Windows PowerShell

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Microsoft

Apologizes and Homage

Sorry

GUI-Centered World

Sorry

CMD.EXE

Sorry

VBSCRIPT (for admins)

Sorry

BASH + Awk +… approach doesn’t work on Windows

Sorry

Yet Another Language

I Love

- Composability
- Commands, utilities, interactive/programmatic shell
- Discoverability
- Ubiquitous remoting
- Simple ad hoc scripting

Unix + Bash + …

I Love

- Production mindset
- Single parser
- Data validation
- Naming guidelines
- Useful error messages

DCL & CL

I Love

- Embeddable engine
- TK
- Domain-specific languages => domain-specific vocabularies

TCL

I Love

- CPAN
- Sophisticated scripting

Perl

I Love

- Reflection
- Attributes
- Huge and growing library

.NET

Windows PowerShell

Mission

Deliver a composition toolkit and scripting language to a wide range of users to easily implement solutions with the right level of quality

A | B | C

Composable Models

- UNIX:
  - ASCII files => sed, awk, grep, etc
- SQL:
  - Tables => join, query, groupby, etc
- .NET:
  - Object => PowerShell

Standardization =>
domain-neutral utilities for composition and manipulation

Windows PowerShell

New command-line shell and scripting language

```
C:\Windows\System32\WindowsPowerShell\v1.0\PowerShell.exe
PS C:\> Get-PSProvider

Name                Capabilities                Drives
----                ------------                ------
Alias               ShouldProcess               {Alias}
Environment         ShouldProcess               {Env}
FileSystem          Filter, ShouldProcess       {C, D, WIN, Fav...}
Function            ShouldProcess               {Function}
Registry            ShouldProcess               {HKLM, HKCU}
Variable            ShouldProcess               {Variable}
Certificate         ShouldProcess               {cert}


PS C:\> Get-WmiObject Win32_ComputerSystem


Domain              : ntdev.corp.microsoft.com
Manufacturer        : Dell Inc.
Model               : Inspiron 9300
Name                : JPSVISTA1
PrimaryOwnerName    : jsnover
TotalPhysicalMemory : 2146279424



PS C:\> _
```

- As interactive and composable as BASH/KSH
- As programmatic as Perl/Python/Ruby
- As production oriented as AS400 CL/VMS DCL
- Allows access to data stores as easy to access as filesystem

Tower Of Power

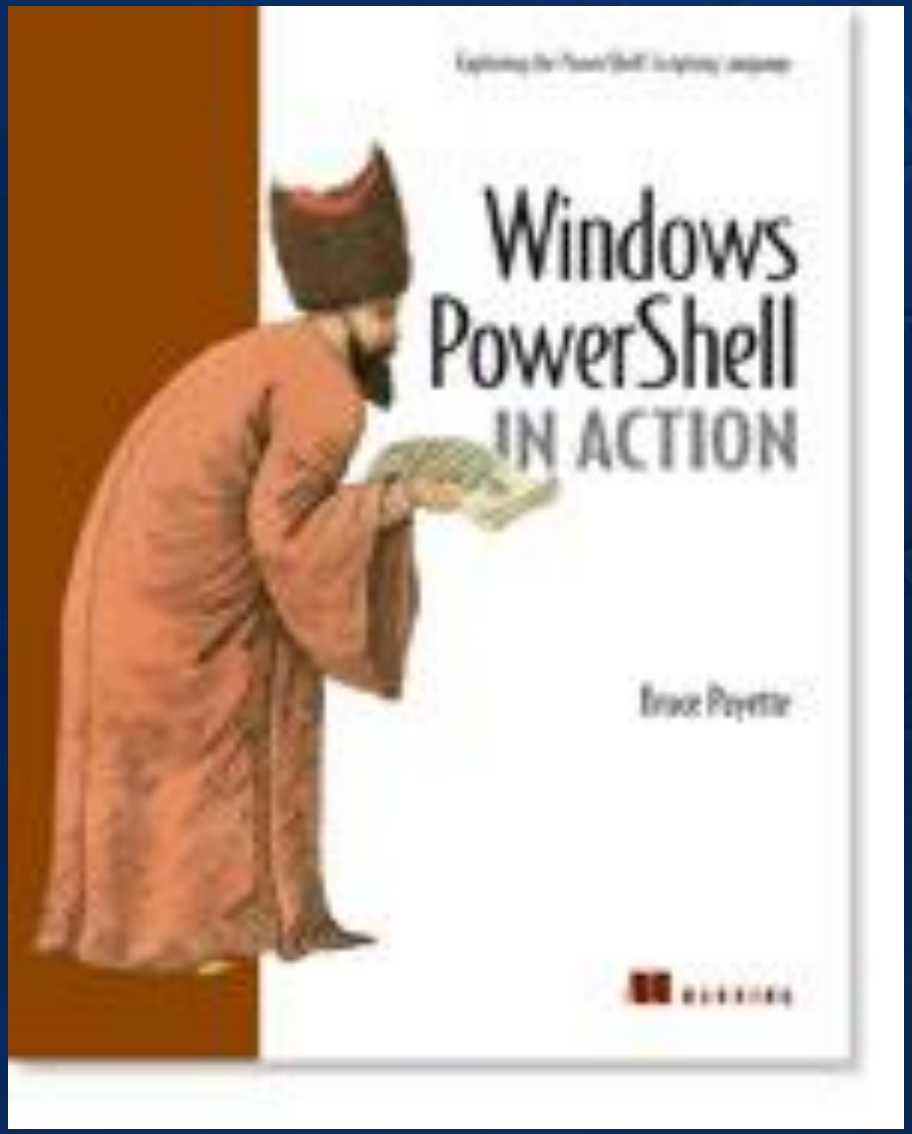
PowerShell books

2007

2008

- Now available in
  - Japanese
  - German
  - French
  - More…

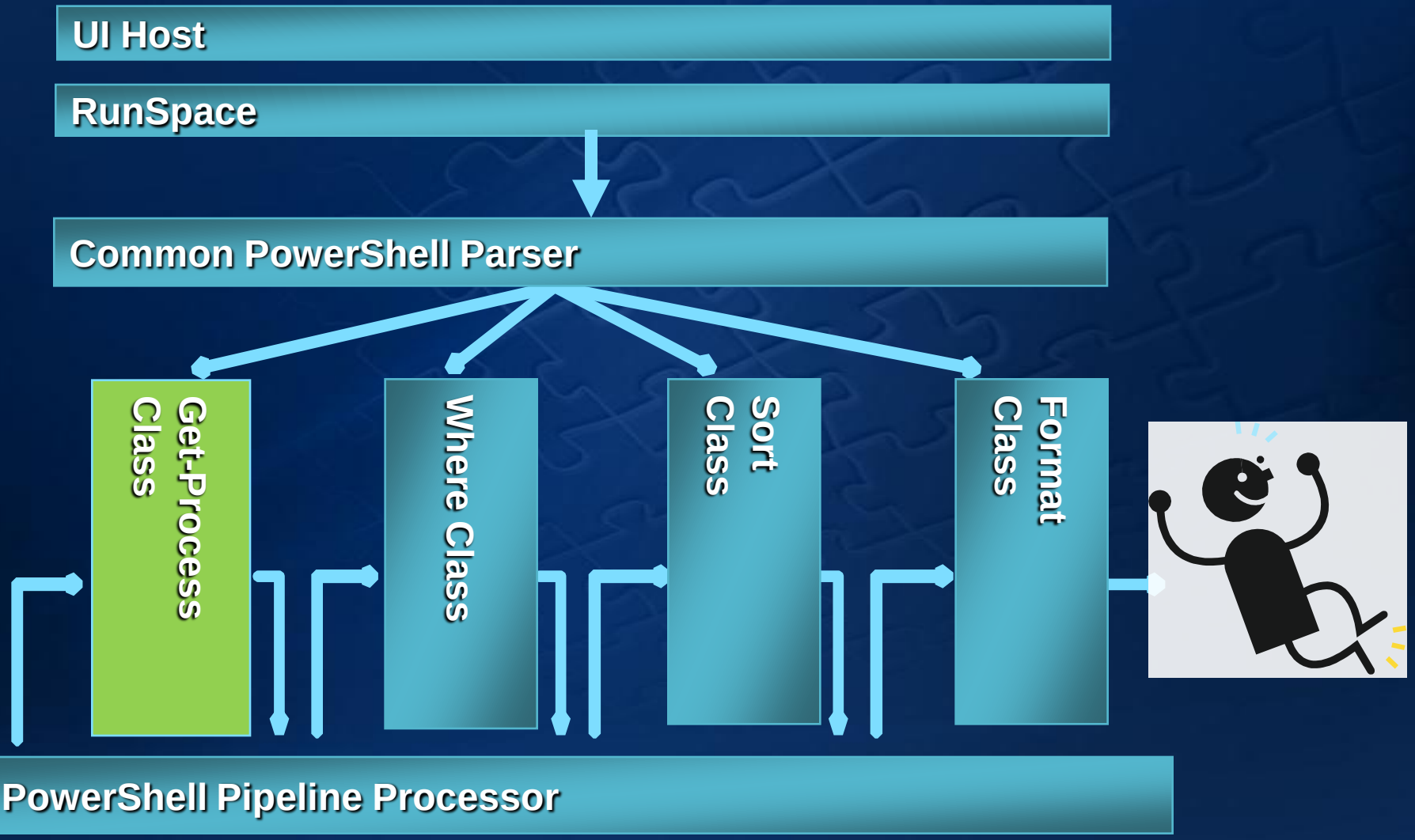
PowerShell In Action



DEMO - Introduction

How It Works

Get-Process | Where { $_.handles –gt 500 } | Sort handlecount | Format-Table



Universal Code Execution Model

- Expressions, Commands, and ScriptBlocks can run
  - In the foreground or background
  - On one or more machines
  - Over a LAN or a WAN
  - In restricted or unrestricted environments
  - Using short or long connections
  - Using impersonation or supplied credentials
  - Initiated by user input or by events

DEMO - UCEM

Remoting

- 1-1 interactive
- 1->many fan-out
- Many->1 fan-in

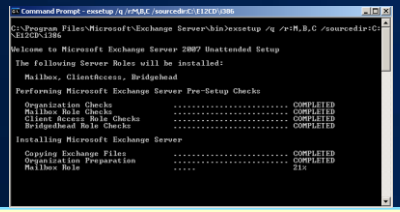
DEMO - Scriptblocks

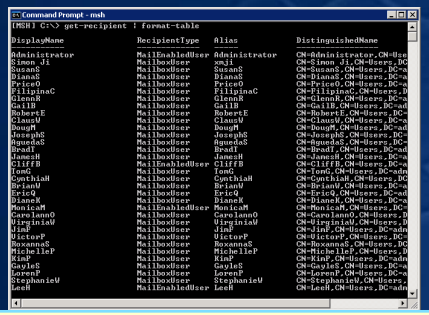
Management Architecture

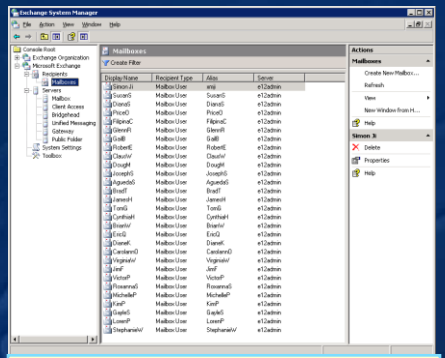
GUI

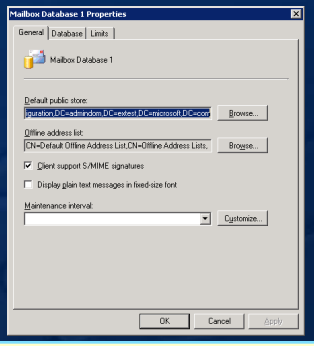
Setup

CLI









WinForms

ADO.Net

WinForms

Early-bound objs

PowerShell Data Provider

PowerShell Engine

Exchange cmdlets

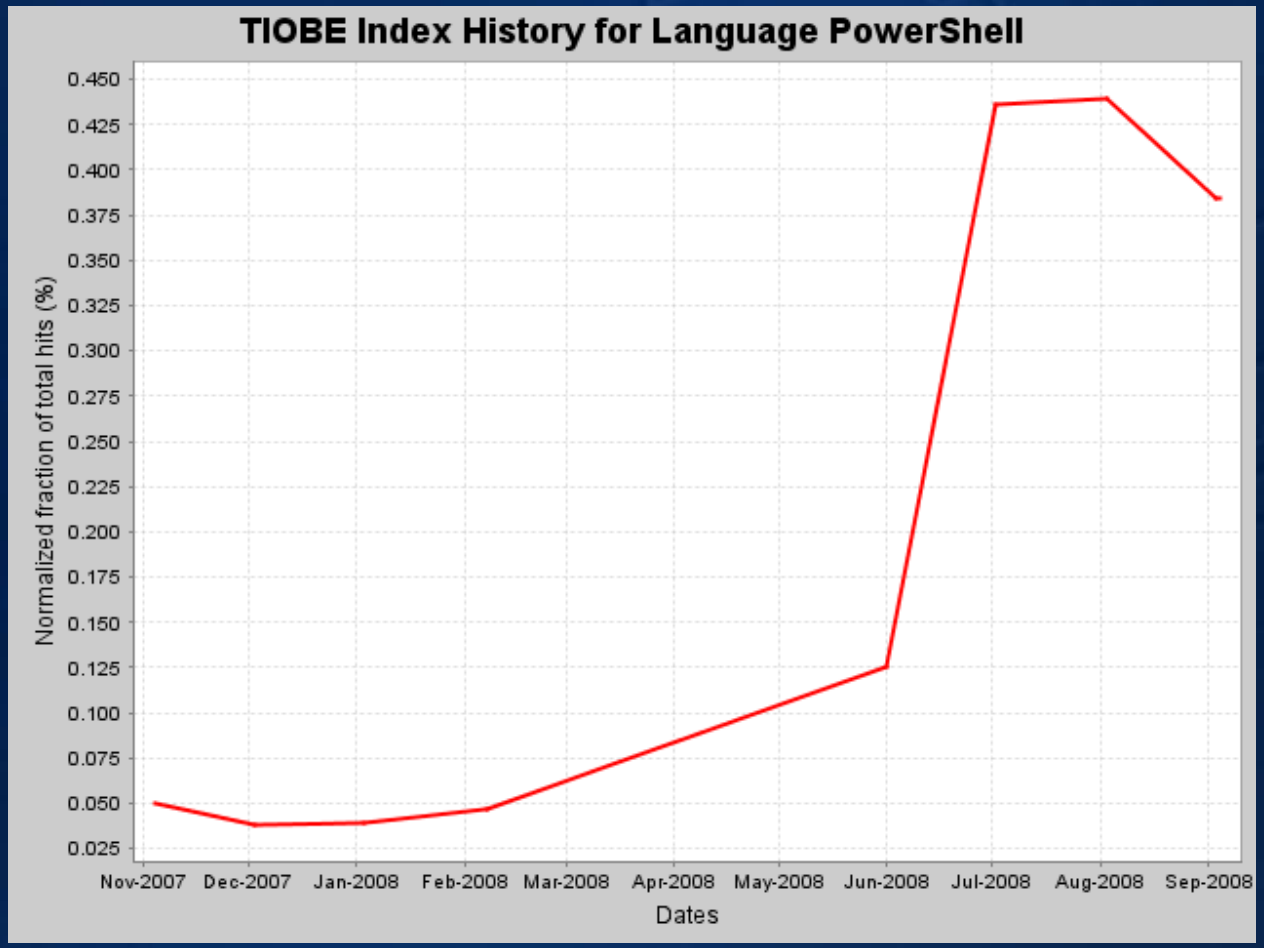
Configuration Data Access

Process boundary

Q&A

Backup

15th Most Popular Language



TIOBE: Highest Rating (since 2007): 0.440% (15th position, August 2008)

Productivity

	Exchange 2003 (VBScript)	E12 (PowerShell)

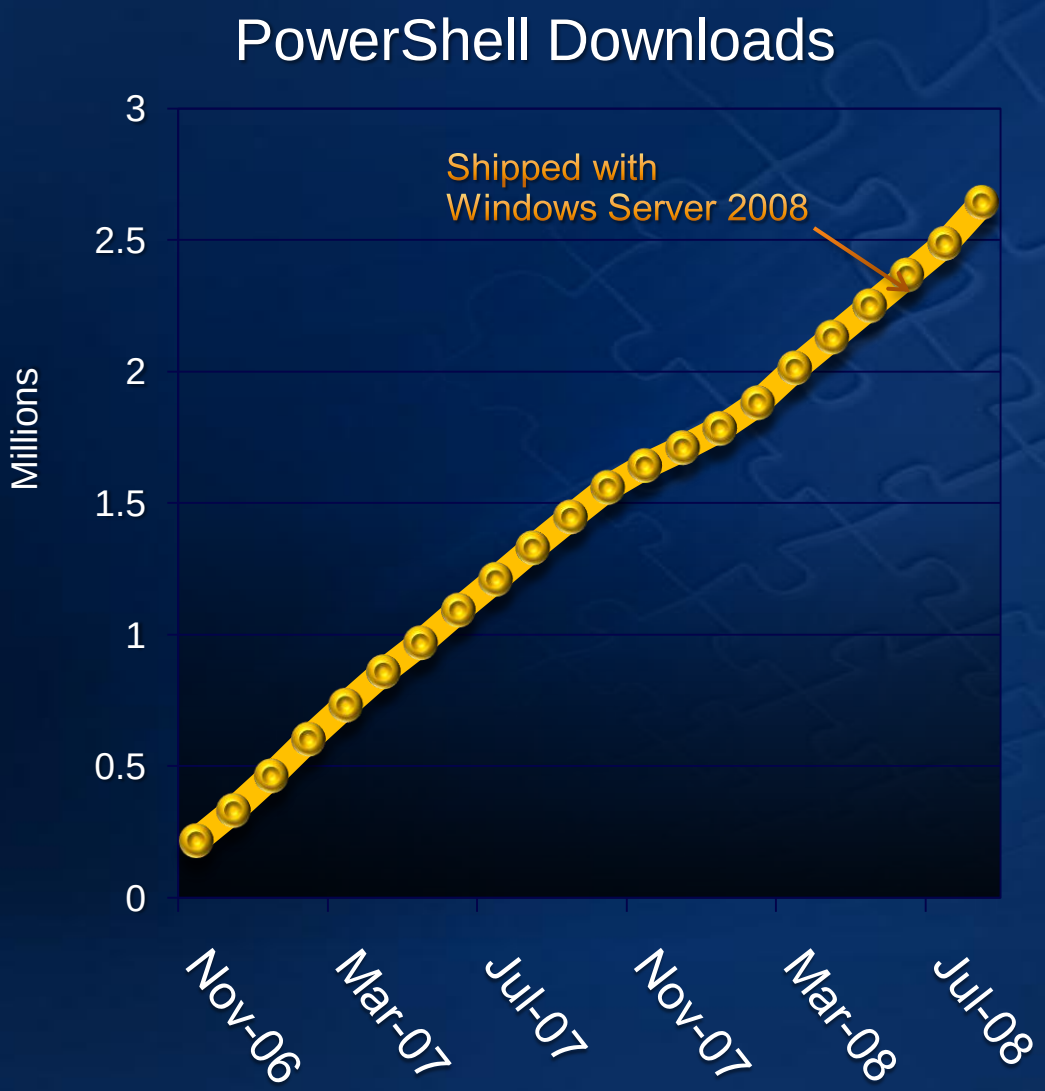
Mailbox Statistics	`Set listExchange_Mailboxs = GetObject("winmgmts:{impersonationLevel=impersonate}!\\COMPUTERNAME\ROOT\MicrosoftExchangeV2").InstancesOf("Exchange_Mailbox")`
	
	`For Each objExchange_Mailbox in listExchange_Mailboxs`
	`WScript.echo "AssocContentCount =" + objExchange_Mailbox.AssocContentCount`
	`WScript.echo " DateDiscoveredAbsentInDS =" + objExchange_Mailbox.DateDiscoveredAbsentInDS`
	`WScript.echo " DeletedMessageSizeExtended =" + objExchange_Mailbox.DeletedMessageSizeExtended`
	`WScript.echo " LastLoggedOnUserAccount =" + objExchange_Mailbox.LastLoggedOnUserAccount`
	`WScript.echo " LastLogoffTime =" + objExchange_Mailbox. LastLogoffTime`
	`WScript.echo " LastLogonTime =" + objExchange_Mailbox. LastLogonTime`
	`WScript.echo " LegacyDN =" + objExchange_Mailbox. LegacyDN`
	`WScript.echo " MailboxDisplayName =" + objExchange_Mailbox. MailboxDisplayName`
	`WScript.echo " MailboxGUID =" + objExchange_Mailbox. MailboxGUID`
	`WScript.echo " ServerName =" + objExchange_Mailbox. ServerName`
	`WScript.echo " Size =" + objExchange_Mailbox. Size`
	`WScript.echo " StorageGroupName =" + objExchange_Mailbox. StorageGroupName`
	`WScript.echo " StorageLimitInfo =" + objExchange_Mailbox. StorageLimitInfo`
	`WScript.echo " StoreName =" + objExchange_Mailbox. StoreName`
	`WScript.echo " TotalItems =" + objExchange_Mailbox. TotalItems`
	`Next`
		`Get-MailboxStatistics -Server $servername`

Database Mgmt	`Dim StorGroup as New CDOEXM.StorageGroup`
	
	`StorGroup.DataSource.Open "LDAP://" + DCServer + "/ CN=First Storage Group,CN=InformationStore,CN=" + Server + ",CN=Servers,CN=First Administrative Group, CN=Administrative Groups,CN=First Organization, CN=Microsoft Exchange,CN=Services, CN=Configuration," + DomainName`
	
	`StorGroup.MoveLogFiles("C:\newlogPath", 0)`
		`Move-StorageGroupPath`
		`-Identity "First Storage Group"`
		`-Log "C:\newlogPath"`

Recipient Mgmt	`Dim objMailbox As CDOEXM.IMailboxStore`
	
	`Set objMailbox = GetObject("LDAP://" + DCServer + "CN=FOO,CN=users," + DomainName)`
	
	`objMailbox.CreateMailbox "LDAP://" + DCServer + "/CN=Private MDB,CN=First Storage Group,CN=InformationStore,CN=" + Server + ",CN=Servers,CN=First Administrative Group, CN=Administrative Groups,CN=First Organization, CN=Microsoft Exchange,CN=Services, CN=Configuration," + DomainName`
		`Enable-Mailbox`
		`-Identity domain\FOO`
		`-Database "First Storage Group\Private MDB"`

State Of The Software

Phenomenal rate of adoption



- Over 2.6 million downloads
- XP, Vista, Server 2003 and 2008
- Adopted by Exchange, SQL, SCOM, SCVMM, and SCDPM
- CEC 2009 requirement
- Dozens of 3rd party tools, ISVs, and partners
- Strong community engagement, 27 PowerShell MVPs

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