

— The DataBus —
Monthly Newsletter of
The Dayton Microcomputer Association
Volume XII (New Series) № 11 (November 2022)

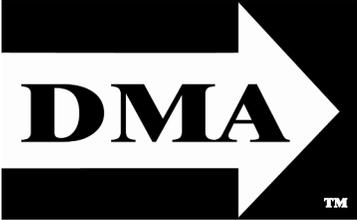


Gary COY —
“Smart” Homes: An Introduction

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SAVE A TREE (or at least a branch)! If you prefer to print your DATABUS rather than read it directly from a monitor, don't print page 19 unless you wish to become a member or renew your membership.



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Your 2022/23 Officers:

President

Gary COY

Vice-President

Mike STOCK

Secretary

Glady CAMPION

Treasurer

Pat FLYNN

*Officers need not be
Trustees.*

Trustees:

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Suzette DE GUZMAN
Patrick FLYNN
Chester HOWES
Ken PHELPS
Dave SCHWAB
Ed SKUYA
Mike STOCK
Gary TURNER

Webmasters:

Mark CAMDEN
& Brent KERLIN

Webmaster Emeritus:
Dave LUNDY, †4/13/20

ESTABLISHED IN 1976, DMA is a group of Dayton-area professionals and enthusiasts in the field of computing and digital information technology. General Membership Meetings are usually held on the last Tuesday of each month. DMA has a number of Special Interest Groups (SIGs) in areas ranging from digital investing and genealogy to the Linux operating system. Each SIG meets according to its own schedule. DMA is a member of the Association of Personal Computer Users' Groups (APCUG) and the Affiliated Societies' Council (ASC). Click on any of the logos—including our own (top left)—to go to that organization's Web site.



Submissions ...

THE DATABUS welcomes compliments, complaints, suggestions, and especially articles. We can accept articles in ASCII, or as attachments in plain text, Microsoft Word, Open or Libre Office Writer, or, yes, even in WordStar (a word-processing program that goes back to about 1980!). Send articles to:

Editor@DMA1.org

All articles are subject to editing for spelling, grammar, usage, and space. Retain a copy of your work, as THE DATABUS cannot be responsible for loss. When articles are of roughly equal quality and importance, those by paid-up DMA members receive preference.

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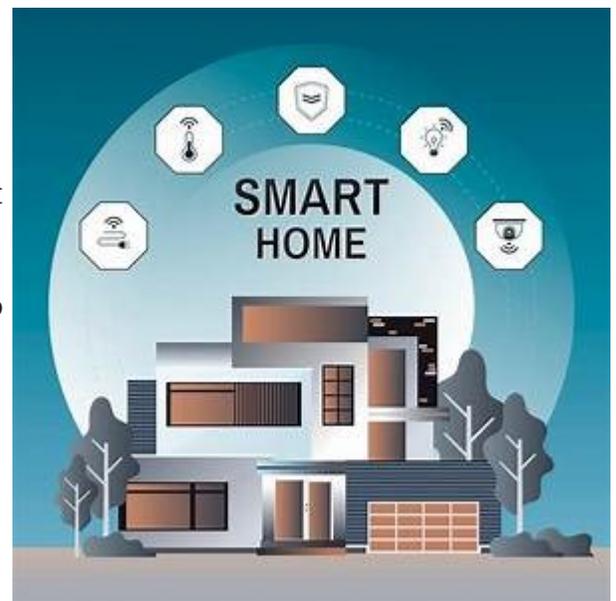
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November Meeting: 7:00 P.M., Tuesday, the 29TH **No Driving—No Charge***

* This is a “hybrid” meeting: via ZOOM, but also in person. Come at 6 P.M. if you wish to join us in person for dinner at T. J. Chump’s Restaurant in suburban Huber Heights, next door to the Meijer’s Supermarket. Click [here](#) for a map. The restaurant has free parking. It is also accessible via RTA bus routes 18 and 19, but there is a short walk from the bus stop in the Meijer’s department store parking lot to the restaurant.

Gary COY — **“Smart” Homes: An Introduction**

A “SMART” HOME refers to a convenient home setup where appliances and devices can be automatically controlled, sometimes remotely from anywhere with an Internet connection and the use of a smart phone or other mobile device. Appliances in a smart home can be interconnected through Wi-Fi or the Internet, allowing the user to control functions such as security access, temperature, lighting, audio, or even visual displays. Smart systems can provide a high level of security. Wireless devices are easy to install but eventually will need to be recharged. Hard-wired systems are considered more reliable and harder to hack, but cost more to install. A full-scale home automation system could cost thousands of dollars but individual products start at less than \$20. You can choose your comfort level and pay as you go. Smart home technology systems provide homeowners with more than a little convenience. Increased efficiency translates into energy cost savings. These devices offer an extra hand. They can manage many of the monotonous small chores that take so much time during the day. This technology provides next-level comfort, allowing homeowners to customize their environment. We’ve arrived at a time when we can communicate vocally with our appliances. “Tea, Earl Grey — hot!”



Gary COY is President of DMA and a frequent presenter at meetings.

Our meeting starts at 7:00 P.M. DMA members will receive an invitation by e-mail for ZOOM. Others may request an invitation using <http://www.dma1.org/contact-us/> Or ... join us at TJ CHUMPS, 7050 Executive Boulevard, in suburban Huber Heights. Click [here](#) for a map. The restaurant has free parking. It is also accessible via RTA bus routes 18 and 19, but there is a short walk from the bus stop in the Meijer’s department store parking lot to the restaurant. If you want to join us for dinner, come at 6 or 6:15 P.M.

... TDB

Minutes are normally published almost two months late, because the Minutes for, say, the October Board meeting must be approved by the Trustees at the *following month's* meeting. They would then appear in the November issue — this one — of THE DATABUS, published toward the end of the month.

Trustees' meetings are usually on the *first Monday* of each month, except when that day is a legal holiday, for example: Labor Day in September.

During the epidemic, Trustees began meeting via ZOOM. This was so successful that they decided to continue the practice indefinitely. Meetings begin at 7 P.M. and are open to all DMA members. Request ZOOM credentials (that's a fancy way of saying "an invitation") from Secretary GLADY CAMPION at Tuesday's General Membership meeting.

The Minutes for the September Trustees' meeting, which were not available for the October issue of THE DATABUS, are also given here.

DMA Board of Trustees – Meeting of Monday, September 12, 2022

CALL TO ORDER

The meeting was called to order at 7:01 P.M. by Gary Coy, via ZOOM.

Trustees present: Gladly Campion, Gary Coy, Edwin Davidson, Peter Hess, Chester Howes, Ken Phelps, and Dave Schwab. **Excused:** Gary Turner. **Absent:** Ed Skuya. **Guests:** Mark Camden, Suzette de Guzman, Stephen Frey, Pat Flynn, Roy Smith, Monica Snow, and Mike Stock.

SPECIAL GUEST: Monica SNOW from Preservation Dayton

Monica provided the board with background information about issues Peter Hess is bringing before the board related to the Computer Museum project.

OFFICERS' REPORTS

President – Gary Coy

Gary thanked the trustees for putting up with recent absences while he completed the next level of EMT training.

Gary is convinced that use of a hotspot for the Zoom connection at our general membership meetings has allowed us to avoid connection drops. He has also been trying out a microphone lent to us by Ed Skuya for these meetings and suggests we purchase something similar for continued use.

Vice President – Edwin Davidson

Edwin is trying to attend some of the SIG meetings.

Secretary – Pat Flynn, Gladly Campion

Gladly presented minutes for the August board meeting. Peter Hess moved the minutes be accepted as corrected. Dave Schwab seconded and the motion passed with Gladly and Gary Coy abstaining.

Treasurer – Gladly Campion, Pat Flynn

Pat presented a report for August.



COMMITTEE REPORTS

(Continued on page 5)

—Notice—

Because of confidentiality concerns (for example, anyone could readily discover the financial institutions in which DMA holds its assets), Treasurer's Reports are not published. However, the latest Treasurer's Report is available to any DMA member on request.

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APCUG REP – Peter Hess

Peter forwarded an e-mail from Judy Tylour about free webinars.

Audit – Gladys Campion

In progress

Computer Museum – Peter Hess

Gary Ganger donated much of his collection of computer equipment to the museum workshop. Stephen Frey and Mark Camden provided the muscle and transported the equipment to the workshop.

Stephen Frey demonstrated his relay computer at the Riverside Historical Society Museum Ice Cream Social on Saturday, September 17. Stephen is next scheduled to do a presentation at Edison State Community College for their Women in STEMM Expo on Friday, November 4. Affiliate Societies Council (ASC) of Dayton is planning an in-person Techfest event at Sinclair for February 18-19 of 2023. Stephen and Gary Ganger plan to put together an impressive museum display.

Peter stressed the need for a security system with cameras for the museum workshop. Stephen Frey agreed. Peter asked Pat Flynn to segregate the museum workshop expenses when he delivers the treasurers report and asked that Pat create a budget for the museum workshop.

Peter moved we accept an offer from Roy Smith to provide a petty cash fund for the museum workshop, initially set at \$100, to be replenished up to a total of \$500, until the end of 2022. Dave Schwab seconded, and the motion passed.

Peter moved the address of the museum workshop be kept confidential and provided only to those with a need to know. Edwin Davidson seconded and the motion passed.

Peter moved that we create a separate fund at The Dayton Foundation for the future computer museum. The motion was discussed but not voted on.

Fund Raising – Peter Hess

Peter repeated his request for a separate fund at The Dayton Foundation solely for the future museum.

Marketing – Peter Hess, Edwin Davidson, Pat Flynn, Debra McFall, Catherine Devlin

Peter placed an acrylic stand with a DMA flier and pack of DMA business cards at Digital Cowboy Computers in Vandalia. He is asking for more DMA business cards.

Membership – Gladys Campion

The membership numbers for August are: 48 Regular, 4 Associate, 0 Student, and 5 Life-time members for a total of 57. Attendance for June was 25, with 16 in person at TJ Chumps.

Door Prizes: Gary Coy chose the Epson Expression Home Inkjet printer. Chester Howes picked up the Roku Express. Eric Ottoson snatched the PNY 128GB 3.0 flash drive.

Net Administration Team – Ken Phelps, Gary Turner, Pat Flynn, Brent Kerlin, Mark Camden

DataYard announced they are no longer offering domain name service and domain name registrations. Mark Camden recommended we start using Dreamhost instead and offered to handle the transfer.

Dreamhost recently sent us a bill, charging fees for PHP extended support and for storage overage. Mark Camden updated PHP installations on our account and Mike Stock will work on a solution for the storage overage issue.

(Continued on page 6)

(SEPTEMBER MINUTES—Continued from page 5)

Mark Camden also updated the primary contact for Dreamhost from Mike Carr to Pat Flynn.

Programs – OPEN!

Thank you to Mark Camden for presenting “Intro to WordPress” at our August meeting.

September – DMA Annual Meeting & Trustee Elections, plus a talk from Gary Coy on Windows 11 22H2

Suggestions for future meetings:

The Tarnished Side of Cryptocurrency; Fiber Internet; Touchless security from Evolv Technology and how they spot threats such as concealed weapons using digital sensors. Also suggested were Installing Linux on a Google Chromebook, or running Linux on the Windows subsystem for Linux (WSL), or installing Windows on a Linux Virtual Machine.

Publications – Martin Arbagi

No DATABUS for August. The editor suffered a major hardware crash. We wish him a speedy recovery.

UNFINISHED BUSINESS

Wright State Archives – Martin Arbagi, Gladys Campion

Still in progress

Next Board Meeting

Next Board Meeting will be 7:00 pm on Monday, October 3, 2022. We will continue to use Zoom.

List of DMA accounts – Gladys Campion

Still in progress

Summer Picnic – Gladys Campion

Our picnic was held Saturday, August 27, at Shellabarger Park in Riverside. The weather was perfect. A big thank you goes to Dave Schwab and Gary Turner for manning the grills. The spread of carry-in dishes was impressive. Many people commented on the variety of foods.

VOLUNTEER OF THE MONTH/QUARTER/YEAR

Dave SCHWAB and Gary TURNER were nominated as Volunteers of the Month for their skills as grillmasters at the picnic. Thank you both!

ADJOURNMENT

Peter Hess moved to adjourn at 9:45 P.M. Edwin Davidson seconded and the motion passed.

DMA Board of Trustees – Meeting of Monday, October 3, 2022

CALL TO ORDER

The meeting was called to order at 7:01 P.M. by Gary Coy, via ZOOM.

Trustees present: Gary Coy, Suzette de Guzman, Pat Flynn, Chester Howes, Ken Phelps, Ed Skuya, Dave Schwab, Mike Stock, and Gary Turner. **Guests:** Mark Camden, Gladys Campion, Stephen Frey, Pat Flynn, and Peter Hess.

OFFICERS' REPORTS

President – Gary Coy

The September general membership meeting went well. Gary mentioned that his presenta-

(Continued on page 7)

(OCTOBER MINUTES—Continued from page 6)

tion on Windows 11 22H2 was shorter than he had hoped. Gary welcomed the new trustees: Suzette de Guzman, Pat Flynn, and Mike Stock.

Vice President – Edwin Davidson

No report

Secretary – Pat Flynn, Gladys Campion

Gladys presented minutes for the September board meeting. Ed Skuya moved the minutes be accepted as corrected. Dave Schwab seconded and the motion passed with Gladys abstaining.

Treasurer – Gladys Campion, Pat Flynn

Pat presented a report for September.

COMMITTEE REPORTS

APCUG REPRESENTATIVE – Peter Hess

Peter forwarded e-mails from Judy Taylour about a round table session on hybrid meetings.

Audit – Gladys Campion

In progress

Computer Museum – Peter Hess

Stephen Frey e-mailed a list of currently inventoried equipment to all members of the museum project.

Stephen plans to talk with Suzette about her experience setting up a security system for an office space.

Peter wants to allow award honorariums to museum presenters.

Fund Raising – Peter Hess

Peter talked with The Dayton Foundation about a fund specifically for museum funds. It would be a charitable checking account and would not cost us fees for management. We could have a page for museum donations on our Web site with a link that opens a page on The Dayton Foundation site, pre-configured to accept donations to the museum account. It would work very much like the existing link on our Web site for donations to the DMA term fund.

Marketing – Peter Hess, Edwin Davidson, Pat Flynn

Peter repeated his request for a retractable banner and business cards with our phone number.

Membership – Gladys Campion

The membership numbers for September are: 48 Regular, 4 Associate, 0 Student, and 5 Lifetime members for a total of 57. Attendance for June was 26, with 17 in person at TJ Chumps.

Door Prizes: Tony Snyder grabbed the Cooler Master NotePad2 laptop cooler. Kathleen Kannik scored the Echo Show 2 (Gen2). Gary Turner picked up the Lexar 3.1 128GB flash drive. Ken Phelps won the Barkan Hi Speed 10' HDMI cable donated by Suzette. Pat Flynn chose the Belkin Hi Speed USB retractable cable donated by Suzette. Eric Ottoson snatched the 32GB flash drive loaded with Windows 11 22H2, donated by Gary Coy.

Net Administration Team – Ken Phelps, Gary Turner, Pat Flynn, Brent Kerlin, Mark Camden

Mark Camden handled all the details involved with the transfer of our domain name from DataYard to Dreamhost.

Programs – OPEN!

Thank you to Gary Coy for presiding over the DMA Annual Meeting & Trustee Elections

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Because of confidentiality concerns (for example, anyone could readily discover the financial institutions in which DMA holds its assets), Treasurer's Reports are not published. However, the latest Treasurer's Report is available to any DMA member on request.

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(OCTOBER TRUSTEES' MINUTES—Continued from page 7)

and giving a presentation on Windows 11 22H2.

October – Stephen Frey will talk to us about the German V2 and Apollo rockets.

November – Gladly plans to provide material for a presentation on home automation.

Suggestions for future meetings:

The Tarnished Side of Cryptocurrency; Fiber Internet; Touchless security from Evolv Technology and how they spot threats such as concealed weapons using digital sensors. Also suggested were Installing Linux on a Google Chromebook, or running Linux on the Windows subsystem for Linux (WSL), or installing Windows on a Linux Virtual Machine.

Publications – Martin Arbagi

THE DATABUS was posted for September

UNFINISHED BUSINESS

Wright State Archives – Martin Arbagi, Gladly Campion

Still in progress

Next Board Meeting

Next Board Meeting will be 7:00 P.M. on Monday, November 7, 2022. We will continue to use Zoom.

List of DMA accounts – Gladly Campion

Still in progress

NEW BUSINESS

Vanity Call Sign K8DMA – Dave Schwab

DMA has held an amateur radio vanity call sign for many years, but it expired in March of this year. George Ewing is listed as Trustee. Dave Schwab reported that he applied for a renewal and is waiting for a response.

Zoom password for Investment SIG – Martin Arbagi

Gladly relayed a request by Martin Arbagi that he be permitted to use the DMA Zoom account for the Investment SIG. There were no objections. Gladly will give him the user name and password.

Election of Officers – Gary Coy

After a short discussion, the new slate was agreed upon.

Peter Hess moved to install Gary COY as President, Mike STOCK as Vice president, Gladly CAMPION as Secretary, and Pat FLYNN as Treasurer. Pat Flynn seconded, and the motion passed.

VOLUNTEER OF THE MONTH/QUARTER/YEAR

Gary Ganger, Stephen Frey, and Peter Hess were nominated as Volunteer of the Month for October, November, and December.

Stephen Frey was nominated as Volunteer of the Year. We thank them all for their work on the museum project.

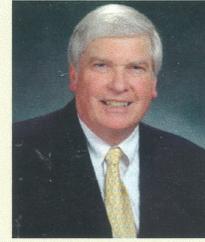
ADJOURNMENT

Pat Flynn moved to adjourn at 9:05 P.M. Chester Howes seconded and the motion passed.

*Respectfully Submitted,
Gladly Campion,
... Secretary*

Wayne Fourman
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Have you heard....?

November, 2022

By Gladys CAMPION

Framework Laptop, Chromebook Edition

Early in 2021, a California startup launched the Framework laptop, designed for easy upgrade and repair by the user. The company has extended that idea into Chromebook territory. The premise is the same: reduce e-waste with a product that users can upgrade, repair, and customize themselves. The laptop ships with a screwdriver. This mobile workhorse runs Google Chrome OS with support for the download of Android apps from the Play Store. A Titan C security chip allows for automatic updates until at least June 2030. It comes with the same 13.5" display as the Framework laptop with a 1080p webcam. It ships with a 12th Generation Intel Core i5-1240P processor with integrated Iris Xe graphics inside, supported by 8 GB of DDR4 RAM and 256 GB of NVMe storage as standard, but which can be upgraded to 64GB and 1TB respectively. It comes with Wi-Fi 6e

connectivity.

NewAtlas.com

IBM Osprey

Earlier this month, IBM unveiled the most powerful quantum processor in the world: the Osprey, which boasts a massive 433 quantum bits (qubits). The Osprey packs twice as many qubits as the previous record-holder – Xanadu's Borealis, which was tested with 216 qubits. While digital computers process data in binary bits, as zeroes and ones, quantum computers use qubits that can be zero, one or both at the same time. But wait – IBM claims that *next* year's quantum processor, the Condor, will boast a stunning 1,121 qubits.

NewAtlas.com

Volkswagen's Hi Tech Office Chair

Looking to branch out from utility vehicles, Volkswagen has tried its hand at designing transport for another kind of worker – those stuck behind a desk. This thing actually drives around, courtesy of an electric motor and some foot pedals. It has a 12-km (7.5-mile) range and a 20-km/h (12.4-mph) top speed. To help you back it out from your desk, there's a rearview camera and 360-degree proximity sensors. If you need to make the long trek down to accounting, you can blast some road-trip tunes with the touchscreen media system through the built-in loudspeakers. And if there's a traffic jam at

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(HAVE YOU HEARD?—Continued from page 10)

the coffee machine, you can lay on the horn. Embedded in the armrests are a pair of headlights to help get around on those overtime shifts, and in true gamer accessory fashion, the chair is also kitted out with some flashing RGB LEDs. To keep that backside toasty over the long work day, there's a built-in seat warmer too. The whole thing is finished in the usual Volkswagen motifs, like metallic exterior paint, wheels with 4-in solid aluminum rims, and the company logo embroidered on the headrest. Maybe the weirdest carry-over from the cars is the cargo capability – there's a small trunk in the back for documents and laptops, and even a trailer hitch for bigger loads. However, where you might get these trailers is another question.

InterestingEngineering.com

Fighting Scammers with Bots on Dating Apps

We've all heard that dating apps are rife with bots and scammers. When efforts to keep their site clean became difficult, the dating site Filter Off decided to take a novel approach to dealing with the issue. They developed algorithms to sort users into humans or likely scammers. Filter Off then created a number of chatbots and a script that generates human-like faces to create their own fake profiles, never to be seen by the humans. These chatbots were added to a "Dark Dating Pool" of scammers. The scammers then observed trying to scam each other, some arguing over who should send who a gift card. You can listen to the craziness by searching for "Filteroff Scammer Bot Series" on YouTube.

TechCrunch.com

Do you have an interesting news item related to digital technology you'd like to include in future columns? E-mail it to Editor@DMA1.org.

Introduction to IP Addresses and Port Numbers

By John KROUT, Presenter and Newsletter Contributor

Potomac Area Technology and Computer Society www.patacs.org

Introduction

MUCH OF WHAT WE ALL DO WITH COMPUTERS is based on communication with other computers through a digital network. E-mail, Web browsing, and streaming video are three of many examples of such network connections.

All that communication is based on Internet Protocol (IP) addresses and a related concept called “port numbers.” This article will explain those concepts and how the device which provides your home Wi-Fi, called a **router**, plays a critical role in digital network communication.

Every computer, smartphone, and tablet has an IP address, at least when connected to a network. The purpose of the IP address is just like your home address, often called a “street address.” For example, delivery services such as the US Postal Service, Federal Express (FedEx), United Parcel Service (UPS), and many others can deliver mail and packages because packages are labeled with your street address. Likewise, the IP address assigned to your computer, smartphone, and tablet serves the same purpose: digital information for your device is delivered quickly and accurately because it is labeled with your device’s IP address.

One difference is that your device, a computer, smartphone, or tablet, has to *ask* for digital info. You use an e-mail application or a Web page to request e-mail, and then the new e-mails are delivered to your device from a computer acting as an e-mail server. This is an example of **client-server computing**, in which your device’s software is called a client, and the e-mail server is called a server. You ask to see the new incoming e-mail, and the server delivers. You use your application or Web browser to compose and send an e-mail, and the computer forwards it to the e-mail server, which then sends it to the destination domain specified in your e-mail. In all client-server computing scenarios, the client application does part of the work, and the server application does another part of the work.

Domain Name Service (DNS)

Behind the scenes, when you receive or send an e-mail, or you ask to see a Web page, two things happen. First, your request for digital info includes the IP address of the device you are using.

Another server, called a Domain Name Server (DNS), helps in a big way: it converts the domain portion of the recipient address, such as @yahoo.com or @gmail.com, or @nasa.gov, to an equivalent IP address. Using that IP address, other computers can relay your request to the destination and send the reply to your device. You need to know only the name, *not the IP address*, of the server you contact. Over time, the destination IP address for a familiar domain name might change, but the DNS stays up to date and allows you to use a familiar domain name instead of a changed IP address.

What does an IP address look like?

Inside your computer, smartphone, and tablet, all data are numbers. A byte is a number, a group of 8 bits with a collective value from 0 to 255. Combining bytes in creative ways lets us write e-mails, display Web pages, and so forth.

Likewise, an IP address is a number composed of four bytes. An IP address is expressed

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(INTRODUCTION TO IP ADDRESSES & PORT NUMBERS—Continued from page 12)

like this: **192.168.1.42**. Each byte in the address is separated from the next by a period.

How to See your device IP address

- ✓ **Android 12:** Open the **Settings application Information**. Look under the heading **IP address**. You can see an example of that screen captured on a Samsung Galaxy S10 running Android 12 in **Illustration 1**, with the IP address circled.
- ✓ **iOS 15 (Apple):** Open the **Settings** app and choose **Wi-Fi**. You will see your Wi-Fi network name below the Wi-Fi switch, with some gadgets to the right. Tap the info button (the letter **i** in a circle) to the right of the name of your Wi-Fi network. A new screen appears. Scroll down and find the **IPv4 address heading**. Below that, you will see both your device's IP address and the internal IP address of your router. Finally, you can see an example captured from an iPhone X and iOS 15 in **Illustration 2**, with the IP address circled.
- ✓ **Windows 10:** Open the Settings application, choose **Network & Internet**, and click the **Properties** button in the right-hand pane. A new screen appears; scroll to the bottom and find the **IPv4 address**. You can see an example in **Illustration 3**, [next page] circling the IP address.

Port Numbers

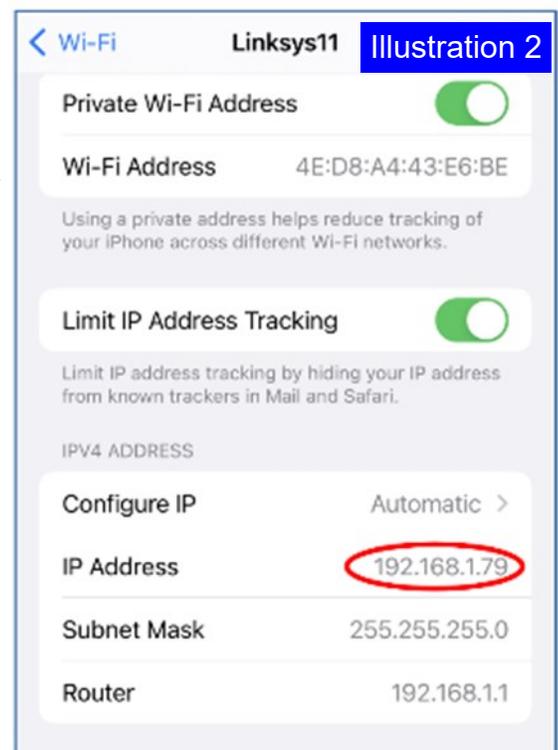
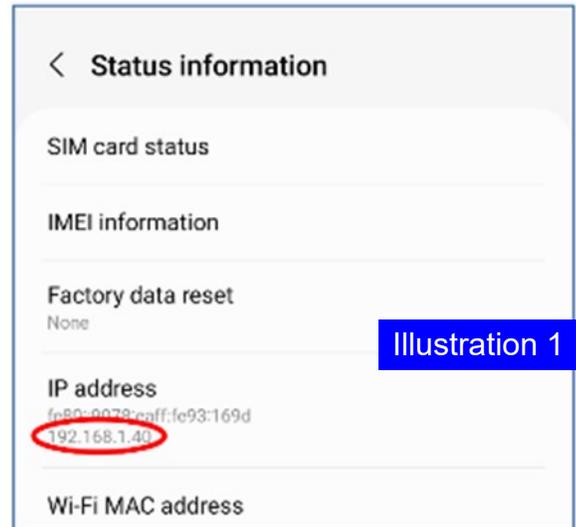
As you know from experience, your device can communicate with many other computers simultaneously. For instance, your device can run an e-mail client application, a Web browser, and a video streaming application concurrently.

Your device uses a second concept called **port numbers** to deliver incoming digital info properly to the correct application on your device.

Ports are analogous to apartments within an apartment building. Each apartment has its own apartment number. Physical deliveries are directed to the correct apartment by being labeled with the correct apartment house address and apartment number.

Think of your device's applications as apartments. Each uses a port devoted to the purpose of the application. The ports are numbered, the number range is 0 through 65535, so there are 65,536 ports.

Some of the port numbers are, by Internet convention, devoted to specific purposes. For example, some port numbers are devoted to e-mail, and some are for Web browsing, and so forth.



(Continued on page 14)

(INTRODUCTION TO IP ADDRESSES & PORTS—Continued from page 13)

The port numbers in the range of 0 to 1023 are called **well-known port numbers** because those are pre-assigned to specific purposes such as e-mail or Web browsing. I reviewed a Wikipedia page listing all of the pre-assigned port numbers; there are many devoted to purposes and applications I have never heard of, but also many I use every day. Port numbers greater than 1023s can be used for any purpose and are called **ephemeral ports**.

Some Web page addresses include both a name and a port number. For example, you may have accessed a web page like this: <https://www.anyserver.com:8080> (this is not a real URL, do not click it).

In this example, the number after the colon character, 8080, is a port number. It is part of the range called ephemeral ports. Using a temporary port number as part of the address allows web servers to host many different home pages, and each home page is assigned a different port number.

Your Router

The device which provides your home Wi-Fi service is called a router. It does a lot more than send and receive Wi-Fi radio signals. Overall, it serves as the city name for various apartment buildings.

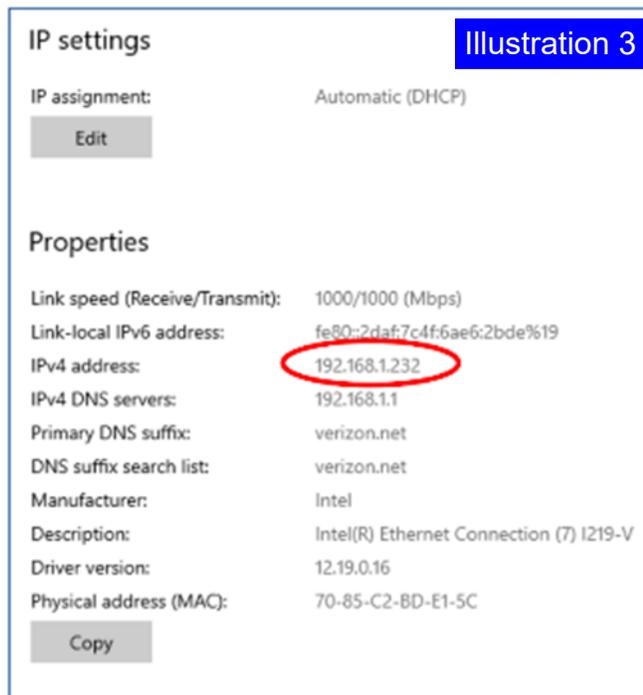
The total possible number of IP addresses is close to 4 billion. That sounds like a lot, but in most metro areas, there are more devices than people by a large margin.

Long ago, the Internet developed a solution. That solution is built into your router, the device that provides your home Wi-Fi.

The router has two responsibilities. First, it assigns IP addresses to itself and your devices in one of two ranges of **reserved IP addresses**, either 192.168.x.x or 10.x.x.x. The address assigned to itself is called the router's **internal IP address**. Second, the router acts as your connection to the Internet. As such, the router is assigned an external IP address by your Internet service provider (ISP), such as Cox, Comcast, FIOS, or Frontier. [EDITOR'S NOTE: Here in the Dayton Metropolitan Area, two other popular ISPs are AT&T and Spectrum.]

Like a central post office, the router forwards every digital info request from your device to the destination. For the return address, the router substitutes the router's own external IP address for the internal IP address of your device. From the viewpoint of the outside world, the only destination address for responses to your requests is the external IP address of the router. When the corresponding digital response arrives at the router, the router forwards it to your device.

In practice, an unlimited number of routers can assign the same range of IP addresses to connected devices. Your neighbor's router can, by chance, literally assign the same IP address



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to your neighbor's phone that your router assigns to your phone. The neighbor's router serves a different "city" and has a different external IP address than your router has, so servers on the Internet can direct responses to the correct router.

My own router's external address, assigned by my ISP, begins with 96. However, that is not necessarily a **permanent** IP address assignment. Each assignment of an IP address by an ISP to a router has a fixed duration, called a "lease." A lease typically expires in 24 hours. Then the lease is renewed by the ISP. However, my router's external IP address has not changed in many months.

The bottom line: routers and reserved IP address ranges make it possible to connect many more than 4 billion devices to the Internet at the "cost" of one IP address per router. As a result, my router serves nine or more devices most days and even more when my kids lived in my home.

Your router also has a self-assigned internal IP address in the same range it assigns to your devices. For example, my router, which is about two years old, assigned itself the internal 192.168.1.1. The router's local address enables your devices to send digital info requests to and through your router because each computer is connected to the router by Wi-Fi or ethernet, and each smartphone or tablet is connected by ethernet.

When your smartphone leaves your home

When your smartphone is out of range of your Wi-Fi or disconnected from your Wi-Fi, it connects to the cell network or another Wi-Fi if you are in range. At that point, the IP address of your phone is assigned by the network to which it has newly connected and is not necessarily the same IP address your device was assigned on your Wi-Fi.

For example, on my Wi-Fi, on the day I wrote this article, the IP address assigned to my smartphone by my router was 192.168.1.40. When I disconnected my smartphone from my Wi-Fi at home, the IP address assigned to my smartphone by the cell network was **100.87.129.39**. Effectively I have moved my smartphone to a different "city."

How can you receive e-mail when your device's IP address changes? Because your device sends your e-mail account name and password to the e-mail server when you use an e-mail application or a Web page to check for e-mail. The current IP address is simply the address to which the e-mail server must send its response.

Some limitations

In reality, most consumer routers limit the number of devices that can connect to the router simultaneously, much lower than the range of IP addresses that the router can assign. For example, my own router's limit is 241. That total includes devices connected by Wi-Fi and devices connected by ethernet.

... TDB

ABOUT THE AUTHOR: John KROUT has been writing about the creative uses of personal computers since the 1980s. He also writes about the creative uses of smartphones, tablets, routers, and digital cameras. He worked as a software developer for federal government contractors until 2020 when he decided to retire at the start of the pandemic. He lives in Arlington, VA, with many computers and cameras and too many cats (his son finally moved out).

[EDITOR'S NOTE: A free Web site that tests your PC's (or other device) ports for vulnerabilities is that of **Gibson Research Corporation**. The site pings all ports on your device. A "ping" is a signal sent by a digital device (you can send pings from your own PC or laptop) — to another

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DMA Calendar of Events, 20 November through 24 December 2022.

(Click anywhere on the calendar, then scroll down for the fully updated version at our Web site.)

DMA Events for Nov 20 – Dec 24, 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Nov 20	Nov 21	Nov 22	Nov 23	Nov 24 	Nov 25	Nov 26
Nov 27	Nov 28	Nov 29 MAIN MEETING 7:00pm Online -AND- TJ Chumps 7050 Executive Blvd Huber Heights	Nov 30	Dec 1 Genealogy SIG 6:30pm Online gen-sig@dma1.org	Dec 2 Python Self-Study 2:00pm, Online PyFri Discord See http://d8ndl.org	Dec 3 Classic Computers 3:00pm By phone
Dec 4	Dec 5 DMA Trustees 7:00pm Online	Dec 6 	Dec 7	Dec 8 NASAC 6:00pm Hustead Fire Dept. 6215 Springfield- Xenia Springfield	Dec 9 Python Self-Study 2:00pm, Online PyFri Discord See http://d8ndl.org	Dec 10 SBC SIG 2:00pm DARA Clubhouse 6619 Bellefontaine Huber Heights
Dec 11	Dec 12 Network SIG See you in the new year	Dec 13 Investment SIG 7:00pm Online investment-sig @dma1.org	Dec 14 Dayton Dynamic Languages 7:00pm Online or InDecation Hub http://d8ndl.org	Dec 15 Linux SIG 7:00pm 348 Russ Eng Wright State Univ. Colonel Glenn Hwy Beavercreek	Dec 16 Python Self-Study 2:00pm, Online PyFri Discord See http://d8ndl.org	Dec 17 Classic Computers 3:00pm By phone
Dec 18 Hanukkah Begins 	Dec 19	Dec 20 	Dec 21 Winter Begins Computer Museum Committee 7:00pm Online	Dec 22	Dec 23 Python Self-Study 2:00pm, Online PyFri Discord See http://d8ndl.org	Dec 24 Happy Holidays 

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digital device (a server, PC, smart phone, tablet, etc.). The other device can “reply” to this ping or not. If a ping is unexpected, it’s better *not* to reply. Sometimes, a device does reply to an unexpected ping, but remains concealed, and sometimes it tries to “counterping” the unknown pinger. Concealment and counterping are not as desirable as simple unresponsiveness, and most security programs (or even most firewalls) will do just that. We cannot put a link to Gibson in THE DATABUS, but a Google or Bing search for: “GRC Shields UP!” (without the quotes) will take you to the site.]

Have a business card? Are you a DMA member?

ANY PAID-UP MEMBER of the Dayton Microcomputer Association is entitled to a *free* business card-sized advertisement in THE DATABUS. Send a good-quality image (600 dpi or better) to Editor@DMA1.org, or give your business card to **Martin Arbagi**, the Editor, at any DMA meeting. We can embed a link to your Web site (if you have one) within the image of your card. Under weird IRS regulations, your Web site may not include discount coupons for DMA members, although discount offers may be included in the advertisement *itself*.

Help DMA by using Amazon's SMILE program!

AMAZON, the Internet's largest retailer (if you haven't noticed, Amazon isn't just for books any more!) has a "Smile" feature whereby Amazon donates a percentage of almost any purchase you make to a nonprofit organization that you select. There is *no* extra cost to you. Click [here](#) to learn more or [here](#) to go directly to the sign-up page. Be sure to put DMA down as the beneficiary of your purchases.

ABOUT THE DAYTON MICROCOMPUTER ASSOCIATION, Inc. (DMA)

By Peter Hess, DMA President, 2018-2020

ALMOST FIFTY YEARS AGO, a small group of computer enthusiasts from the Dayton, Ohio area gathered around a kitchen table looking at, and playing with, an early personal computer called the Altair 680 that one of them had purchased. This computer had been featured earlier on the cover of the January 1975 issue of *Popular Electronics* magazine. Paul Allen had shown the selfsame article about the Altair to Bill Gates, and later, they wrote software together for that computer. Still later — and still together — Allen and Gates founded the Microsoft Corporation.



Shortly thereafter, those Dayton-area computer enthusiasts joined with many others to form THE DAYTON MICROCOMPUTER ASSOCIATION (DMA), now one of the oldest (if not *the* oldest) continuously operating computer user groups in the world. Typically, computer user groups, and the newer iteration, technology user groups, are volunteer-run operations. The DMA is an all-volunteer led, organized, and run 501(c)(3) non-profit organization.

Now, there are hundreds of computer (or technology) user groups in the world, all of which continue to foster improved communication between technological equipment and software publishers, and users of their products. User groups (both computer and technology) provide an environment where more experienced technology users introduce additional and advanced techniques to novices.

DMA offers both monthly General Membership Meetings, which cover new and innovative topics including a wide range of generic technological topics, and its Special Interest Groups (SIGs) which address concerns about specific technology interests. There are eight different SIGs sponsored by the DMA, covering such topics as the Linux operating system, various programming languages such as Python, the use of technology to investigate genealogy, and digital aids to investing. Neither SIG members nor attendees at DMA General Meetings need be members of the parent organization, though they are encouraged to join so DMA can continue providing its services to the public.

Annual dues for DMA membership, which have not been raised for decades, are \$25 for Regular Members, and \$12.50 for Family/Associate Members (someone living at the same address as a Regular Member). Nonvoting Student Memberships are *free* to students through age 22. Door prizes at General Meetings, picnics, banquets, and other DMA events, and both product and service discounts are available to all DMA members.

... TDB

Dayton Microcomputer Association Membership Form

Today's date ____/____/____

- NEW** Please credit the DMA member who recruited me: _____
- RENEW** Contact information below is new Y N

TYPE OF MEMBERSHIP

REGULAR

Name _____ Home / Work (____) ____ - _____

Email _____ Mobile Phone (____) ____ - _____

ASSOCIATE Family Associate membership is for a family member living at the same address as a Regular member. Name of Regular member: _____

Name _____ Home / Work (____) ____ - _____

Email _____ Mobile Phone (____) ____ - _____

STUDENT Free Student membership is available to those under 22 years of age, enrolled full-time in a program of higher education. Name of School: _____

Name _____ Home / Work (____) ____ - _____

Email _____ Mobile Phone (____) ____ - _____

Home Address _____

City _____ State _____ Zip _____

INTERCHANGE

Skills & interests you might share with DMA _____

What you hope DMA will provide _____

SHELL ACCOUNT A shell account on the DMA web server provides file storage, hosting of a personal non-commercial website, @dma1.org email alias (forwarding address), all for a one-time fee of \$10. A username must be 8 alpha characters. The usual default is last name and first initial, no caps or punctuation. DMA reserves the right of final decision on all usernames: 1st choice _____ 2nd choice _____

DUES AND FEES

Regular membership	\$25.00 x <input type="checkbox"/> 1yr <input type="checkbox"/> 2yr <input type="checkbox"/> 3yr \$ _____
Family Associate membership	\$12.50 x <input type="checkbox"/> 1yr <input type="checkbox"/> 2yr <input type="checkbox"/> 3yr \$ _____
Student membership	FREE \$ <u>0.00</u>
One-time setup fee for Shell account	\$10.00 \$ _____
Total	\$ _____

**Note: \$10.00 fee will be charged for any returned checks*

Make your check payable to:
Mail check and application to:

Dayton Microcomputer Association, Inc
PO Box 4005
Dayton OH 45401-4005

Or use Paypal to send your payment to:

membership@dma1.org

DMA use only

Member# _____ Exp ____/____/____ [] Cash [] Check# _____ [] Paypal Proc by _____

Member# _____ Exp ____/____/____ [] Cash [] Check# _____ [] Paypal Proc by _____

Member# _____ Exp ____/____/____ [] Cash [] Check# _____ [] Paypal Proc by _____