

# GitHub - scottlundgren/w32time

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gametime

Windows provides a facility for third parties to build custom time providers. These time providers are interesting in that they can be used as a Windows "Autorun" capability.

Microsoft lightly documents Win32 time providers. See [https://msdn.microsoft.com/en-us/library/windows/desktop/ms725475\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/ms725475(v=vs.85).aspx). The important points are that time providers are implemented as DLLs that match the architecture (x86, x64) of Windows. Time providers are supported from Windows 2000 through Windows 10. Registering a time provider is as simple as one registry key and three values.

Microsoft's own NTP client is implemented as a Win32 time provider. VMWare's VMWare Tools includes a time provider implementation as well.

Time providers are an interesting Autorun mechanism for three reasons:

- (1) Time Providers are not well-known or well-documented
- (2) The implementation of time providers allow for installing any number of time providers, so a custom time provider can be installed easily alongside existing time providers with no loss of functionality and no need to proxy through to the original.
- (3) Time providers can be enabled or disabled with a single registry value

From an autorun perspective, a few important points:

- (1) There is no escalation of privilege here; one must be an administrator to set up a time provider
- (2) The time provider runs in the security context of Local Service
- (3) The time provider config in the Windows registry must reference an on-disk file (or, at least, something addressable via an installed filesystem)

## Configuring a time provider

Must create a key of an arbitrary name (example code uses "gametime") in the registry at:  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders

Under the new key, three values must be created:

```
REG_SZ DllName (Name of the time provider DLL)
```

```
REG_DWORD Enabled (1 or 0)
```

```
REG_DWORD InputProvider (1 or 0)
```

## Registering & Deregistering

The gametime DLL allows for registration and deregistration using `rundll32.exe`. Just use:

```
rundll32.exe gametime.dll,Register
```

```
rundll32.exe gametime.dll,Deregister
```

This saves the hassle of having a standalone installer script.

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Source: <https://github.com/scottlundgren/w32time>