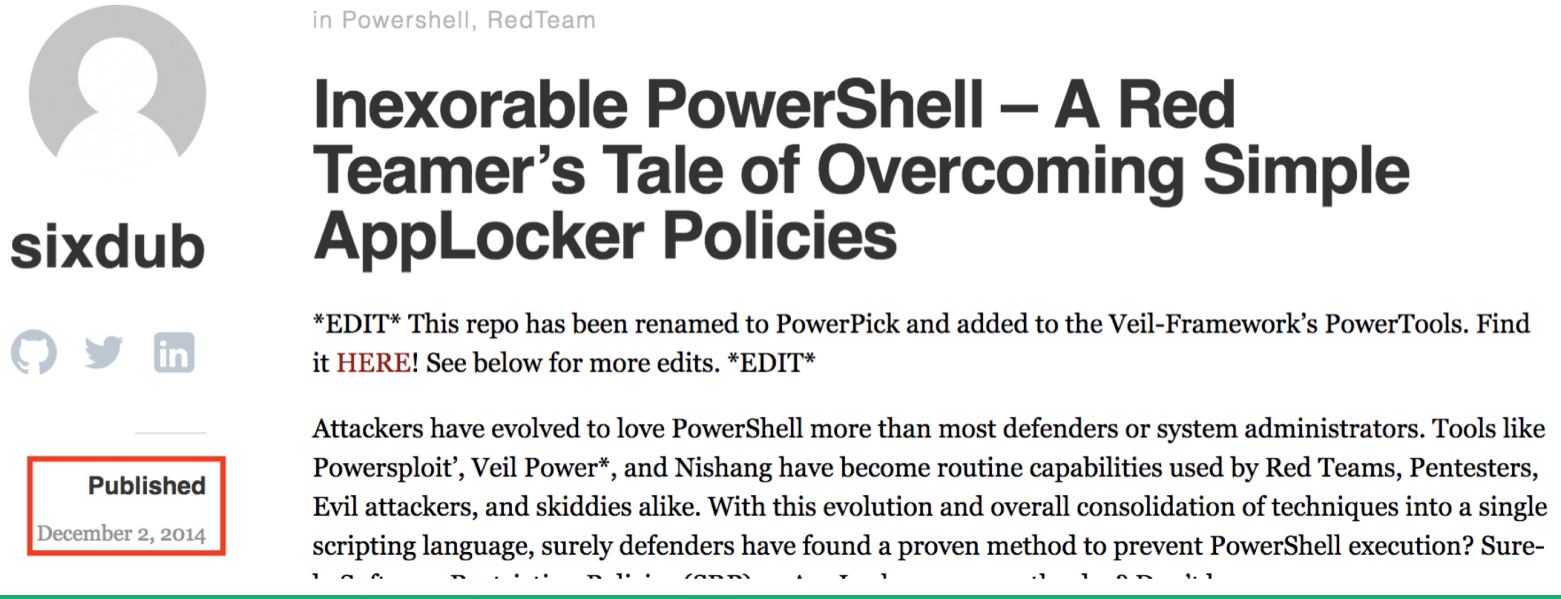
PowerShell Without powershell.exe

Who needs powershell(.exe) anyway?

Our Genesis

- Back in 2014, we realized that eventually powershell.exe would begin to be signatured, and we began investigating alternative ways to invoke our PowerShell code



sixdub

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in Powershell, RedTeam

Inexorable PowerShell – A Red Teamer's Tale of Overcoming Simple AppLocker Policies

EDIT This repo has been renamed to PowerPick and added to the Veil-Framework's PowerTools. Find it HERE! See below for more edits. *EDIT*

Attackers have evolved to love PowerShell more than most defenders or system administrators. Tools like Powersploit', Veil Power*, and Nishang have become routine capabilities used by Red Teams, Pentesters, Evil attackers, and skiddies alike. With this evolution and overall consolidation of techniques into a single scripting language, surely defenders have found a proven method to prevent PowerShell execution? Sure-

The Real Genesis?

PowerShell Pipeline Runners

- ***This is not a new idea!***

- Remember that PowerShell != powershell.exe
  - PowerShell == System.Management.Automation.(ni.)dll
- Following SharpPick/PowerPick, other offensive projects followed:
  - @jaredhaight's PSAttack project
  - @Cneelis's p0wnedShell
  - @ben0xa's NPS project

- Conceptually these utilize the same basic mechanism for PowerShell script invocation through C#

PowerShell Pipeline Runners

```
RunspaceConfiguration rsconfig = RunspaceConfiguration.Create();
Runspace runspace = RunspaceFactory.CreateRunspace(rsconfig);
runspace.Open();
RunspaceInvoke scriptInvoker = new RunspaceInvoke(runspace);
Pipeline pipeline = runspace.CreatePipeline();
String cmd = "Start-Process calc.exe";

pipeline.Commands.AddScript(cmd);
pipeline.Commands.Add("Out-String");
Collection<PSObject> results = pipeline.Invoke();
runspace.Close();
```

UnmanagedPowerShell

UnmanagedPowerShell

- **@tifkin_**'s response to the "can PowerShell run without powershell.exe" problem

- "UnmanagedPowerShell" (https://github.com/leechristensen/UnmanagedPowerShell) provides the ability to run PowerShell code in an unmanaged (C/C++/non-.NET) process
  - This is a different problem than running PowerShell in managed (.NET) code!

UnmanagedPowerShell: Process

1. Loads up the .NET Common Language Runtime (CLR) in the current process (needs code injection for a foreign process):
   a. .NET 4+ : CLRCreateInstance() to create a CLR instance, gets the runtime interface with .GetRuntime()/.GetInterface()
   b. .NET 2/3: CorBindToRuntime() (depreciated in 4)
2. Grabs a pointer to the CLR AppDomain with **.GetDefaultDomain()** and **.QueryInterface()**
3. Then loads up a custom C# assembly using **appDomain->Load_3()**
   a. This custom assembly is essentially just a “PowerShell runner”
4. The desired command or scriptblock is copied into the assembly and the execution method is called in the assembly

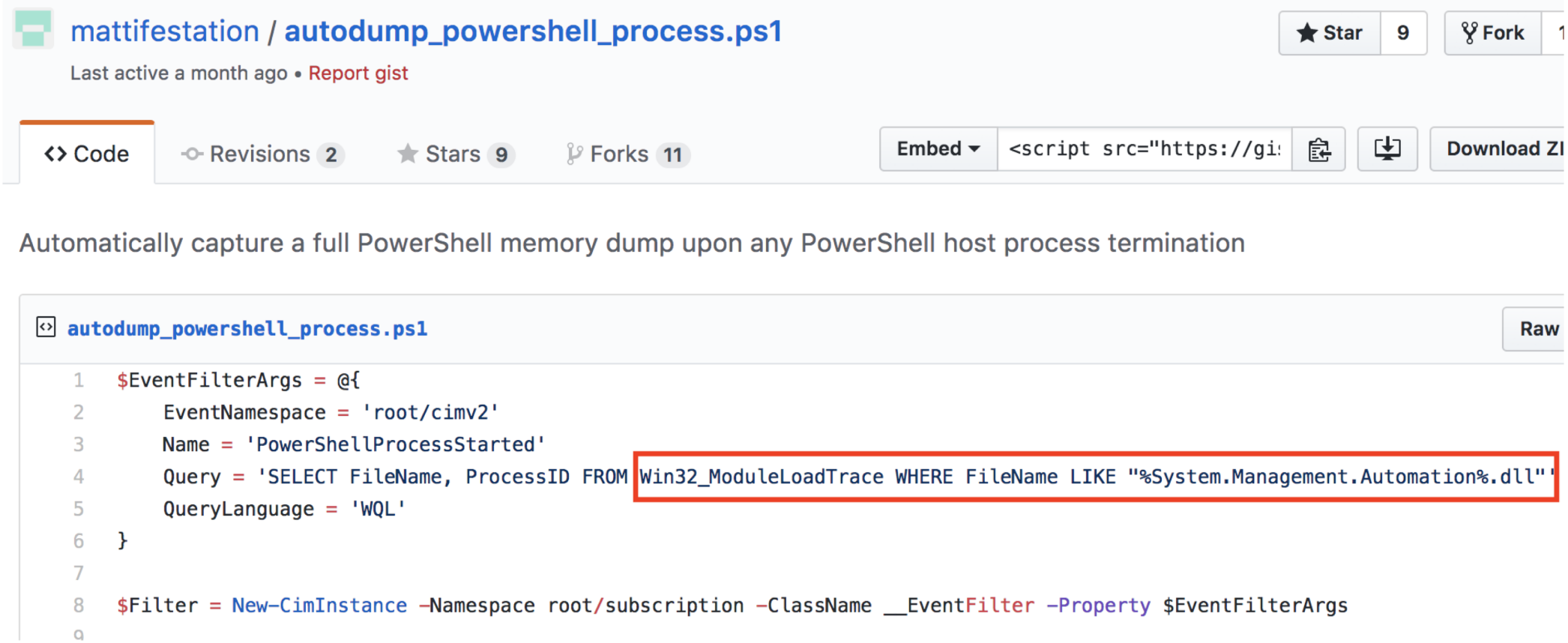
UnmanagedPowerShell: Weaponization

- **UnmanagedPowerShell** was what allowed us to build process injection for PowerShell Empire
  - @sixdub then took Lee's work and wrapped it up with Stephen Fewer's ReflectiveDLLInjection code
  - It has since been incorporated into Meterpreter and Cobalt Strike

- **ReflectivePick-** Reflective DLL that instantiates a PowerShell runspace (can be injected into another process)

- **PSInjector-** Script that uses ReflectivePick and automates injection

UnmanagedPowerShell: Defense



This would be a good time to

take a break and attempt

Lab: Building Your Own SharpPick