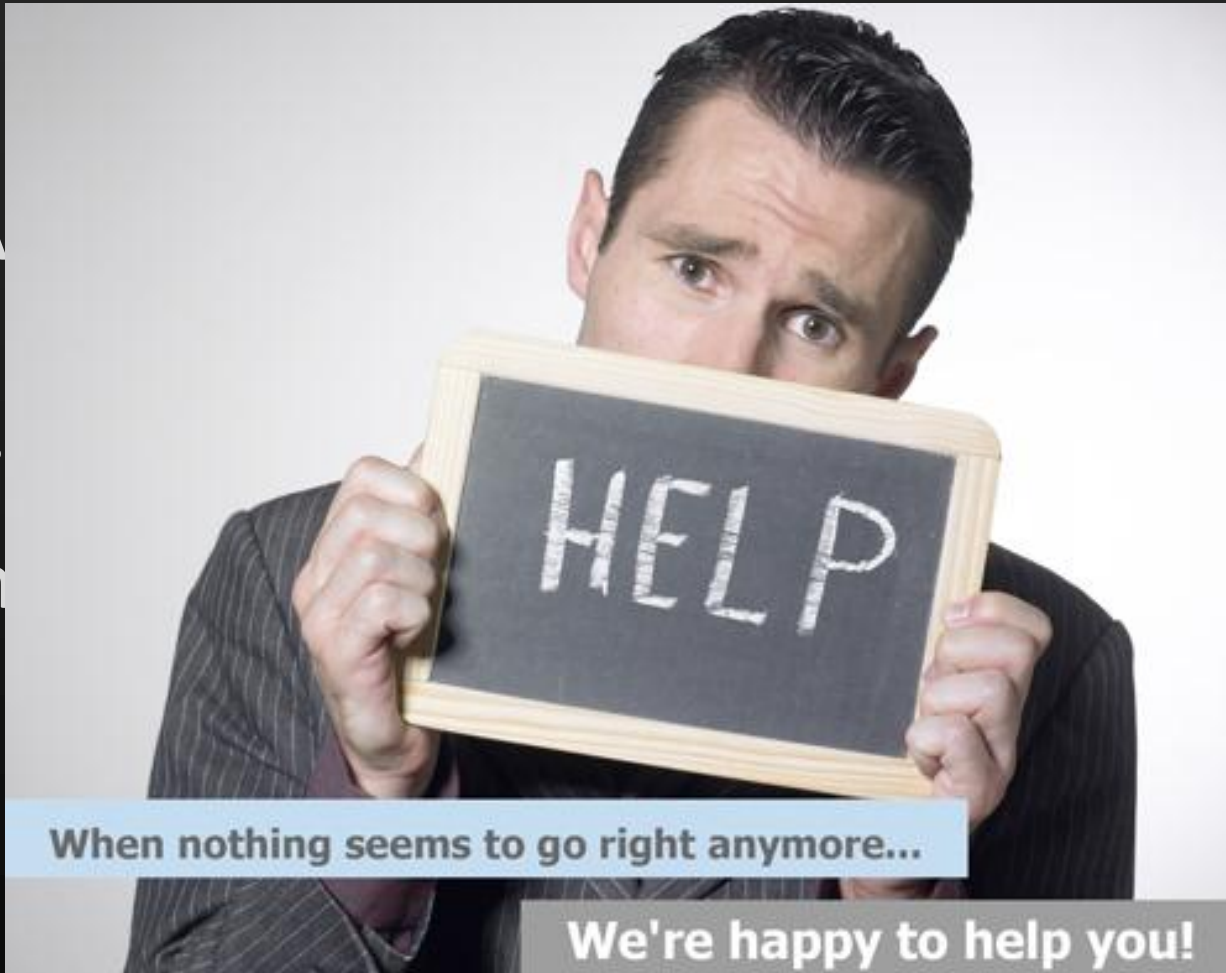
Need to remove access to existing executable

Protocol Handler issues

FTA issues

Word direct launch (doesn't use Shell handler)

#3 – IE, WMP, and Plugins



When nothing seems to go right anymore...

We're happy to help you!

#3 – IE, WMP, and Plugins

In the case of suite'ing, the trick is ensuring the correct one gets launched at the proper time

#4 – Services & Drivers

Runtime services are supported (i.e. licensing service, etc)

Keep in mind that services are global in scope to a machine from a process perspective

#4 – Services & Drivers

Services that need to be loaded at boot time are not supported (i.e. IIS, SQL, etc)

Why? Because Softgrid apps run (after login) in the context of the user

#4 – Services & Drivers

Citrix streaming has no support for services

#4 – Services & Drivers

Kernel device drivers are not supported
(generally common with hardware devices)

Forget about Anti-Virus, VPN clients, etc.

#4 – Services & Drivers

Safe drivers are things like ODBC database drivers, etc. Because they are user-mode drivers.

#5 – Sequencer Gotchas

Network locations are captured by default and virtualized

#5 – Sequencer Gotchas

Sequencer assumes you're using Q: as mount

SG Client allows you to specify the mount drive during installation (advanced setting)

#5 – Sequencer Gotchas

Virtualization of ODBC Data Sources and printers

Pre-create User DSNs and local printer on base sequencer machine

#5 – Sequencer Gotchas

Always sequence on a clean OS that is least common denominator OS

VC++ Runtime

#5 – Sequencer Gotchas

OS Targets

Controlling execution

#5 – Sequencer Gotchas

Make OSD edits in Sequencer

#5 – Sequencer Gotchas

Sequencer and Client doesn't discern drive letter differences (for similar relative paths)

#6 – Troubleshooting Virtualized Apps

FileMon *

RegMon *

Process Monitor *

Process Explorer

* You must run these tools outside of the virtual environment once for filter driver installation

#6 – Troubleshooting Virtualized Apps

In sequencer

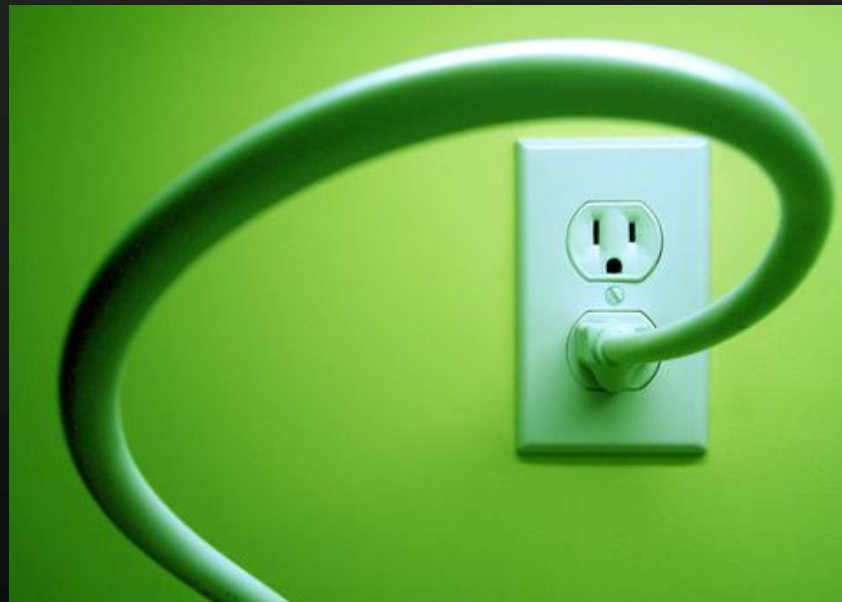
Tools-> Diagnostics -> Command Window

On client side – Create Debug OSD

- 1) Dupe existing OSD and edit it
- 2) Change Softpkg Name or Version number
- 3) Set FILENAME =
“%WINDIR%\System32\cmd.exe”
- 4) Set subsystem value = “console”

#7 – High Availability

Risk of VAS server failure



#7 – High Availability

VAS down = app delivery down

Can also be app crash

Multiple servers load balanced

MSI Utility

Pre-cache 100%

#7 – High Availability

App authorization down means app execution
down

Many pieces involving SQL and Registry (more
on this soon)

#7 – High Availability

Load Balancing vs Smart DNS

#7 – High Availability

Local content vs Central Content

#8 – Branch Office

VAS Deployment to the branch

SG Content Deployment to branch

#8 – Branch Office

Lack of location awareness (mobile users)

Can't change system environment variable

#8 – Branch Office

Other options for branch

- ✓ MSI Utility for MAV
- ✓ MAV 4.5 Source Roots

#9 – Offline Use / DR

Laptops

Preload 100% for offline

#9 – Offline Use / DR

Terminal Servers

Preload 100% for performance and launch time

#9 – Offline Use / DR

How will you pre-load?

Manual

Scheduled Task / Script (TS)

Outside background process

Sequence apps 100% from the start

4.5 –Autoload

System Center

#9 – Offline Use / DR

App Authorization – at least once

VAS/SQL must be online, or

Can run DO/Offline, but need auth on the device

But what about Terminal Servers?

Need to roam user profile, or at least roam

HKCU\Software\Softricity\SoftGrid Client\CurrentVersion\Network\PerUserData

Can disable authorization in 4.1SP1/4.2

#10 – Performance



#10 – Performance

Virtualization overhead

...product has 5-15% overhead from virtualization..

...2-3% overhead from the filter driver..

...almost not noticeable...

#10 – Performance

The real answer to app virt overhead?



#10 – Performance

VFS (C:) vs MNT (Q:)

#10 – Performance

User Data vs App Data

Items can be designated as belonging to App Data or User Data – Sequencer makes a guess

Poorly sequenced app may cause UsrVol*.pkg bloat which will cause app launch delays

#10 – Performance

DLL Redirection

Uses .local or .manifest file/folder to indicate redirection

Ex: 4 times file ops, 2-3 times slower than local

#10 – Performance

Anti-virus

Found to degrade app performance
Scanning SG File System from outside?

Why scan Q:?

Should scan during app intake process
Still have OnAccess process intercept

#10 – Performance

Virtual Registry I/O vs Virtual Disk I/O impact

Virtual registry operations is relatively cheap

Virtual file ops more expensive

Larger package, more likely to have perf impact

System Path is important

Thank you for attending!

Questions?