

Gen-i-Sys[®] and IIS Security and Confidence

SynCo Technologies has developed a technology that allows the creation and maintenance of database applications for the Internet incredibly quickly and inexpensively. The technology is called Gen-i-Sys[®] (**Generic-Internet-Systems**) and is based on ISAPI (Internet Server Application Program Interface) technology, which runs on IIS (Internet Information Server). ISAPI has been used for many years. This document discusses the benefits of using ISAPI on IIS.

IIS is widely used

According to ENT (www.entmag.com) Web Server Status Among the Fortune 1,000, 2/26/01:

- IIS is the most commonly used web server at Fortune 1,000 company web sites (47% use IIS).
- IIS usage on Fortune 500 web sites went up from 41% in June 2000 to 44% in December 2000.
- Among others, IIS is used by the following Fortune 500 companies for their corporate web sites: Dell Computer, Barnes & Noble, Compaq, Bank One, Cardinal Health, Ford Motor, Philip Morris, Texaco, Target, Intel, Allstate, Dow Chemical, Gap, Halliburton, PacificCare Health Systems, US Bancorp and Saks Incorporated.

According to SecuritySpace.com (www.securityspace.com), 8/1/01:

- 29.71% of educational web servers (.edu) are IIS.
- 31.24% of secure (ssl) educational web servers are IIS.
- 54.09% of US military (.mil) web servers are IIS.
- 57.69% of secure US military web servers are IIS.
- 29.77% of commercial (.com) web servers are IIS.
- 27.36% of secure commercial web servers are IIS.
- 31.08% of US government (.gov) web servers are IIS.
- 36.32% of secure US government web servers are IIS.

According to Netcraft.com (www.netcraft.com/survey), 7/01:

- 27.91% of all active Internet sites run IIS.

Also Of Interest:

- Active Server Pages (ASP) is the most common method of application development for IIS. ASP is an ISAPI technology
- Barnes and Noble's online store (www.bn.com) is run with ASP on IIS (Windows 2000 servers).
- The ebay auction site (www.ebay.com) is run with ISAPI dlls on IIS (Windows NT servers).



Security

Gen-i-Sys Security

Much of the security for a Gen-i-Sys site is in the hands of the IIS Administrator. The assumed set up for one of our public sites would give anonymous access to a single directory containing a single file: The Gen-i-Sys ISAPI DLL (Dynamic Link Library). (The rest of the server is restricted.) All HTTP requests are handled by this DLL. The user must sign in to gain access to anything besides the Log In screen (generated by the DLL). Each subsequent request must contain a cookie that re-authenticates the identity of the user making the request. For public sites (as opposed to Intranet sites) which contain sensitive information, the site would be a secure site using SSL (Secure Socket Layer). All requests and responses would use this protocol (similar to banking on line). The DLL itself has access to the information that defines database connections and methods of retrieval. The Internet user can not get to this information.

This is our standard security model, but we are quite flexible. For instance, we can use your User ID for the log in, or get other information passed from a organization's portal to avoid a double log in, or use another method specified by your IT department. We are more than happy to discuss other ideas with your IT group to conform to your security requirements.

IIS Security Features

A few features are listed here. For more information see Microsoft's web site.

IIS supports five methods of Authentication:

- Anonymous authentication
- Basic authentication
- Digest authentication
- Integrated Windows authentication
- Certificates

IIS supports the following levels of Access Control:

- IP Address Restriction
- User Account Restriction
- Web Permissions (Read, Write, Log visits, etc.; by Sites, Directories or Files)
- NTFS Permissions (Read, Write, Execute Scripts, etc.; by Directories or Files)

Encryption Protocols – IIS supports:

- SSL 3.0 (40, 128-bit)
- SGC (128-bit)

Auditing – IIS can monitor:

- Directory and File Access Attempts
- Server Events (logging on and off, security changes, shutting down, etc.)
- Web Site Access/Activity (site, virtual directory, or file)
- FTP Site Access/Activity



Securing IIS

Using the above (and other) techniques to secure your IIS server in combination with a well-implemented firewall will lead you to a reliable, secure site. A recent article in Information Security magazine makes the point that any web server is vulnerable when not maintained diligently and configured correctly (April 2001, "Improving Apache"). The article states "...hundreds of thousands--if not millions--of Web-facing IIS servers are made robust and secure through ongoing security administration and configuration management."

Code Red

The most recent, highly publicized Security hole in IIS. The "worm" that attacked all of these IIS servers was unleashed on the Internet about a month *after* the patch for IIS that plugged that security hole was available. In other words, those that update their IIS servers regularly with security updates were not affected. (Microsoft and others have subscription services to alert IIS administrators in a timely manner.) The solution was available before the problem occurred.

In Conclusion

The above information should increase your confidence in the ISAPI/IIS technology. The benefits of this confidence are far-reaching. It can be extremely valuable to use Gen-i-Sys technology to create reliable solutions on short order. Utilizing this technology provides Intranet and Internet applications for a variety of your database needs at a substantially reduced cost and time-to-market.



Definitions:

ISAPI

Short for *Internet Server Application Program Interface*, an API for Microsoft's IIS (Internet Information Server) Web server. ISAPI enables programmers to develop Web-based applications that run much faster than conventional CGI (Common Gateway Interface) programs because they're more tightly integrated with the Web server. In addition to IIS, several Web servers from companies other than Microsoft support ISAPI.

One of the biggest advantages of an ISAPI application is that it is fast. Once the server loads the ISAPI application into memory it is not released, making other calls quick. The operating system need not load the DLL again. Comparably, CGI executables are instantiated every time they are called - making the loading and running of the executable slow the response time of the page.

IIS

Short for *Internet Information Server*, Microsoft's Web server that runs on Windows NT platforms. In fact, IIS comes bundled with Windows NT 5.0 and 2000. Because IIS is tightly integrated with the operating system, it is relatively easy to administer. Currently IIS is available for the Windows NT and 2000 platform, whereas Netscape's Web servers run on all major platforms, including Windows NT, OS/2 and UNIX.

DLL

Short for *Dynamic Link Library*, a library of executable functions or data that can be used by a Windows application. Typically, a DLL provides one or more particular functions and a program accesses the functions by creating either a static or dynamic link to the DLL. A static link remains constant during program execution while the program creates a dynamic link as needed. DLLs can also contain just data. Some DLLs are provided with the Windows operating system and available for any Windows application. Other DLLs are written for a particular application and are loaded with the application.

Web Server

A computer that delivers (*serves up*) Web pages. Every Web server has an IP address and possibly a domain name. For example, if you enter the URL www.syncotec.com/index.html in your browser, this sends a request to the server whose domain name is syncotec.com. The server then fetches the page named index.html and sends it to your browser. Any computer can be turned into a Web server by installing server software and connecting the machine to the Internet.

SSL

Short for *Secure Sockets Layer*, a protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a public key to encrypt data that's transferred over the SSL connection. Both Netscape Navigator and Internet Explorer support SSL, and many Web sites use the protocol to obtain confidential user information, such as credit card numbers. By convention, Web pages that require an SSL connection start with *https:* instead of *http:*.

Source: webopedia.com

Contact

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