

Windows Home Server 2011

Step by Step

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Dedication

For Karen, Jamie and Elliot.

About the Authors

Terry Walsh



Terry Walsh is the Owner and Editor of We Got Served (<http://www.wegoterved.com>), which he established in 2007 to share his own experiences with emerging Home Server platforms.

Since then, the site has grown to cover a wide range of digital home, consumer electronics, and small business product categories but retains at its core the mission to help users make the most of technology.

Terry graduated from the University of Durham in 1995 with a Bachelor of Arts in English Language and Literature. He's worked in a variety of senior retail marketing, innovation consultancy and product management roles for a variety of blue-chip brands including Citibank, RBS, DSGi, John Lewis, Tesco, Barclays, SK Telecom and Unilever amongst others, but has much more fun writing about technology in his spare time. Prior to starting WGS, Terry cut his teeth online in 1993 building and operating a number of successful alternative music websites and communities for UK artists.

Born and raised in Liverpool, England and now living in Silverstone with his wife and two sons, Terry has been awarded Microsoft's Most Valuable Professional Award each year since 2008 for his work on We Got Served.

You can contact him at terry@wegoterved.co.uk, or via Twitter at [@wegoterved](https://twitter.com/wegoterved).

Jim Clark



Jim Clark is a frequent contributor to We Got Served. When Jim first heard about Windows Home Server, he developed an immediate interest in this new platform as a centralized storage product for the home. We Got Served became an outlet to document his experiences with this Microsoft product, review software written specifically for the Windows Home Server platform, and review hardware related products for use in the digital home. His interest in Windows Home Server and the digital home continues to this day.

Jim was born and raised in Marion, Iowa. Except for short stints in Cedar Rapids and Waterloo, Iowa, he has remained true to Marion. All four of his children have graduated from the same high school he went to. Jim has a degree in Mechanical Engineering from the University of Iowa and has spent his entire career in various design engineering positions in the manufacturing industry.

Jim's interest in computer technology started with the original IBM PC. PCs have been an integral tool at work, and a hobby for over 25 years. Jim has been awarded Microsoft's Most Valuable Professional Award for Windows Home Server each year since 2009 for his work with Terry on the We Got Served website.

You can contact Jim at jim@wegotserved.com.

About We Got Served

We Got Served is a popular technology news and community site which was founded in February 2007. It is written, edited and moderated by a dedicated and knowledgeable team of technology enthusiasts across the world who are focused on bringing you the latest news, reviews, tutorials and support for the products you're using today and tomorrow. We created We Got Served as a place to learn about new technology, help readers make the most of the products and services they use, and most importantly to create a community where readers can learn, discuss and share their experiences and knowledge with others in need of support. However you use the site, I hope you enjoy it.

About this Book

When I published We Got Served's first eBook, Using OS X Lion Server at Home back in December 2011, I received two types of email - firstly, a lot of people saying thanks (which is always great to receive) and the second which run along the lines of, "Hey, why haven't you written a Windows Home Server 2011 eBook?"

That was a valid question. Over the last five years, We Got Served has focused heavily on tips, tricks, tutorials and how to guides to help people make the most of Windows Home Server. We've published hundreds of articles, but in truth, only recently had the idea to pull together a comprehensive, one-stop guide to the platform. Which is what you've just started reading.

So, my long term collaborator Jim Clark and I set out over the holiday period to do just that. The aim is to create a comprehensive resource for all things Windows Home Server 2011 - we'll cover the basics for new starters, walk through more advanced topics for those more comfortable with the technology, and end with a range of guides which will help you extend the use of your home server with some really cool stuff.

If you're a regular WGS reader, you'll know what to expect - if your new, well it's all about helping you do more with your home server - step by step - in a clear, friendly and (hopefully) fun kind of way. We'll explain what you need to do without trying to bamboozle you with the geekery!

Have a great time with your home server, and enjoy the book!

Terry Walsh
January 2012

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Register This Book

Whilst the concept of registering a book may sound a little strange, I heartily invite you to do so! Registering your email with us allows us to inform you of updates and amendments to the book, and let you know about new books we're writing as well as some offers on our other titles.

Hey, if that's not enough, you know us so we'd like to know you too!

So head over to <http://eepurl.com/kZUcH> and spend 23.2 seconds signing up!

Need Help?

Windows Home Server 2011 is pretty simple to get to grips with, but it does have the odd quirk. If you run into trouble and need a hand, then We Got Served has a fabulous user community of over 95,000 Windows Home Server users ready and willing to lend a hand.

Come over and join us at <http://forum.wegotserved.com> - look forward to seeing you there!

Introduction

Welcome to *Windows Home Server 2011 - Step by Step* and for many of you, to the Windows Home Server platform itself. If you're new to WHS, I hope this book will help you quickly discover how easy it is to install, configure and use Windows Home Server, and how useful its features are in both the home and small business environments. Whether you're interested in streaming music, video and photos around your home and beyond, seeking an easy way to share files with friends and colleagues, or simply looking for an easy way to protect your PCs and Macs, you'll learn that Windows Home Server can play an essential role at the heart of your network.

For the "old timers" amongst you who own or have used Windows Home Server v1, the aim of this book is to bring to life the many improvements Microsoft's latest release has over its predecessor, refresh your memory on some of the features you may have forgotten about, as well as show you a few new tricks you may not have realised were possible with your home server. We'll also discuss some elements of the platform that were, well, a little better in the previous version.

Whilst I've called the book *Windows Home Server 2011 - Step by Step*, the plan is to do much more than cover the basics. Our journey together will start with an overview of what a home server is (and isn't), and then dive into the platform itself, where we'll talk through building and buying a home server, setting up your network, installing, configuring and working with Windows Home Server on a day to day basis, both in the home and remotely.

A server, whether in the home, small business or a large corporation is pretty useless without clients (devices that connect to the server, such as PCs, Printers and Digital Media Receivers) so we'll also be spending time looking at how Windows Home Server works with applications like Windows Media Center for TV Recording, as well as streaming music, video and photos around the home, game consoles such as the Xbox 360 and PlayStation 3, and a host of other devices including printers, digital cameras, smartphones and more. Home Servers rock, but they rock a lot harder when they meet the rest of your devices in the home.

Who Is This Book For?

When starting out on a project like this, it's useful to envision who will be reading, and why. My assumption is that you'll have at least heard of Windows Home Server, or in more general terms, home servers or network attached storage devices and are interested in finding out more. You may have tried storing your growing collection of files on an external hard drive, but find it difficult to share files around the home. That hard drive is filling up, and you're wondering what to do with your

You may own or work for a small business with up to 10 PCs being used around the office, and have heard that Windows Home Server can backup and protect your vital data with ease, and allow centralised file sharing, user account management and remote access.

You may know a lot about computers, you may know just a little but I'm going to assume that just like me back in 2006, you own more than one PC, have a growing library of music, video, photos and other data to look after and you're interested to learn why Windows Home Server is right for you.

My job is to help you get started with Windows Home Server, but more importantly, prepare you with the knowledge you need to begin your own adventures with the platform, at home, at work or on the road.

Who Am I to be Talking About This Stuff Anyway?

You know how sometimes you meet someone new, and you launch into a conversation without introducing yourself? I just did that. So, let me pause and tell you a little about who I am and why I'm writing this book. I'm Terry, and I love digital stuff. That's almost it. I'm not an IT Professor or Professional, and I don't have a list of thirty other books I've written before this one. I'm a regular guy with a growing collection of music, videos and photos, a few PCs around the house and a broadband internet connection – in short, I'm exactly the guy that Microsoft invented Windows Home Server for. The story of how I was introduced to Windows Home Server may be similar to your situation.

Back in last 2006, I had the opportunity to test out a pre-release version of Windows Home Server v1. At the time, I was trying to figure out how to manage all of the media I was collecting – the music I was ripping from CD, the videos I was shooting on a camcorder and the photos I was taking on our digital camera. I'd figured out that I was going to need a server (whatever they were), to share all of this digital stuff with my PCs. But Servers Are Scary, or so I thought. I was half way through Windows Server 2003 for Dummies (and starting to get disheartened) when I was introduced to Windows Home Server, and I was hooked! It did everything I needed it to and more without the need for a Computer Science degree.

There were still things to learn, however – what hardware to use, how to install the operating system, how to stream music and video to those PCs and I thought I'd share my adventures with Windows Home Server on a blog. I started We Got Served (<http://www.wegotsserved.com>) in February 2007 (so named because here was a server that we could all use) and it was the world's first Windows Home Server website. From a readership of 1 (me), the site now benefits from a readership of over 300,000 Home Server enthusiasts every month, and a thriving forum community of over 60,000 members supporting users like you and me with our questions, problems and ideas for

You'll find daily home server news, reviews, walkthroughs, how to guides and a whole lot more on the site, as the community continues to grow, experiment and learn together.

Since I started the site, I've been fortunate enough to be awarded Microsoft's Most Valuable Professional award for the last three years for sharing the highs and lows (and there has most definitely been both) of my life with Windows Home Server, and have had the opportunity to meet and advise a great number of the hardware manufacturers and software developers who have built amazing products powered by WHS.

So, I've spent a lot of time with Windows Home Server, and it's opened up a number of amazing avenues for me. But at the end of the day, I'm a guy with a load of digital stuff that needs help to manage, share and protect it, and despite spending a lot of time with Windows Home Server, I'm continually surprised with what it can do. I hope I'm able to translate my own experiences with Windows Home Server into an enjoyable read, and inspire you to go out and experience the product for yourself. Feel free to get in touch at terry@wegotserved.co.uk and let me know how I did.

Let's get going...

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Chapter 1

What is a Home Server?

What is a Home Server?

“Before we get into the finer details of life with Windows Home Server, we should take a step back and ask a pretty important question. Just what is a home server? Ask a hundred people in the street, and you’ll find many blank faces and the odd comedian who’ll ask you if it has something to do with household chores.”

The problem is the word *server* – it’s a term that most people use in a workplace context, perhaps without really understanding what it really means. Ever said, “Oh sure, you can find the document on the server” or missed a deadline because “the server has gone down”? In the workplace (unless you’re an IT admin) the server is a mystical, unseen entity that stores our documents and we only really care about it when we can’t reach it.

Put simply, a server is a computer that shares its resources with other computers on a network. It may look a little different to the desktop computers you know on the outside, but on the inside, it’s made up of the same components that comprise the computers you use to write your emails, browse websites, and play Call of Duty. It’s a computer with an operating system, processor, memory, storage and a network card. So, no need to get hung up on the word server.

Whilst you may use your desktop or laptop PC for a wide range of tasks – email, web browsing, enjoying music and video and of course, work, the home server is a computer with a number of more specific roles, which can vary depending on your needs.

The home server connects to your home network, and for most of us, works in the background to perform a number of really useful tasks. They include:

- **Storing and sharing** files with other computers in the home (sometimes referred to by IT people as *clients*, but we’re talking about your netbook, laptop, desktop PC and other devices like smartphones here)

- **Streaming** music, video and photos to connected devices like modern TVs, digital photo frames and networked media receivers
- **Protecting** your data (think about all of those music, video and photo files you've collected over the years) by backing up all of your computers each night.

I often use the example of a heating system to bring home servers to life (not the most exciting analogy, granted, but it works!). You have radiators in each room, connected to a central boiler tucked away in a cupboard, which pumps hot water around pipes to the radiators, which in turn heats the house.

A home server works in exactly the same way with your home network and the PCs around the home. The home server is like the boiler, tucked away out of site, which stores your data. Your home network, whether it's wireless or wired, act as the "pipes" which bring your data to the PCs and other networked devices scattered around the home, just like your radiators.

Home Servers differ from other computers in your home in a few ways. Firstly, they run a specialised operating system which helps them perform the tasks I mention above, plus a few others we'll explore later in the book, really, really well. Secondly, as they need to store a lot of data, you'll find most home servers can take two, four or more hard drives to provide a large centralised pool of storage for all of your data. Finally, home server hardware is a little different to the computers you know and love. They're generally low powered (as they'll be switched on 24 hours a day) and you won't find a keyboard or a mouse to control them. You manage the home server through a dashboard application installed on your other computers, or via a web browser. Just like the boiler, once the home server is installed, you can shut it away in a (well ventilated) cupboard, and should only need to open it again from time to time.

So Why Do You Need a Home Server?

I can hear you thinking. "Okay, so I get what a home server is and what it does. But I already have a bunch of other computers around the house that can do a lot of that stuff. So why do I need a home server?"

It's a great question.

Here's where I reveal my first secret. You don't need a home server. Windows and Macs are now so well stuffed with features, that individual computers in your home can share files with each other, back themselves up, and stream music, video and photos to network devices around the home. They rock!

But here's the thing. Think about all of the data you have stored on those computers – the thousands of documents, audio tracks, video files and photos. You may have one computer that's assigned for storing all of that data. Maybe you have data scattered all over the place – work files on one PC, music on another (apart from those new tracks that you downloaded on your laptop), photos stored on an external hard drive that you move from PC to PC. It's a mess.

Now think about the next five years, and imagine how much more data you're going to collect. The music you'll buy, photos you take, videos you shoot and work you complete. How are you going to organise it all? Where are you going to store it? What happens to that data if your PC's hard drive fills up, the PC breaks, that external hard drive fails or you simply can't remember where you saved it?

No-one needs a home server if they're happy to work tirelessly across multiple computers and devices and live under the shadow of data loss. But imagine a large, centralised resource which is easy to expand, can organise and store that growing torrent of data, allow secure access to those files to the users you specify, backup and protect your PCs and Macs and effortlessly stream your music, video and photos to devices inside the home and indeed remotely, anywhere in the world.

That's the kind of device I want and if you do too, it's time to get a home server!

If That's a Home Server, What's a NAS?

Pop into your local big box retailer or browse your favourite online tech retailer and browse the storage area. You'll see a host of device names on show, including network attached storage, NAS, network hard drive, network media drive as well as home server. The distinction between the terms is more marketing oriented than technical, as different manufacturers try to describe similar products in different ways that they hope the average shopper will understand. As a general rule, all of these devices perform a very similar role to a home server, in that they connect to the home network, provide centralised storage and file sharing capabilities. The network hard drive and network media drives tend to be cheaper, but limited in storage capacity and features, with a single hard drive and feature set geared towards media streaming and storage.

Network Attached Storage (NAS) products range from single (hard drive) bay consumer devices through to 8 or 12+ bay units designed for enterprises – they'll run on a version of the Linux operating system and offer a broad set of storage, file sharing and backup features and at the higher end of the market, provide a suite of fancy tricks that are useful in large business networks.

Home Servers, or to be more specific, Windows Home Server is Microsoft's interpretation of a NAS operating system. Devices that are powered by Windows Home Server are so called because that

operating system is part of the broader Windows Server family – the same operating system that powers small businesses and enterprises all over the world. So, there's a lot of powerful features under the hood, but Microsoft have tailored this specific server platform to the home, hiding the stuff you'll never need, and ensuring the features you do are super simple to use.

The resulting features on offer are broadly similar in scope to those offered by non-Windows NAS devices, although pick a NAS device at random, and you'll find there are things it does better than Windows Home Server, a few things it does that Windows Home Server doesn't do and vice versa. If I had to summarise the pros and cons, I'd tell you that Windows Home Server excels over its competitors in ease of use as well as its data backup and remote access features whilst the better NAS devices out there offer a wider set of small business and enterprise features that Microsoft reserves for its Small Business Server product line. Importantly, however as a platform rather than a device, Windows Home Server has a freely available software development framework that has been used to develop hundreds of additional applications and features.

Rather than continue to tell you what a home server is, perhaps I should now show you...

Chapter 2

Building Your Home Server

Building Your Home Server

“We start with home server hardware. The first release of Windows Home Server in 2007 shipped on a variety of hardware that you could pick up from your local Best Buy, PC World or favourite online store.”

Fast forward to Windows Home Server 2011, and dedicated hardware is more difficult to find. So you're left with the choice to either purchase an off the shelf PC or small server (such as HP's excellent ProLiant MicroServer) and install the Windows Home Server 2011 software, or build your own. If you don't fancy a build project, then skip to Chapter 4 for installation goodness. Otherwise, grab your screwdriver and spirit of adventure and come with me!

Researching and building any computer is fun, and there are great benefits to building rather than buying. You can tailor the computer exactly to your needs, have greater choice over the size, scale and components selected and ensure you future proof the design for future upgrades. If you have never built a PC before, it may seem a little daunting from the outside looking in. In reality, with a little bit of research, and the right components, it's actually really easy to build a home server and you'll get a lot more satisfaction the first time you boot it compared to one bought off the shelf! So, let's hop to it, as I walk you through a home server self-build.

What Kind of Home Server Do You Need?

Before you even start thinking about components, step back and spend a little time thinking about what you wish to do with a home server. You can segment your thinking into a number of categories:

Processing Power & RAM

Whilst a home server doesn't need to run at a blistering pace like a gaming desktop PC, you'll need to ensure you select an appropriate processor and RAM to suit the type of tasks you wish to run on

the server.

Do you want a basic setup that will just back-up your PCs, share files and folders and allow you to access your computers remotely?

Do you want something more powerful, that will take advantage of more advanced features like media streaming and transcoding (real time video conversion and streaming from one format to another)?

- Is low power consumption important to you (bearing in mind the server will be switched on 24-7?)
- Do you want to install home server add-ins to extend the server's feature set?

If you want basic with a low power footprint, take a look at Intel's Atom processor range. The dual-core Atom processor is the current favourite for many manufacturers building low cost, low power home servers. Don't scrimp on the RAM, especially if you wish to run add-ins on the home server – go for at least 2GB, as it's cheap enough nowadays. If you're likely to be streaming high definition video, and want to take advantage of those media streaming and video transcoding features, then you'll be more comfortable with a more powerful processor and RAM combination. Take a look at Intel's dual-core Pentium processors, or even the Core i3/Core i5 range. Paired up with 4GB RAM, you'll have easily enough power for your current and future needs. Do make sure that you select a processor that supports 64-bit operating systems, as Windows Home Server 2011 is compatible only with these chips. Most modern processors are absolutely fine, but if you go for something a little older or obscure, make sure you check the manufacturer's website.

Once you've decided on a motherboard, do check what type of RAM is compatible with that motherboard and how many slots are available to help you determine what type of RAM to buy.

Storage Needs

A good home server doesn't just have to fit all of the music, video, photos and other data you have today. It needs to have a bit of wiggle room for the future too. So think through the following questions:

- How big is your media collection now? And in the future?
- Do you store a lot of video, music and photos, or is it mainly documents and other small files?

- Do you need a server that can be expanded internally with additional hard drives in the future?
- Do you need a server that can be expanded externally with an eSATA drive enclosure or USB Hard Drives?

I'd recommend you building a home server with at least two internal hard drives of at least 500GB each. Storage is reducing in price all the time, so if you can stretch to 1TB or 2TB drives, then do so – you'll be amazed how quickly you can fill drives up. When thinking about future expansion, you may want to add additional hard drives internally, so you'll need to look for a motherboard with 4+ SATA ports – they're now very common. Your home server chassis will also need room to house those drives, so again, it's well worth thinking about future expansion up front. Even if you only install two drives today, you're safe in the knowledge that you have that wiggle room when you need it.

Footprint

Importantly, you need to think about where you are going to position your home server. In the office, under the stairs, in a cupboard or closet or out on the desktop? There's no rules about where to place your home server, other than ensuring you can run an Ethernet cable between the server and your router. But its position in the home or office may have an impact on the physical size of home server you want to build. In turn, that will dictate the size of chassis and motherboard form factor you end up purchasing. The good news is there's a huge variety of chassis and motherboards out there, and you can now find small Mini-ITX motherboards and cases that can fit four or even six hard drives without taking up a huge amount of space.

If the server is going to be on show, you may wish to invest a little more in the overall look and feel of the chassis – better finishes, colours and aesthetics. If it's tucked away in a cupboard, you may be less concerned with looks.

Networking

As your home server will spend most of its time moving files backwards and forwards, it's good to ensure you have a fast connection. Many newer motherboards now come with Gigabit Ethernet as standard, which is a great choice, but bear in mind that you'll only benefit from the faster speeds if your router and other devices on the network also support Gigabit Ethernet. If not, you'll be transferring at the standard "Fast" Ethernet speeds (sometimes marked as 10/100), still plenty fast enough for your needs.

Other Considerations

Whilst they're not strictly necessary, if you want to access the home server directly, then you'll need a monitor connection (VGA, DVI, HDMI) as well as a USB keyboard and mouse to control the server. Bear in mind, that you should mostly use the Windows Home Server Dashboard on a network connected PC to control the server, so direct access isn't required, but if you want it, then ensure you've got plenty of USB ports available. If you're likely to be importing a lot of photos from a camera on to your home server, then an integrated card reader may also be useful – again, it's unorthodox to see these on a home server, but the benefit of building your own home server is that you can configure it exactly for your needs!

With regard to video and audio processing, most motherboards you'll come across will have some kind of integrated audio and video processing on board. That's absolutely fine for your needs, there's no need to look for additional AV cards for the home server.

Collate Your Components

Make a list of all of the components you wish to buy, then go shopping! When everything arrives, collate all of the kit so it's at hand when you need it. For our walkthrough, I've decided to go for a high power "media server" configuration. It's a little over-specified for basic use, but will ensure it lasts a good while.



Our soon-to-be home server, in component form.

With technology aging as soon as you break it out of the box, it's likely that when you read this, updated versions of these components may be available on the market. So dig around with Google or your favourite search engine. Our components are:

- 1 x Fractal Design Array Mini-ITX Computer Case
- 1 x Intel DH57JG Mini-ITX Motherboard
- 1 x Intel Core i5-661 Processor
- 2 x 2GB Corsair DDR3 RAM
- 2 x 2TB Hitachi Deskstar 7K2000 Hard Drives
- 2 x SATA Connector Cables
- 1 x Windows Home Server 2011 Operating System (not shown)