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ASP.NET Runtime Cheat Sheet: HttpRequest, HttpRuntime, AppDomain and friends

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This article has cheat sheets for retrieving various bits of ASP.NET runtime information. For each bit of info, there is:

- A code snippet for retrieving it in a page, with a link to MSDN
- Description, sometimes explanation
- ~~The value for the live ASP.NET app backing this site~~ The values are static right now. They were obtained from a request to `http://minuteman.duartes.org/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx?param1=foo&param2=bar`

The code for the ASP.NET user control that generates the cheat sheets is in AspNetRuntimeDiagnostics.ascx.

HttpRequest information

HttpRequest.LogonUserIdentity and Process

When troubleshooting ASP.NET problems you often ask two questions: **which process is the code running in?**; and **which Windows user is it running as?** The default setups are thus:

Windows + IIS	Worker Process	ASP.NET threads
Vista + IIS 7.0	w3wp.exe running as NETWORK SERVICE, one per application pool	IUSR, well-known account with SID S-1-5-17, see this post
Windows 2003 + IIS 6.0	w3wp.exe running as NETWORK SERVICE, one per application pool	IUSR_MACHINE_NAME, per-machine anonymous IIS user
Windows 2000/XP + IIS 5.0	aspnet_wp.exe, one for all ASP.NET applications	ASPNET, per-machine ASP.NET worker account

These defaults however are subject to many factors, so often you need to find the answers yourself. The cheat sheet below shows you the relevant classes and properties to use. ProcessMonitor is a great tool for troubleshooting Windows runtime problems, especially permission and access denied issues. If you wish to read up on security and .NET, see Keith Brown's superb online book, The .NET Developer's Guide to Windows Security.

HttpRequest.LogonUserIdentity And Process

C# Page snippet + description	Value
Process.GetCurrentProcess ().MainModule.FileName GetCurrentProcess() has security demands and may not be available in certain situations. One work-around is to use Environment.GetCommandLineArgs()[0] to at least get the file name	c:\windows\system32\inetsrv\w3wp.exe
Process.GetCurrentProcess().Id The Windows process ID for the process running your code. This is the process you attach to for debugging, watch for perf monitoring, and kill to restart your app 'cold'.	3008
Process.GetCurrentProcess ().MainModule.FileVersionInfo	File: c:\windows\system32\inetsrv\w3wp.exe File version: 6.0.3790.3959 (srv03_sp2_rtm.070216-1710) FileDescription: IIS Worker Process Product: Internet Information Services
Process.GetCurrentProcess().StartTime	12/24/2008 3:09:55 AM
this.Request.LogonUserIdentity.AuthenticationType	
this.Request.LogonUserIdentity.Groups These are the Windows groups which contain the user running your ASP.NET code.	MINUTEMAN\None Everyone BUILTIN\Guests BUILTIN\Users NT AUTHORITY\NETWORK NT AUTHORITY\Authenticated Users NT AUTHORITY\This Organization NT AUTHORITY\NTLM Authentication
this.Request.LogonUserIdentity.Name This is the Windows user running your ASP.NET code. This user should be granted the permissions needed by your application.	MINUTEMAN\IUSR_MINUTEMAN
this.Request.LogonUserIdentity.ImpersonationLevel This is 'Impersonation' if the thread running your code is impersonating a Windows user, otherwise it's 'None'. In IIS 6 and 7, this is normally 'Impersonation' because the ASP.NET threads run under a different user than the IIS worker process.	Impersonation

C# Page snippet + description	Value
this.Request.LogonUserIdentity.IsAnonymous	False
this.Request.LogonUserIdentity.IsSystem True if your code is running as Local System. This should never be the case.	False
this.Request.LogonUserIdentity.User.Value The SID for the account.	S-1-5-21-433945606-595587905-2999028010-1013

Paths

Path names in ASP.NET may be confusing, but the concepts are simple:

- **Physical paths** refer to the server's filesystem (*e.g.*, c:\inetpub\wwwroot\index.aspx).
- **Virtual paths** refer to HTTP paths, the stuff in the browser address bar. They come in two types: absolute and relative.
- **Absolute** virtual paths are exactly what you see in the browser, starting with the / after the host name (*e.g.*, /gustavo/articles).
- **Relative** (or app-relative) virtual paths start with ~/. The ~/ is magic and always represents the root virtual path of your application. So for an IIS application deployed at /bunny/love/ ASP.NET transforms ~/ into /bunny/love/. If the app is deployed to the IIS root (/), then ~/ simply becomes /.

There are two useful ASP.NET tools to manipulate paths. The HttpServerUtility.MapPath method converts a virtual path to a physical path. The VirtualPathUtility class has several methods for manipulating virtual paths.

HttpRequest and Page Paths

C# Page snippet + description	Value
this.Request.ApplicationPath Gets the IIS root virtual path for your ASP.net application. ASP.NET transforms ~/ into this value when making an absolute virtual path.	/
this.Request.AppRelativeCurrentExecutionFilePath Returns the app-relative virtual path for the HttpHandler currently executing, normally your page. *Equivalent to* this.Page.AppRelativeVirtualPath	~/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx
this.Request.CurrentExecutionFilePath	/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx

C# Page snippet + description	Value
Returns the absolute virtual path for the HttpHandler currently executing, normally your page.	
this.Request.PhysicalApplicationPath	c:\inetpub\wwwroot\Duartes\
The root of your application in the server's file system.	
this.Request.PhysicalPath	c:\inetpub\wwwroot\Duartes\gustavo\articles\Asp.r -Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx
The file system location for the HttpHandler currently executing, normally your page.	
this.Page.TemplateSourceDirectory	/gustavo/articles

Click here for an example where the ApplicationPath is not /.

Request.Url

C# Page snippet + description	Value
this.Request.Url.AbsolutePath	/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx
this.Request.Url.AbsoluteUri	http://minuteman.duartes.org/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx?param1=foo&param2=bar
this.Request.Url.Authority	minuteman.duartes.org
this.Request.Url.DnsSafeHost	minuteman.duartes.org
this.Request.Url.Fragment	
this.Request.Url.Host	minuteman.duartes.org
this.Request.Url.HostNameType	Dns
this.Request.Url.LocalPath	/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx

C# Page snippet + description	Value
this.Request.Url.OriginalString	http://minuteman.duartes.org:80/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx?param1=foo&param2=bar
this.Request.Url.PathAndQuery	/gustavo/articles/Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx?param1=foo&param2=bar
this.Request.Url.Port	80
this.Request.Url.Query	?param1=foo&param2=bar
this.Request.Url.Scheme	http
this.Request.Url.Segments	[0]: / [1]: gustavo/ [2]: articles/ [3]: Asp.net-Runtime-Cheat-Sheet-HttpRequest-HttpRuntime.aspx
this.Request.Url.UserInfo	

Information from the HTTP request headers

C# Page snippet + description	Value
this.Request.AnonymousID Used with ASP.NET anonymous profiles.	null
this.Request.ContentLength Length in bytes for the BODY in the client's request. For a GET request, this is normally zero as there is no body. For a POST request it depends on how much data is sent to the server.	0
this.Request.TotalBytes This is usually equal to ContentLength, but it could be slightly different depending on how the client encoded its HTTP request.	0
this.Request.UrlReferrer The URL that sent the user your way. Bless them.	null

C# Page snippet + description	Value
this.Request.UserAgent The client's browser.	Mozilla/5.0 (Windows; U; Windows NT 6.0; en-US; rv:1.9.0.5) Gecko/2008120122 Firefox/3.0.5
this.Request.UserHostAddress	10.1.10.150
this.Request.UserHostName	10.1.10.150
this.Request.UserLanguages User-configured language preferences sent by the browser. You might tune your content based on this.	[0]: en-us [1]: en;q=0.5

Environment

C# Page snippet + description	Value
Environment.OSVersion	Microsoft Windows NT 5.2.3790 Service Pack 2
Environment.WorkingSet Amount of physical memory used by the ASP.net worker process	149577728
Thread.CurrentThread.CurrentCulture Used by string formatting and other culture-sensitive methods.	en-US
Thread.CurrentThread.CurrentUICulture Used by the ResourceManager to load culture-specific resources like strings and images .	en-US
Environment.UserDomainName	NT AUTHORITY
Environment.UserName Do **not** trust this value. Stick to HttpRequest.LogonUserIdentity	NETWORK SERVICE
Environment.Version	2.0.50727.1433

C# Page snippet + description	Value
.NET Framework version. This returns '2.0' even for assemblies compiled as .NET 3.5.	

HttpContext

C# Page snippet + description	Value
HttpContext.Current.SkipAuthorization	False
HttpContext.Current.User.Identity.AuthenticationType	
HttpContext.Current.User.Identity.IsAuthenticated	False
HttpContext.Current.User.Identity.Name	
HttpContext.Current.Timestamp	12/24/2008 3:57:45 AM

HttpRuntime and AppDomain

Your ASP.NET code runs inside a .NET AppDomain, which in turn runs inside a Windows process. The IIS version and configurations determine where your AppDomain will run. IIS 6 and 7 by default run AppDomains in a Worker Process called w3wp.exe. There is one worker process for each IIS application pool. Inside the Worker Process, there is one AppDomain for each application in the pool. Here are some useful tidbits on the current AppDomain and process:

C# Page snippet + description	Value
AppDomain.CurrentDomain.SetupInformation.ConfigurationFile Configuration file for the current AppDomain. For ASP.net this is the web.config file.	c:\inetpub\wwwroot\Duartes\web.cor
HttpRuntime.AppDomainAppId The /LM/W3SVC part is fixed for a given IIS instance. The following number is the Site ID within IIS. The last piece is the IIS root virtual path for the application (or 'ROOT' for /).	/LM/W3SVC/1/ROOT
HttpRuntime.AppDomainAppPath The filesystem folder containing your application. *Equivalent to* AppDomain.CurrentDomain.BaseDirectory	c:\inetpub\wwwroot\Duartes\

C# Page snippet + description	Value
HttpRuntime.AppDomainAppVirtualPath	/
HttpRuntime.AppDomainId *Equivalent to* AppDomain.CurrentDomain.FriendlyName	/LM/W3SVC/1/ROOT-1-128745617
HttpRuntime.AspClientScriptPhysicalPath	C:\WINDOWS\Microsoft.NET\Fram \asp.netclientfiles
HttpRuntime.AspClientScriptVirtualPath	/aspnet_client/system_web/2_0_5072
HttpRuntime.AspInstallDirectory	C:\WINDOWS\Microsoft.NET\Fram \
HttpRuntime.BinDirectory *Equivalent to* AppDomain.CurrentDomain.RelativeSearchPath	c:\inetpub\wwwroot\Duartes\bin\
HttpRuntime.ClrInstallDirectory	C:\WINDOWS\Microsoft.NET\Fram \
HttpRuntime.CodegenDir This is where ASP.NET stores generated source files for your pages, controls, etc. Watch this folder to see what a processed page becomes. Pages are compiled to DLLs which are also stored here. *Equivalent to* AppDomain.CurrentDomain.DynamicDirectory	C:\WINDOWS\Microsoft.NET\Fram \Temporary ASP.NET Files\root\194
HttpRuntime.MachineConfigurationDirectory	C:\WINDOWS\Microsoft.NET\Fram \Config

Loaded Assemblies

.NET code is packaged into .NET assemblies. It is often important to know which assemblies are loaded into your ASP.NET AppDomain because many problems boil down to missing or incorrect assemblies. The method AppDomain.CurrentDomain.GetAssemblies returns a list of assemblies loaded in your AppDomain (it requires full trust). Here's the output for the current domain:

Count of loaded assemblies: **27**

Assemblies

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\mscorlib.dll

mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

Assemblies

C:\WINDOWS\assembly\GAC_32\System.Web\2.0.0.0__b03f5f7f11d50a3a\System.Web.dll

System.Web, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a

C:\WINDOWS\assembly\GAC_MSIL\System\2.0.0.0__b77a5c561934e089\System.dll

System, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\assembly\GAC_MSIL\System.Configuration\2.0.0.0__b03f5f7f11d50a3a\System.Conf

System.Configuration, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a

C:\WINDOWS\assembly\GAC_MSIL\System.Xml\2.0.0.0__b77a5c561934e089\System.Xml.dll

System.Xml, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

Conclusion

C:\WINDOWS\assembly\GAC_MSIL\Microsoft.JScript\8.0.0.0__b03f5f7f11d50a3a\Microsoft.JScript

Microsoft.JScript, Version=8.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a

I hope this saves you some time. It's a work in progress, let me know what I messed up or missed.

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

What Now?

\App_global.asax.2xsiz5uk.dll

App_global.asax.2xsiz5uk, Version=0.0.0.0, Culture=neutral, PublicKeyToken=null

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C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

\b59cf41d\50132709_c073c801\WebSite.DLL

Thanks for reading! —

WebSite, Version=0.1.802.2002, Culture=neutral, PublicKeyToken=null

Rendered on Wed, 24 Dec 2008 03:57:45 GMT

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

\14e5df28_726cc801\Common.Helpers.DLL

Common.Helpers, Version=0.1.0.0, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\assembly\GAC_MSIL\System.Web.Mobile\2.0.0.0__b03f5f7f11d50a3a\System.Web.N

System.Web.Mobile, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a

C:\WINDOWS\assembly\GAC_MSIL\System.ServiceModel\3.0.0.0__b77a5c561934e089\System.Serv

System.ServiceModel, Version=3.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\assembly\GAC_MSIL\System.Web.Extensions\3.5.0.0__31bf3856ad364e35\System.W

System.Web.Extensions, Version=3.5.0.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35

C:\WINDOWS\assembly\GAC_MSIL\System.Core\3.5.0.0__b77a5c561934e089\System.Core.dll

Assemblies

System.Core, Version=3.5.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\assembly\GAC_32\System.Data\2.0.0.0__b77a5c561934e089\System.Data.dll

System.Data, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\assembly\GAC_32\System.Transactions\2.0.0.0__b77a5c561934e089\System.Transact

System.Transactions, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\assembly\GAC_32\System.EnterpriseServices\2.0.0.0__b03f5f7f11d50a3a\System.Ent

System.EnterpriseServices, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a

C:\WINDOWS\assembly\GAC_MSIL\SMDiagnostics\3.0.0.0__b77a5c561934e089\SMDiagnostics.dll

SMDiagnostics, Version=3.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

App_Web_ghr_5vya, Version=0.0.0.0, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

App_Web_z-opz3of, Version=0.0.0.0, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\assembly\GAC_MSIL\System.Web.RegularExpressions\2.0.0.0__b03f5f7f11d50a3a\S

System.Web.RegularExpressions, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

App_Web_jzwzgh0y, Version=0.0.0.0, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

App_Web_goxujwqv, Version=0.0.0.0, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370
\30f22d7a_a06bc801\Iris.DLL

Iris, Version=0.1.712.1401, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370

App_Web_l1fsy2rr, Version=0.0.0.0, Culture=neutral, PublicKeyToken=null

C:\WINDOWS\assembly\GAC_MSIL\System.Drawing\2.0.0.0__b03f5f7f11d50a3a\System.Drawing.c

Assemblies

System.Drawing, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a

C:\WINDOWS\assembly\GAC_MSIL\System.Data.Linq\3.5.0.0__b77a5c561934e089\System.Data.Li

System.Data.Linq, Version=3.5.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089

C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\Temporary ASP.NET Files\root\1943e657\370
\8a54307a_a06bc801\Newtonsoft.Json.DLL

Newtonsoft.Json, Version=1.3.0.0, Culture=neutral, PublicKeyToken=null