



Sealing and Deploy your Master Image Best Practices

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Virtualization
Conference

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About us

- Trond Eirik Haavarstein (Fulltime Automator, Blogger and Trainer)
 - Citrix CTP, VMware EUC, Nutanix NTC, Atlantis ACE, Parallels VIPP
 - Automation Framework and 3 Day Master Class
 - Twitter: [@xenappblog](https://twitter.com/xenappblog)
- Matthias Schlimm (IT-Architect, Login Consultants Germany)
 - Citrix experience since 1998 (WinFrame 1.8)
 - Planning, Design, Implementation Citrix Infrastructure, PVS experience since 2008, Version 5.0
 - Like scripting and automation, mostly PoSH
 - Twitter: [@MatthiasSchlimm](https://twitter.com/MatthiasSchlimm)
- Jonathan Pitre (Technology Specialist, Oriso Solutions)
 - CTA – Citrix Technology Advocate
 - Planning, Design, Implementation Citrix Infrastructure
 - Automation, Update fanatic
 - Twitter: [@PitreJonathan](https://twitter.com/PitreJonathan)

About us

- Trond Eirik Haavarstein (Fulltime Automator, Blogger and Trainer)
 - Citrix CTP, VMware EUC, Nutanix VTC, Atlantis ACE, Parallels VIPP
 - Automation for the Masses - 1st Class
 - Twitter: [@xtrond](#)
- Matthias Schlimm (Senior Consultant, Xenapp Consultants Germany)
 - Citrix expert, VMware, Nutanix, PVS
 - Planning, Design, Implementation Citrix Infrastructure, PVS
 - Experience with Citrix, VMware, Nutanix, PVS
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Agenda

- MCS and PVS Backend optimizations
- Image preparation & Demo
- Necessary steps
- How to handle sealing and personalization ?
- Base Image optimizations
- Internals and future plans
- Q & A

Citrix MCS

- Image preparation need additional stuff, on site or machine catalog level
 - Set-ProvServiceConfigurationData -Name ImageManagementPrep_Excluded_Steps -Value EnableDHCP
 - Set-ProvServiceConfigurationData -Name ImageManagementPrep_Excluded_Steps -Value OsRearm
 - Set-ProvServiceConfigurationData -Name ImageManagementPrep_DoImagePreparation -Value \$false
- On Master Image activate Logging
 - HKLM\Software\Citrix\MachineIdentityServiceAgent
 - ValueName LOGGING | ValueType DWORD32 | Value 1
- Prevent Shutdown on the ImagePrep VM to analyze the logs
 - Set-ProvServiceConfigurationData -Name ImageManagementPrep_NoAutoShutdown -Value \$True

<https://www.citrix.com/blogs/2016/04/04/machine-creation-service-image-preparation-overview-and-fault-finding>

Citrix PVS

- Boot storms (PVS Accelerator can help)
- PVS servers can handle 160 Devices by default
 - “# of ports” x “# of threads/port” = “max clients”.
 - Default: 20 Ports * 8 Threads per port = 160 max clients
 - Example: 50 Ports * 10 Threads per Port= 500 max clients (Ports: 6910 – 6960)
- Multihomed Network to split PVS Stream and ICA
Network not necessary
- PVS installed on Hardware:
 - Controller Settings: 75% read / 25% write
 - Caching Settings: Enable Write Cache when Battery Capacitor not present or not completely charged – set to Disabled

Image preparation

- Automate the building process of the Base Image (avoid human errors)
- Automate the sealing process
- MCS and PVS – sealing is different
 - Defrag running on base image only (vhd/vhdx only)
 - P2PVS running on base image only
 - Defrag arguments depends on OS type
- Personalization difference, based on deployment type
 - MCS Private, MCS Shared, PVS Private, PVS Shared
 - Some services must be started on private mode only

Provisioning Services Console

File Action View Window Help

Provisioning Services Console

- Farm (localhost)
 - Sites
 - Site
 - Servers
 - vDisk Pool
 - vDisk Update Management
 - Device Collections
 - vW7SP1 MI
 - vW7SP1 XenDesktop
 - vWS12 MI
 - vWS12 XenApp
 - vWS16 MI
 - vWS16 XenApp
 - Views
 - Hosts
 - Views
 - Stores
 - Store

Name	Site	Connections	Size	Mode	Class	Description
vW7SP1PVS-Rev01	Site	0	40 960 MB	Private		
vWS12PVS-Rev01	Site	0	61 440 MB	Cache in Device RAM with Overflow on Hard Disk: 512 MB		
vWS12PVS-Rev02	Site	3	61 440 MB	Cache in Device RAM with Overflow on Hard Disk: 512 MB		
vWS16PVS-Rev01	Site	0	61 440 MB	Cache in Device RAM with Overflow on Hard Disk: 512 MB		

Image preparation

- Necessary steps - Part 1:

- Clear eventlog
- Delete ghost NIC's
- Reset MS Distributed Transaction Service
- MS Message Queuing clear cache & QMID
- Delete local profiles that are not required
- Delete Citrix Profile Manager log & cache
- Rename UPM ini if using GPO configuration
- Grace Period Fix for RDS
- Clear App-V Cache
- **HOT:** Office Licensing issue since VDA 7.9

HKLM\SYSTEM\CurrentControlSet\services\CtxUvi

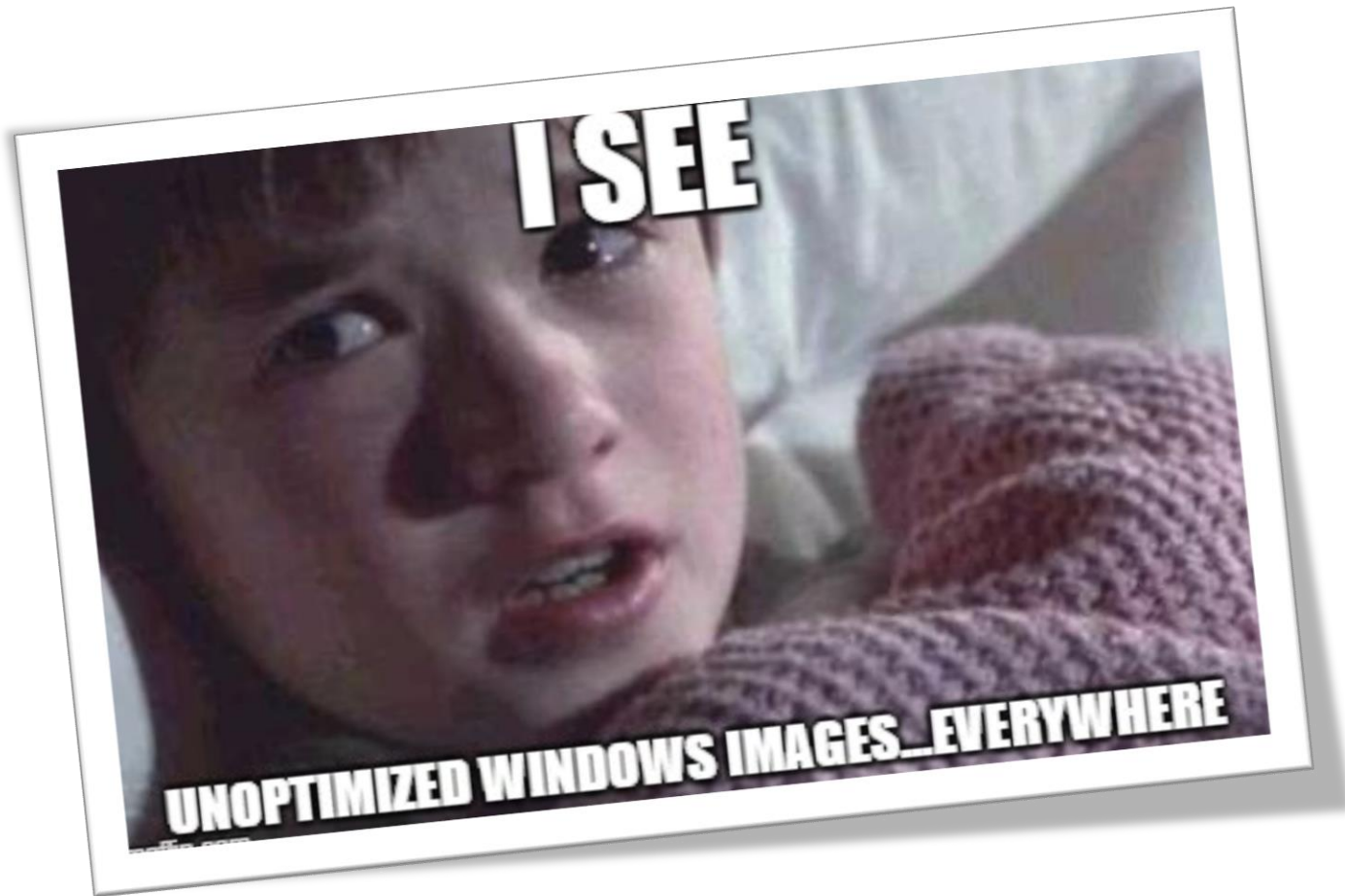
ValueName UviProcessExcludes | ValueType REG_SZ | Value sppsvc.exe

<https://discussions.citrix.com/topic/381105-office-license-error-after-upgrade-to-vda-79/page-3>

Image preparation

- **Necessary steps - Part 2:**

- Stop DHCP Client Service
- Delete IP Informations in registry
- Antivirus: Run full scan & de-personalization
- SSCM / SCOM: de-personalization
- AppSense / RES / 3rd Party tools: de-personalization
- Rearm Operating System and Office
- Defrag disk
- Clear Citrix EdgeSight Cache
- Redirect Citrix WEM Cache
- XenApp 6.5 PVS preparation steps
- Disable or remove unneeded schedule tasks
- Is Cortana really needed in virtual environments ?
- Format the PVS WriteCache Disk



How to handle sealing and personalization ?

What is BIS-F

Base Image Script Framework

The perfect way to seal your image



- 100 % PowerShell driven
- Microsoft RDSH & VDI, Citrix XA & XD with MCS or PVS, VMware Horizon View
- Optimize the Base Image, if...
 - Installed from scratch
 - Updating the Base Image
- Remove unique identifiers according to vendor Best Practices to prevent ghost or duplicate entries on Management Servers

What is BIS-F

Base Image Script Framework

The perfect way to seal your image



- Persistent and non-persistent Images
- Automatically detect & prepare the installed software
- PVS: Format the WriteCache Disk once
- PVS: Convert Base Image to the attached vDisk
- Extend BIS-F with your're own custom scripts (PoSH only)

What is BIS-F

Base Image Script Framework

The perfect way to seal your image



BIS-F is not designed...

- to install additional software



BIS-F is executed...

- after final Base Image build



[3 steps to success]

Quite simple



1. Install



2. Configure



3. Run



1. Install

- Simple installer, remove previous BIS-F version (5.1.2 and earlier manually before, e.g. C:\SCRIPTS)
- Installer keep your custom scripts during update
 - `<InstallDir>\Framework\SubCall\Preparation\Custom`
 - `<InstallDir>\Framework\SubCall\Personalization\Custom`
- Supported 3rd Party Tools *(not delivered with BIS-F)*
 - sdelete.exe (v1.61), nvpsbind.exe, cmtrace.exe, vietool.exe, ccleaner, delprof2.exe, VMWare OS Optimization Tool (vmOSOT)
 - **Search paths** -> C:\Windows\System32, %ProgramFiles%, %ProgramFiles(x86)%
- Silent installation
 - `Setup-BIS-F-6.0.2.exe /SILENT /log="C:\Windows\Logfiles\BIS-F.log"`

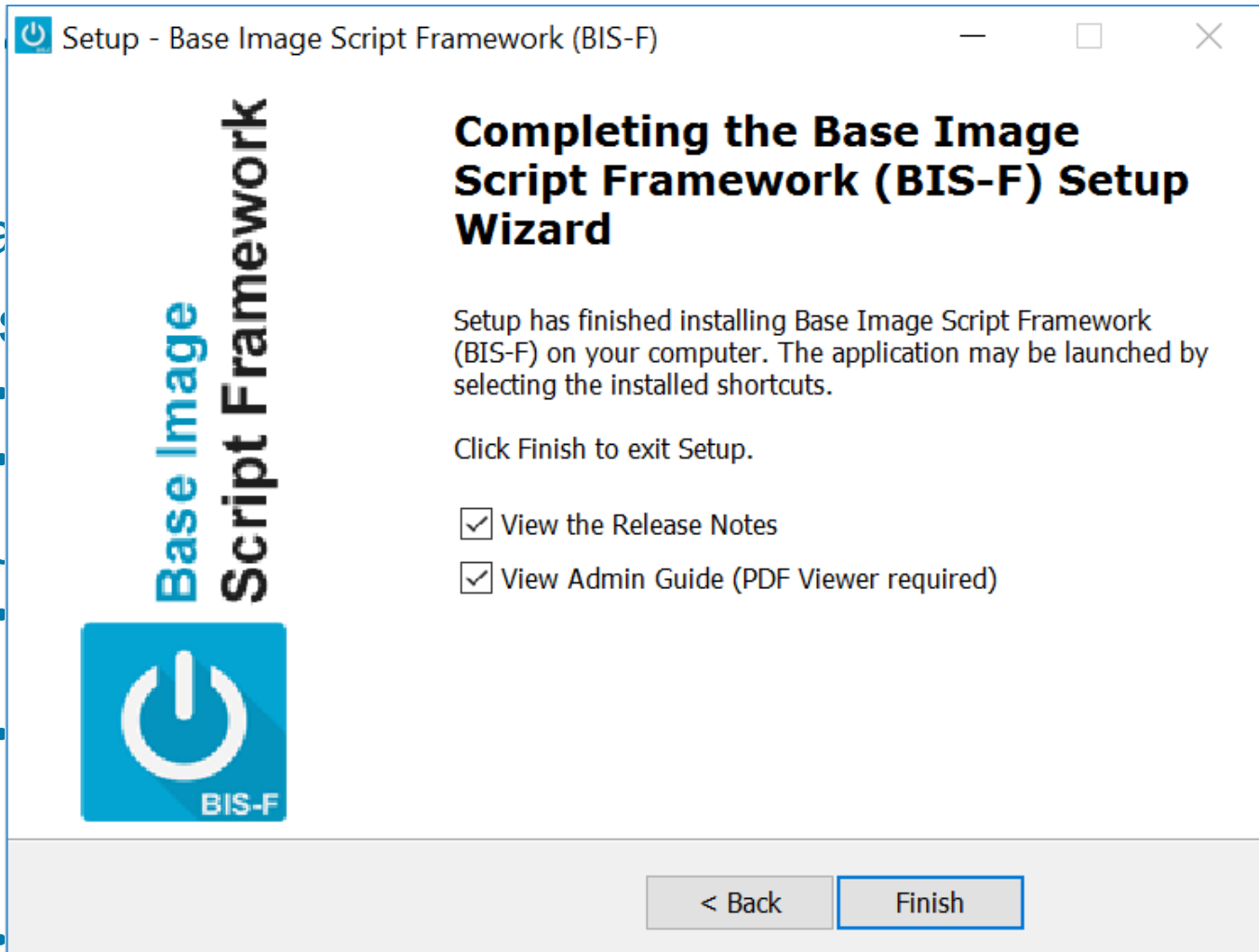


1. Install

- Simple installer, remove previous BIS-F Version (5.1.2 and earlier manually, e.g. C:\SCRIPTS)
- Installer keep your custom scripts during update
 - *<InstallDir>\Framework\SubCall\Preparation\Custom*
 - *<InstallDir>\Framework\SubCall\Personalization\Custom*
- Supported 3rd Party Tools
 - sdelete.exe (v1.61), nvpsbind.exe, cmtrace.exe, vietool.exe, Ccleaner, delprof2.exe, VMWare OS Optimization Tool (vmOSOT)
 - **Searchpath** -> C:\Windows\system32, %Programfiles%, %programfiles(x86)%
- Silent install
 - Setup-BIS-F-6.0.2.exe /SILENT /log="C:\Windows\Logfiles\BIS-F.log"



1. Install



- Si
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- Su
- Si

.1.2 and

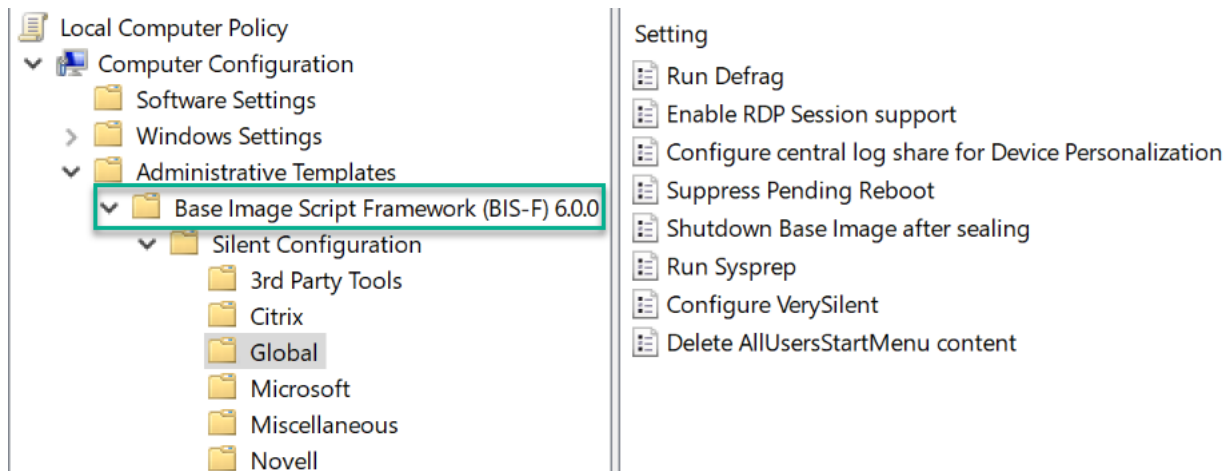
exe,
vmOSOT)

-F.log"



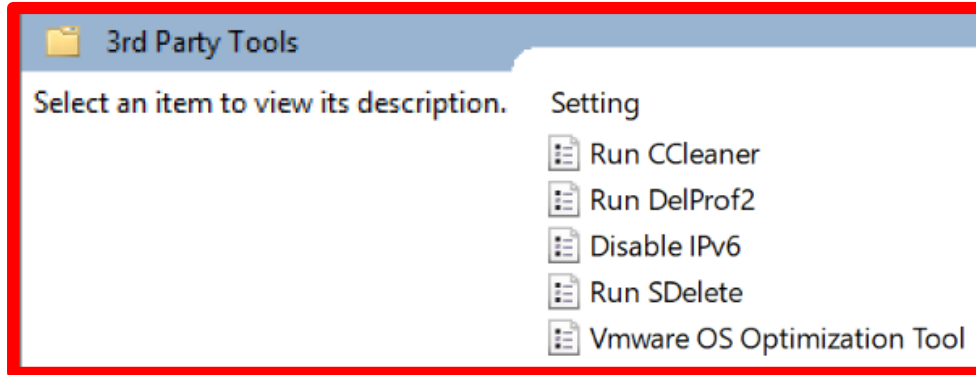
2. Configure

- ADMX template
 - Required for complete and silent automation
 - Located in BIS-F installation folder, manually copy to central store
 - Alternative: Message boxes during sealing (run) process
 - NOTE: In Next BIS-F Version, message boxes will be removed, ADMX required





2. Configure





2. Configure



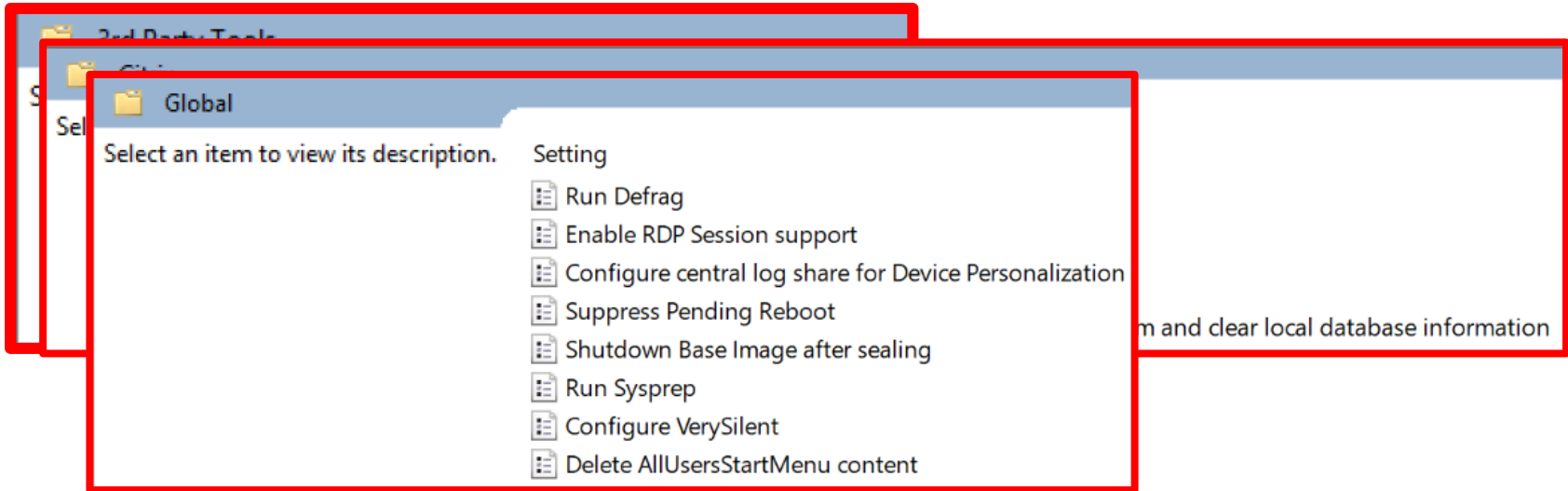
Select an item to view its description.

Setting

- Configure Citrix Personal vDisk
- Fallback to P2PVS if XenConvert if installed
- Configure Citrix PVS WriteCacheDisk driveletter
- Rebuild Performance Counters
- XA 6.x only - Remove current XenApp server from the Farm and clear local database information

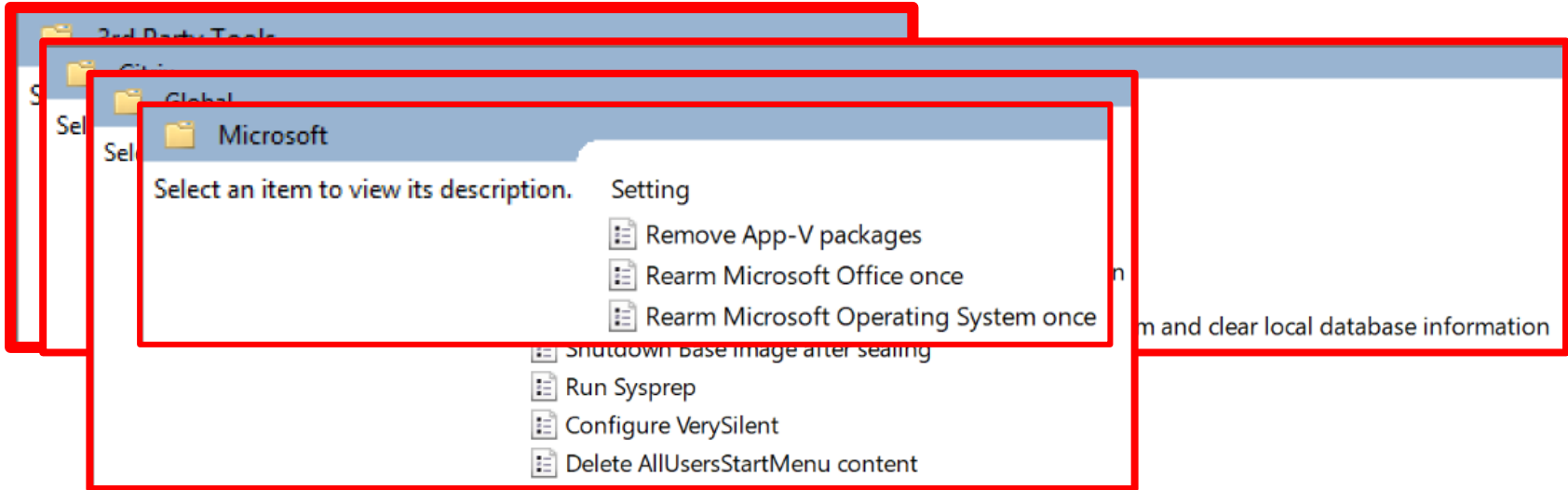


2. Configure



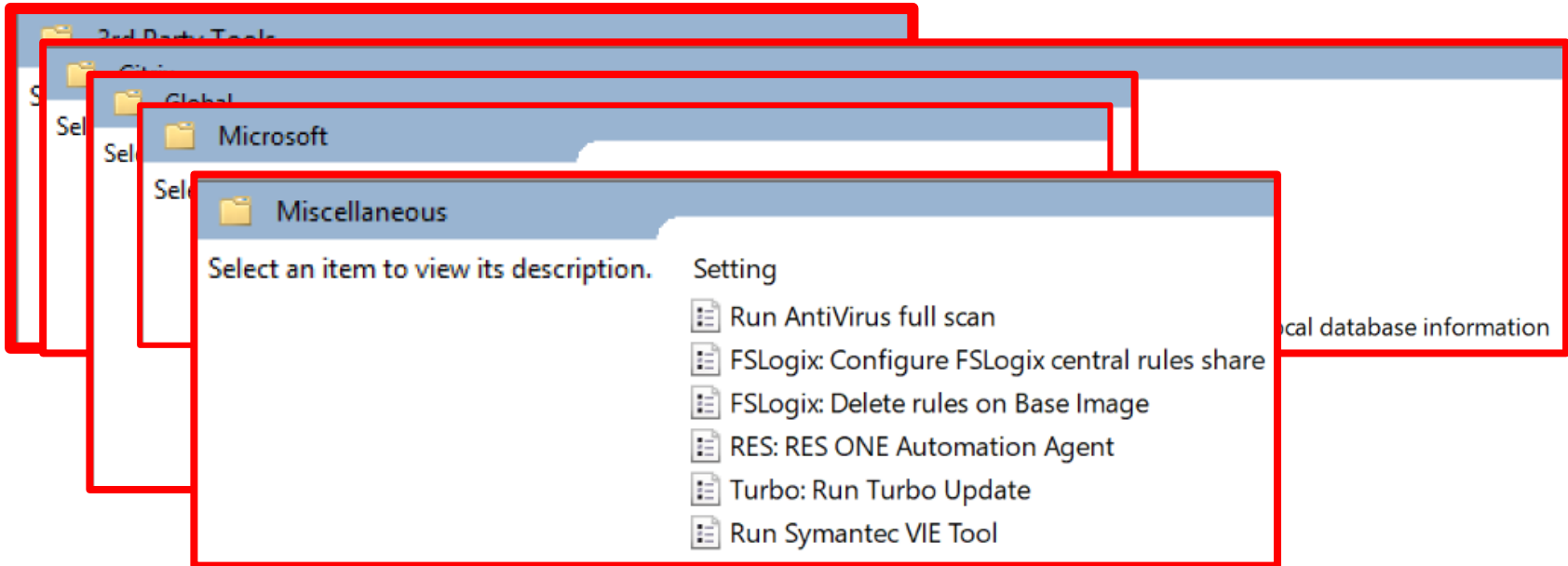


2. Configure





2. Configure





2. Configure



The screenshot shows a configuration tool interface with several folders and settings. Red boxes highlight the following elements:

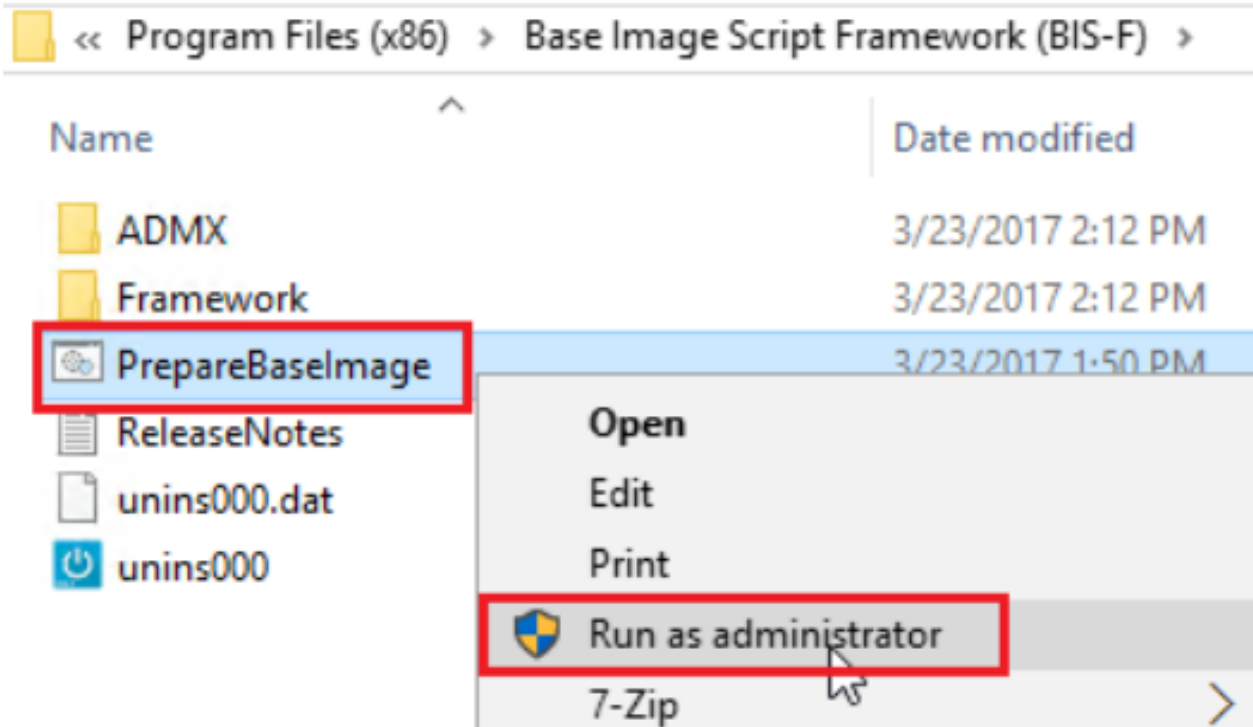
- Global** folder
- Microsoft** folder
- Miscellaneous** folder
- Novell** folder

Settings visible in the highlighted areas include:

- Setting: Run AntiVirus full scan
- Setting: configure Novell ZCM Agent webbased configuration URL
- Setting: Run Symantec VIE Tool



3. Run





3. Run

Base Image Script Framework (BISF) © Login Consultants [2017 - 6.0.0p]

```
+ Checking Prerequisites
> Creating log folder on path D:\BISFlogs
> Setting logfile to D:\BISFlogs\Prep_BIS_XXXXXXXXXXXX_20170323-154106.bis
> Creating log folder on path D:\BISFlogs
> Update logfile to D:\BISFlogs\Prep_BIS_XXXXXXXXXXXX_20170323-154106.bis
> Last BIS-F Preparation would be performed on 03/23/2017 15:40:31 started from user Administrator
> Running Preparation Phase
> No Central logShare would be configured, the local path would be used
> RDP session support can be enabled in the ADMX template
> Powershell Version 5
+ Product Citrix XenDesktop Virtual Desktop Agent (VDA) (Version 7.13.0.13) installed
+ Product Citrix Provisioning Services Target Device Driver (PVS) (Version 7.13.0.13008) installed
> PVSWriteCacheDisk configured: D:
> Redirect Spool directory to D:\Spool
> Redirect Eventlogs (Application, Security, System) to D:\Eventlogs
+ Product Microsoft App-V Client (Version 10.0.14393.594 (rs1_release_inmarket.161213-1754)) installed
> The client service is not running, The Script cannot clean up package files.
+ Product CMTrace installed
+ Product Heat DSM (Version 7.3.2.3660) installed
> Preparing Heat DSM for Imaging
+ Base Image Script Framework (BISF) installed, securing folder
> User access on the folder "C:\Program Files (x86)\Base Image Script Framework (BIS-F)" is removed.
+ Get UniqueID from PVSWriteCacheDisk
> Get content from file C:\Windows\Temp\XXXXXXXXXXXX-Diskpartfile.txt...please wait
> Random GUID would be generated during system startup
```

```
+ Check Operating System Microsoft Windows Server 2016 Standard rearm status
> Operating System already rearmed, no action needed
+ Checking Office 2016 x86 rearm status
> Office already rearmed, no action needed
+ Running PreCommands for Windows Server 2016
> Disabling Cortana...
+ Running PreCommands on your Base-Image
> Configure Delete all Citrix Cached files C:\Program Files (x86)\Citrix\System32\Cache\*
> Configure Delete SoftwareDistribution C:\Windows\SoftwareDistribution\Download\*
> Configure Delete Windows Update Log C:\Windows\WindowsUpdate.log
> Configure Delete AllUsers Start Menu C:\ProgramData\Microsoft\Windows\Start Menu\* ?
> Silentswitch will be set to YES
> Configure Purge DNS resolver Cache
> Configure Purge IP-to-Physical address translation tables Cache (ARP Table)
> Configure Reset Performance Counters ? See CTX129350 or CTX127151 for further informations
> Silentswitch will be set to YES
```



3. Run

```
Base Image Script Framework (BISF) © Login Consultants [2017 - 6.0.0p]
> Reconfigure Service netprofm
> Configure Disable Windows Service CscService

convert C: to PVS vDisk...(P2PVS)
Please wait...
[oooo ]

> Configure Disable Windows Service stisvc
> Reconfigure Service stisvc
> Configure Disable Windows Service SensrSvc
> Reconfigure Service SensrSvc
> Configure Disable Windows Service XblAuthManager
> Reconfigure Service XblAuthManager
> Configure Disable Windows Service XblGameSave
> Reconfigure Service XblGameSave
> Configure Disable Windows Service ShellHWDetection
> Reconfigure Service ShellHWDetection
> Configure Disable Windows Service SNMPTRAP
> Reconfigure Service SNMPTRAP
> Configure Disable Windows Service SSDPSRV
> Reconfigure Service SSDPSRV
> Configure Disable Windows Service SysMain
> Reconfigure Service SysMain
> Configure Disable Windows Service TapiSrv
> Reconfigure Service TapiSrv
> Configure Disable Windows Service upnphost
> Reconfigure Service upnphost
> Configure Disable Windows Service WinDefend
> Reconfigure Service WinDefend
> Error during reconfigure Service WinDefend -Action Stop -StartType Disabled
> The error is: Service 'Windows Defender Service (WinDefend)' cannot be configured due to the following error: Access is denied
> Configure Disable Windows Service WerSvc
> Reconfigure Service WerSvc
+ Task already exist, modify startup task LIC_BISF_Device_Personalize to personalize System
+ Create BIS-F Shortcut on your Desktop
+ Build your Base-Image now...
  > Mode HD - Boot from HardDisk in Private Mode
  > Looking for the P2PVS Logfile
  > Delete old Logfile C:\ProgramData\Citrix\P2PVS\P2PVS.txt
  > Reconfigure Service suprv
  > Reconfigure Service vss
  > If you see a windows popup to format the disk, please click Cancel or do nothing !
```

Optimizing your Image



Optimizing the right way!

BIS-F Optimizations

• Microsoft Optimizations

- Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016
- Windows 7, 8, 8.1, 10
- Delete WSUS Client-ID
- Delete WSUS SoftwareDistribution folder
- Reset Performance Counters
- Delete temp files with CCleaner *(3rd Party CCleaner must be installed first)*
- Delete local profiles that are not required *(3rd Party DelProf2 needed in C:\Windows\System32)*
- Delete Windows event logs
- Reclaim storage space on PVS WriteCache Disk *(3rd Party SDelete needed in C:\Windows\System32)*
- Rearm Operating System once
- Rearm Microsoft Office (2010, 2013, 2016) once - x86 only
- Delete DHCP Client information in registry
- Defrag system disk
- Delete AllUsers StartMenu
- Disable IPv6 *(3rd Party nvpsbind needed in C:\Windows\System32)*
- Add delay between time sync and GPO processing
- Disable unneeded scheduled tasks
- Pending Reboot detection
- Grace Period Fix for RDS
- .NET Optimizations

BIS-F Optimizations

- **AntiVirus**

- Trend Micro
- Symantec Endpoint Protection *(3rd party vietoool needed in C:\Windows\System32)*
- McAfee VirusScan Enterprise
- Microsoft EndPoint Security Client
- Kaspersky AntiVirus
- Sophos AntiVirus

- **Electronic Software Deployment (ESD)**

- Microsoft SCCM Agent
- Novell ZCM Agent
- Altiris Deployment Agent
- Matrix42 Agent
- Heat DSM (prev. NetInstall)

BIS-F Optimizations

- **Application Virtualization**

- FSLogix
- Microsoft App-V Client
- Ivanti AppSense
- RES ONE Automation Agent
- RES ONE Automation Console
- RES ONE Automation
- RES ONE Service Store Client Service
- Turbo.net

- **System Monitoring**

- Microsoft System Center Operations Manager Agent
- Splunk Universal Forwarder
- uberAgent

BIS-F Optimizations

- **Citrix**

- Citrix XenApp 6.x (IMA)
- Citrix XenApp/XenDesktop 7.x (FMA)
- Citrix Machine Creation Service (MCS) 7.x
- Citrix Provisioning Server Target Device Driver (PVS) 5.6 – 7.x
- Format automatically the Citrix WriteCache Disk once
- XenDesktop Personal vDisk (PvD) Inventory Update (Windows 7, 8.x, 10 only)
- Fix for MSMQ Service (required for Session Recording)
- Reset Citrix Application Streaming offline database
- Delete Citrix Streaming Cache (RadeCache)
- Delete Citrix Profile Management cache
- Delete Citrix EdgeSight client data
- Citrix Environment Management Agent (WEM) configure Cache

- **VMware**

- VMware Horizon View detection
- VMware OS Optimization Tool (vmOSOT) with default OS Template

□ BIS-F internal's
□ and future plans □



Team BIS-F



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Senior Consultant



Jonathan Pitre – Oriso Solutions
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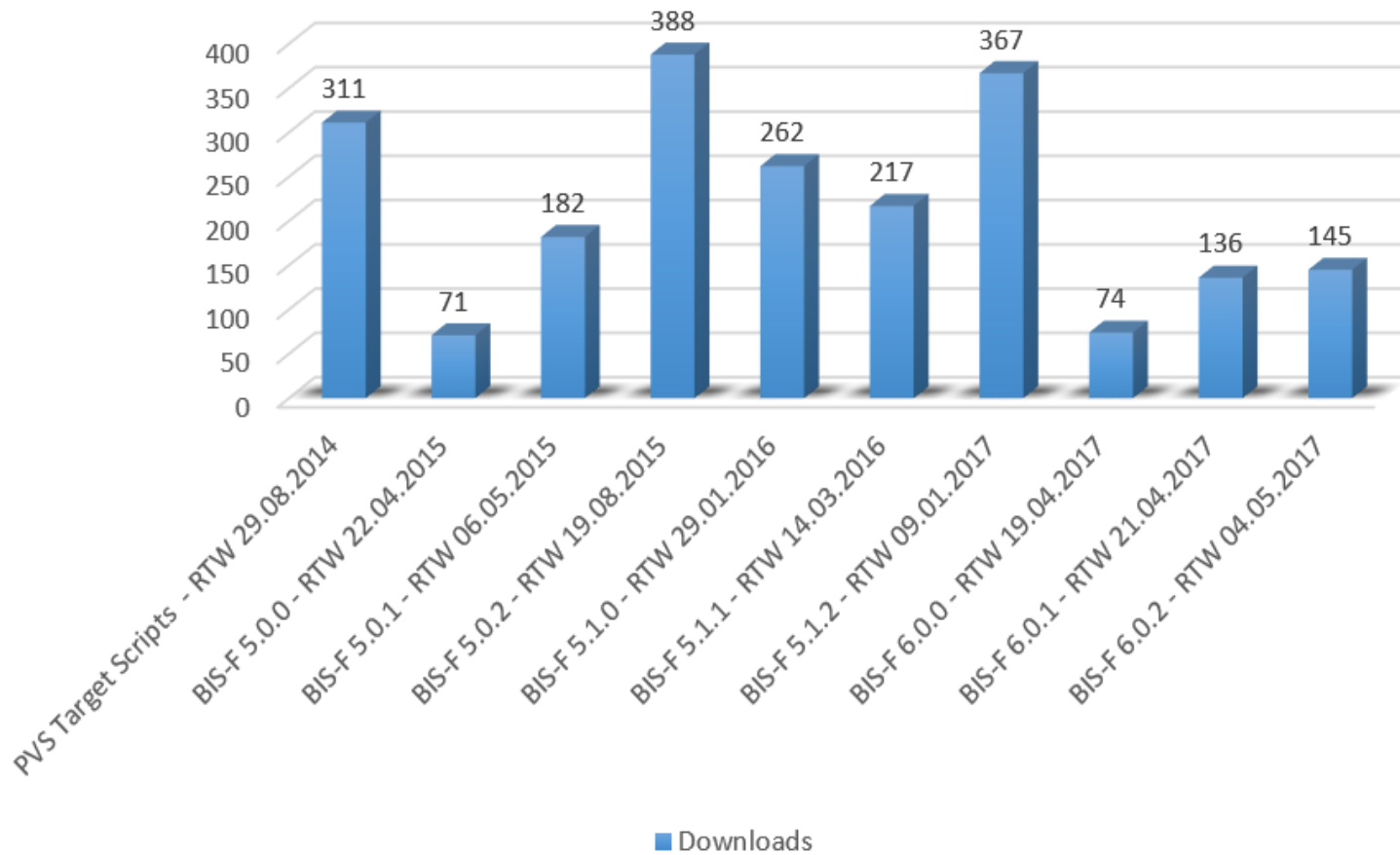
bisf@online.de



[@BISF2017](https://twitter.com/BISF2017)

History

Downloads 22.05.2017



Future Plans

- Remove all non present devices from Device Manager
- Logfile retention via ADMX (hardcoded, keep last 5 logs)
- Citrix AppLayering Support
- AntiVirus F-Secure Support
- UEFI Support
- VMware OS Optimization Tool, select template in ADMX
- Replace BIS-F scheduled Task with service
- Delete orphan printers from registry and defrag registry (faster logins)
- Cleanmgr.exe support (reboot required)
- Citrix System Optimizer (available soon)

World-Wide BIS-F Customers



... and many more

Thank you



get free download here

https://bit.ly/Login_BISF

