# Before you begin

Are you an inadvertent IIS administrator, or even a reluctant one? I used to be and still am on occasion. I understand the life of a systems administrator – it’s all about time management. We spend our days putting fires, bringing new services online, and keeping the network always available for our users and the business. As an administrator I may have known IIS was lurking in my servers, waiting for me to install it and build a website, but I didn’t want to use my time for that staff. IIS wasn’t that interesting to me, and I wanted to play with sexier technologies like Microsoft Exchange and SharePoint. I chose to ignore IIS and left it to the other system admins.

But my reluctance to spend time learning IIS started to interfere with my job in a surprising way, because IIS is more than a product to make websites; it’s a primary communication gateway for many other products. Have you worked with Exchange, SharePoint, SQL Server, or some other Microsoft enterprise product? If so you’ve noticed that almost all of the enterprise servers have IIS as a software prerequisite. Consider this: any application you want to use via the internet – whether its Outlook web access for Exchange, a portal system such as SharePoint, or management applications such as System Center – uses IIS for that communication. To be an expert at those technologies, the person who can troubleshoot problems (and increase your value to the company), you need to be an IIS expert.

In addition to hindering my abilities with enterprise server products, my avoidance of IIS became an even large business issue. My company started a new product initiative and needed someone who could set up and manage the websites for the new product line. Don’t get me wrong, they didn’t need me to develop the new websites – I’m not a developer – but to configure, secure, and manage them. To be of better service to my company and to give in to my slight but growing fascination with this intriguing product, I chose to learn IIS.

As soon as I drove into IIS, my understanding of and management abilities for those other product soared. I could troubleshoot problems and manage the communications products better. I enjoyed working with IIS so much that I became the primary “go to” web guy. I began building highly available web servers, taking developer-written web applications, putting them into secured websites, and launching new applications for the business. IIS proved to be as sexy and exciting as any other technology and has become my favorite web server product today.

Throughout this book I do everything I can to open your eyes to the allure of IIS while providing you with best information to manage, deploy, secure, and troubleshoot it – even if you don’t find it as sexy as I do. I show you how to work with IIS using traditional Microsoft graphical and downloadable tools. Because I’m reluctant to spend more time than necessary on management, I also show you time-management techniques I’ve found that use PowerShell to manage and automate processes in IIS. Being proficient with IIS has increased my understanding of many technologies, including the web, and elevated my career. Whether or not you’re an inadvertent IIS administrator, you’ll find that learning to use the IIS tools covered in the pages of this book will help you do your job better.

This chapter starts with a high-level tour of IIS and them launches into the prerequisites you need before you begin your next lunch. You’ll also learning the best ways to get the most from this book, you’ll experience IIS as you manage and support a small-town bicycle shop with a basic website called WebBikez that will grow to a worldwide bicycle distributor. Let’s begin with a closer look at IIS itself.

## Introducing IIS

It helps to relate IIS – and web servers in general – to something you already known. In most cases IIS performs the same job as a file server, serving web pages as files to a network client across the internet. The client uses a browser that displays and runs those files as a useful application.

The same concerns you have about file servers regarding security and performance still apply, and in many cases IIS is configured similarly. But there is much more to IIS and its architecture, mainly due to the security challenges that impact any server connected to the internet and the need to be able to run many different types of web applications.

Figure 1.1 is a simple description of how IIS works. It provides a good starting point to get a handle on what to expect.

IIS contains a time-proven architecture that’s fast and highly secured. Flexibility helps developers who are implementing modules – IIS allows for quick additions to



support new applications – and IIS gives web administrators a web platform that will grow into large-scale web farms for redundancy. Throughout this book you’ll dive into this architecture from the perspective of a web administrator to design, configure, secure, and maintain a web environment. But before all that, let’s look at the basics of how IIS delivers we content:

1. The process begins with clients who request a website or other resource by typing a URL into their browser, such as [www.WebBikeZ.com](http://www.WebBikeZ.com). The URL is resolved into an IP address by DNS, and clients connect to the web server using the IP address.
2. A component in the web server architecture called HTTP.SYS intercepts the incoming request. HTTP.SYS call the Windows Activation Service (WAS) and WWW Service to determine the location and configuration of the website or resource. This process launches a w3wp.exe worker process that handles and responds to the client request.
3. The web pages of the website can be physically located on the local web server or on a remote share. This information, along with all the configuration settings for the website, is made accessible through the graphical IIS manager or a command-line tool such as PowerShell.
4. The client’s request is processed by the worker process, and the web page contents are sent to the client, where the browser runs the web page code to display the web application.

Look beyond this simple description and you can envision the challenges that this book covers – from the installation of the web server, to the creation and configuration of websites, to configuring and maintaining security, and finally to scaling into a web farm for best performance and high availability. Let’s take a look at what you’ll need to complete this journey.

## What you need before you start

I assume that you’re an IT professional and not someone off the street reading this book because you enjoy my entertaining prose. As an author who wants you to be successful with IIS, I want to define what you need to know and have in hand *before* you start to you can decide whether you should brush up on any weak points. As you use this book, you may find some areas where you need some additional information or training. That’s not a bad thing; it’s how most of us have been successful in our careers with constantly changing technology – we find out what we’re missing and get that information. I assume that’s why you’re holding this book. Congratulating – it gets easier from here.

This section covers what you need to know to begin this book – including how to work with PowerShell and which versions of IIS will work with the “lunches” in this book.

### Prerequisite knowledge

IIS is a technology that reaches throughout your company network and onto the internet. To be an effective administrator for IIS, you need a lot of infrastructure knowledge. You probably have most of it already in your head, and you can pick up the missing parts as you go. Here are the things you should have basic to intermediate knowledge of before you get started:

* First, you *don’t need* to know any development language such as ASP, ASP.NET, Java, or anything else. Surprised? This book isn’t about developing web applications; it’s about managing IIS servers and websites. Have no fear, you’ll be fine.
* You *do* need an intermediate level of knowledge about TCP/IP and how to properly configure the protocol for the network addressing of your web servers. You don’t need to know how to subnet an IP address, but you should be comfortable assigning an IP address, subnet mask, and default gateway. And you should be comfortable using commands such as Ping and Tracert to troubleshoot IP communication issues.
* You need a basic understanding of routers, firewalls, and NAT (network address translation). You may have engineers to configure this specialized equipment, but you should understanding the basics of how they work so you can request configuration changes to the devices depending on your environment.
* You need to understand the basics of DNS and name resolution. In this book, as in real life, you’ll need to request changes to DNS when you set up URLs for you websites. Although you may not be the person who normally makes this change, you’ll need to make the request to the folks who do. I show you how to make the changes so you know exactly what to do.
* As an IT professional with Windows, assigning NTFS file system permissions and share permissions should already be a comfortable process. You’ll need this skill when we examine website security.
* You also need a basic understanding of Active Directory – nothing over the top like policies or replication troubleshooting, but the basics of creating a user and a group.

### IIS versions 7.0, 7.5, or 8

What version of IIS do you need? Fortunately for administrators, IIS versions 7.0, 7.5, and 8 have similar configuration settings and management tools. No matter which version you’re using, this book is for you. I use IIS 8 for the screenshots in this book, but I also point out differences between IIS 8 and versions 7.x.

What do you do if you’re using IIS 6? Consider upgrading to the new IIS 8 platforms. IIS 6 is similar in many respects to the newer versions, but you’re missing many new features and capabilities. This book is still useful to you, though, and will help you with IIS 6, but I don’t address specific issues with IIS 6.

|  |
| --- |
| **Upgrading may be easier than you think**  If you’re concerned that you web applications running on IIS 6 won’t run on IIS 7/8, you may have an option that will still allow you to upgrade. IIS 7/8 have a series of components called “IIS 6 compatibility mode.” This option may permit those older applications to run and allow you to upgrade. I discuss IIS 6 compatibility mode, along with other options, throughout the book. |

I also don’t go back and address management and architecture changes. I understand that updating can be a challenge, particularly if your web application don’t support the new versions. Remaining on the old version and not updating those web applications will prove to be more costly in the long run and much harder to secure. I recommend you update to IIS 7.5 or IIS8. You don’t want to miss out on what you can do with the most current products.

### 1.2.3 Windows PowerShell

In addition to the prerequisites I’ve mentioned, you also need to know how to use PowerShell to get the most out of this book. I spend a lot of time showing you how to use PowerShell for IIS to automate and manage you web environment. In fact if you have more than one IIS server, you need to use PowerShell to make your management faster.

Can you use this book and manage IIS without knowing PowerShell? Yes, I show you how to perform the necessary tasks using graphical tools. But as your web server, environment grows, PowerShell can make your job much easier. Knowing PowerShell also improves your management of other technology areas you’re responsible for.

If you don’t know PowerShell, how do you learn it quickly? Check out Don Jones’s *Learn Windows PowerShell 3 in a Month of Lunches* ([www.manning.com/jones3/](http://www.manning.com/jones3/)). Before you dig into the next lesson in this book, I recommend you pick up that book and work through the first 18 chapters. Yes, it will delay your learning IIS by 18 days (or two full weekend days if you’re a masochist), but you won’t regret the time investment.

## 1.3 How to use this book

As an IT professional, I’m sure you’ve read countless books and scoured each page for that one gem you need to complete your knowledge quest. This book is designed for the busy IT professional who never seems to have enough time. I know you can’t plop down on the sofa for a week and curl up with this book. In fact even if you do have that kind of time and want to curl up with it, you shouldn’t. I need you to experience IIS, not merely read about it. With that in mind, this book has been designed to be digested one chapter at a time, one hour at a time, and provides labs and “ideas for on your own” to gain additional experience.

### 1.3.1 One hour at a time

I’ve written 24 chapters for you digest along with your sandwich during lunch. As you’re munching you can read one chapter in about 30 minutes. That leaves another 30 minutes to wash up and practice what the chapter showed you. The practice part is the most important for understanding the concepts of the chapter. Each chapter builds on the next, so get in the practice time to be sure you’re ready to move on.

Some chapters don’t take the full hour, so spend whatever extra time you have to practice cementing the concepts or returning to work. Don’t rush to the next chapter; make you understand the current one. Try to stick with the schedule, and you’ll be administering IIS in month of lunches.

### 1.3.2 Completing the labs

To help you get the practice you need, the chapters also include short practice labs for you to complete before moving on. This is a great way for you to test the information you’ve learned while it’s still fresh in your mind. You’ll install, configure, and manage the WebBikez web servers and sites as they grow, so don’t skip the lab part of your lunch. Each lab gives you a set of instructions and some hints, but no answers – not within the book, anyway. Try to complete the labs without any additional assistance. If you get stuck or want to see how I did the labs, the answers are online at MoreLunches.com.

### 1.3.3 MoreLunches.com

Other than lab answers at MoreLunches.com you’ll find additional supplemental content, such as the latest one new updates to IIS and demonstration videos for some of the chapters to help make your journey with IIS a pleasant one.

I want to you to have access to new ideas and resources. I’ll be adding blogs of my favorite IIS resources and connecting you to great people to follow on Twitter. Learning IIS is a continuous process, due to ever-changing environments and web applications. I want to continue to help.

### 1.3.4 Ideas to try on your own

When I first learned IIS, back when dinosaurs roamed the internet, I found it a difficult task. I hand much to learn, not only about the IIS product but about the internet and how things such as DNS worked. I found that as soon as I’d learn something about IIS, it’d spark some question or fascination in my mind that I’d quickly go off and explore. At first I thought this was a curse that slowed me down and distracted me from important matters at hand, but it turned out that I gained a much deeper understanding of both IIS and how websites worked on the internet.

Now, many years later, when I sit down to learn a new product or some enhancement in IIS, I still go off on these tangents and go beyond the surface of administration into the deeper regions. Because you may be as much of a technology geek as I am, I include a section at the end of every chapter with some ideas to explorer on your own. With these ideas for exploration, I include additional information about how things work at a deeper level. If you’re someone who wants to stay focused on the administration of IIS and you don’t want the distraction, then feel free to check out these ideas at a later time.

## 1.4 Setting up your lab environment

Learning a new technology is always a challenge – particularly a technology that reaches to the internet – without a place to practice. I want you to do a lot of practicing with IIS as you work through the book. That means you need an environment you can safely practice on that won’t cause any disruption. Your company’s production environment isn’t that safe place. Please *don’t* experiment on your company and friends. I have a better, safer idea.

I suggest that you create a virtual environment to work on four the month. Using you laptop, desktop, or a spare computer at work, pick your favorite virtualization software (Hyper-V, VMware, Parallels) and build the environment I describe in the next section. Keep in mind that you want to be able to access this environment during your lunch; you’ll be doing a lot of practice, so create the environment wherever you’re going to eat.

If you can’t create a virtual environment on your laptop, another option is to use one of the available cloud technologies, such as Vaasnet ([www.vaasnet.com](http://www.vaasnet.com)), CloudShare ([www.cloudshare.com](http://www.cloudshare.com)), or Microsoft Windows Azure ([www.windowsazure.com](http://www.windowsazure.com)). These aren’t free, but they’re a good alternative because you don’t have to set up anything. You log in and tell them what you want. If you don’t want to deal with building virtual machines, you can try this option.

The next section provides details and instructions for creating both the basic and extended setup environments needed for the labs in this book.

### 1.4.1 The basic environment

To get the most from this book, I recommended two different lab environments, beginning with this basic lab environment. You’ll need the basic lab environment for chapters 2 through 12. The basic environment is a single virtualized server (see figure 1.2) running DNS and Active Directory.

You may be tempted to use a client operating system such as Windows 7 or Windows 8 because they both run IIS. I don’t recommend this because you’ll miss part of the configuration process without DNS and Active Directory. Here’s all you need to get started:

* A single virtualized server – you can use either Windows 2008 R2 or Microsoft Server 2012. If you don’t have a copy of the software available, you can always download the trial from Microsoft. Currently, Windows Server 2008 R2 is located at <http://mng.bz/2zqT>. The best part about the trial is that is lasts for 180 days – 5 more month than you need for this book.
* A domain controller – you need a domain controller so you have access to Active Directory and can look at security permissions later in the book.



Figure 1.2 the virtual server setup you need for the labs

**BUILDING THE DOMAN CONTROLLER**

I realize that building a domain controller isn’t something you probably do every day, so this section outlines the basic of installing Active Directory. The process is similar whether you use Windows Server 2008 R2 or Server 2012.

|  |
| --- |
| **Need more help?**  If you find that the instructions provided here aren’t detailed enough, please go to MoreLunches.com, where you’ll find a more detailed lab setup guide. |

1. In you virtual software, create a new computer and install Windows Sever. You don’t need much memory for this – 512 MB to 1024 MB is sufficient. You can name the computer whatever you like and assign a password of your choosing to the Administrator account.
2. Install the ADDS role and a domain controller. You do that in Server Manager for Windows Server 2008 R2 and Microsoft Server 2012.
3. Install Active Directory. When asked for a Fully Qualified Domain Name for your forest root domain, choose something simple. For this book I choose Company.loc.
4. Supply the Windows NetBIOS name for the domain. I’m using Company in my environment.
5. When prompted to choose the forest and domain functional level, choose the highest level, which will be Windows Server 2008 R2 or Microsoft Server 2012.
6. When prompted for Additional Domain Controller Options, select the option to install DNS. Not only does Active Directory need DNS, but you’ll be using it for your websites.

NOTE If

1. When prompted for the file locations of the Active Directory files, accept the default locations.
2. When prompted for a Restore Mode password, use the same password that you set for the Administrator account. It’s okay because this is a test environment.
3. When the installation of Active Directory is complete, reboot.
4. Using Active Directory Users and Computers, create three or four users. Nothing special. It can be John Doe1, John Doe2, and so on. You’ll need them in the security sections.



Figure 1.3 the extended virtual environment for labs

At this point you’re ready to get started with the next lunch in your month of lunches.

Feel free to enhance and add to your environment at any time. But keep in mind that I’ll use this basic environment in my examples so that we stick together. One enhancement you may want to make now is to extend this environment to a couple more web servers. Take a look at the next section on how to extend the basic environment.

### 1.4.2 Extending the basic environment

Many of the concepts discussed in chapter 13 and later involve multiple web servers – topics such as load balancing and high availability. To be able to practice those concepts, you’ll need to build an extended virtual environment. Although you don’t need this environment to get started, you can save time by setting it up and using it for the labs.

You’ll need two additional virtual servers, as shown in figure 1.3; the hardware requirements are minor because each VM only needs 512 MB of RAM and will perform limited processing. You should install the VMs on the same virtual network as the domain controller. You’ll turn them into web servers later, so I suggest naming them something like Web1 and Web2.

If you have some IIS experience already, I recommend staring with the extended environment now. Although you don’t need the extra servers for the first part of the book, it’s a more accurate representation of the real world and will be better for your overall experience. In a test environment like this one, I do my testing and management form the domain controllers as if it were a client computer. You could even go so far as to add Windows 7/8 client computer to your virtual environment and use that for management, but I find the concept works fine without the extra virtual computer.

## 1.5 Taking immediate control over IIS

As an inadvertent and busy IIS administrator, the last thing I wanted to do was write a book that had you spend countless hours on theories and background instead of immediately starting to use IIS. In fact, *taking immediate control* is a phrase that I’ve made my primary goal for this book.

The original designer of the Month of Lunches series, Done Jones, is passionate about getting readers to be “immediately effective” with technology in the workplace. I’m a firm believer in this practice. I’m paraphrasing Don from his *Learn Windows PowerShell 3 in a Month of Lunches book* when I say I’ll do my best to focus each chapter on something you need to use in your production environment right away. This means that sometimes I may gloss over details when we’re starting a new chapter, but I promise to circle back and hit those areas in depth in later sections. Like Don in his book, I hand to choose whether to write several chapters of architecture and theory or dive right in and accomplish some administrative tasks with IIS. In almost every chapter I chose to dive in so you can take immediate control over IIS.

I explain all of those other nuances and theories at some point in the book or in articles on MoreLunches.com, where they can be more effective. I won’t let you miss anything important. Using this approach means you can start creating solutions with IIS immediately.

Now, wasn’t your first lunch good? I’ll see you back here for your next lunch where you’ll find a juicy “IIS deployment” on the menu.