

Core IIS Concepts

Key Components

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|---------------------|---|
| Application Pools   | Isolate web applications for better security and reliability. Each pool runs in its own worker process. |
| Web Sites           | Host websites with unique bindings (IP address, port, hostname).  |
| Virtual Directories | Map physical directories to URL paths within a website.   |
| Handlers            | Process specific file types (e.g., .aspx, .php).  |
| Modules             | Extend IIS functionality (e.g., authentication, logging).   |
| Bindings            | Associate a website with an IP address, port, and hostname. Supports HTTP and HTTPS.                    |

IIS Architecture Overview

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| IIS architecture consists of the following layers:   |
| <ul style="list-style-type: none"><li><b>User Interface Layer:</b> GUI tools like IIS Manager.</li><li><b>Configuration System:</b> Stores IIS settings in XML files (applicationHost.config).</li><li><b>Web Administration Service (WAS):</b> Manages application pool configuration and lifecycle.</li><li><b>HTTP.sys:</b> Kernel-mode listener that receives HTTP requests.</li></ul> |

Important Configuration Files

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| applicationHost.config | Main configuration file located in %windir%\System32\inetsrv\config\.                                       |
| web.config             | Application-specific configuration file, placed in the root directory of a web application.                 |
| machine.config         | Framework-level configuration, typically located in %windir%\Microsoft.NET\Framework[64]\<version>\config\. |

Management and Configuration

IIS Manager

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| The IIS Manager is a GUI tool for managing IIS. Common tasks include:  |
| <ul style="list-style-type: none"><li>Creating and managing websites and application pools.</li><li>Configuring bindings, handlers, and modules.</li><li>Setting authentication and authorization rules.</li><li>Monitoring server performance and health.</li></ul> |

PowerShell Cmdlets

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| Get-Website  | Lists all websites.  |
| New-Website -Name "MyNewSite" -PhysicalPath "C:\MyNewSite" -BindingInformation ":80:www.example.com" | Creates a new website.   |
| Stop-Website -Name "MyNewSite"   | Stops a website.   |
| Get-WebAppPoolState  | Gets the state of all application pools.                         |
| Restart-WebAppPool -Name "MyAppPool"   | Restarts an application pool.                                    |
| Import-Module WebAdministration  | Import the WebAdministration module to use IIS-specific cmdlets. |

Command-Line Tools

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| appcmd list sites  | Lists all websites.           |
| appcmd add site /name:"MyNewSite" /physicalPath:"C:\MyNewSite" /bindings:http/*:80:www.example.com | Creates a new website.        |
| appcmd stop site "MyNewSite"   | Stops a website.              |
| appcmd list apppools   | Lists all application pools.  |
| appcmd recycle apppool "MyAppPool"   | Recycles an application pool. |

## Security and Authentication

### Authentication Methods

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| <b>Anonymous Authentication</b> | Allows access to the website without requiring users to provide credentials. Uses the <code>IUSR</code> account by default. |
| <b>Basic Authentication</b>     | Sends usernames and passwords in plain text (Base64 encoded). Should only be used over HTTPS.                               |
| <b>Windows Authentication</b>   | Uses Windows credentials (NTLM or Kerberos) for authentication.   |
| <b>Forms Authentication</b>     | Uses a custom login form and stores authentication information in cookies or sessions.                                      |
| <b>ASP.NET Impersonation</b>    | Allows the application to run under the identity of the authenticated user.   |

### SSL/TLS Configuration

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| To configure SSL/TLS:  |
| <ol style="list-style-type: none"><li>1. Obtain an SSL certificate from a Certificate Authority (CA).</li><li>2. Install the certificate in the server's certificate store.</li><li>3. Add an HTTPS binding to the website (port 443).</li><li>4. Select the installed certificate for the binding.</li><li>5. Enforce HTTPS by requiring SSL in IIS settings.</li></ol> |

### Authorization Rules

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| <b>Allow Rules</b>       | Grant access to specific users, groups, or IP addresses.                         |
| <b>Deny Rules</b>        | Restrict access to specific users, groups, or IP addresses.                      |
| <b>URL Authorization</b> | Configure authorization rules for specific URLs or directories within a website. |

## Troubleshooting

### Common Error Codes

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| <b>401.1</b>  | Authentication failed due to invalid credentials.                        |
| <b>403.14</b> | Directory browsing is disabled. Enable it or specify a default document. |
| <b>404</b>    | Resource not found. Check the URL and physical path.                     |
| <b>500</b>    | Internal server error. Check the application event logs for details.     |
| <b>503</b>    | Service unavailable. The application pool may be stopped or overloaded.  |

### Logging and Monitoring

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| IIS logs detailed information about requests, errors, and performance. Check the following logs:  |
| <ul style="list-style-type: none"><li>• <b>IIS logs:</b> Located in <code>%SystemDrive%\inetpub\logs\LogFiles</code>.</li><li>• <b>Application event logs:</b> Use Event Viewer to view application errors.</li><li>• <b>HTTP.sys logs:</b> Located in <code>%SystemRoot%\System32\LogFiles\HTTPERR</code>.</li></ul> |

### Troubleshooting Steps

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| <ol style="list-style-type: none"><li>1. <b>Check the application pool status:</b> Ensure the application pool is running.</li><li>2. <b>Verify the physical path:</b> Make sure the physical path in IIS points to the correct directory.</li><li>3. <b>Test the website bindings:</b> Confirm that the website is bound to the correct IP address, port, and hostname.</li><li>4. <b>Review the web.config file:</b> Look for syntax errors or incorrect settings.</li><li>5. <b>Examine the application event logs:</b> Check for application errors or exceptions.</li><li>6. <b>Use Failed Request Tracing:</b> Capture detailed information about failed requests.</li></ol> |
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