Zero to CCNA in 120 Days . . .

. . . and Preparing for other Advanced Certifications

Beau Williamson
CCIE R&S 1346 Emeritus

T-Mobile
Housekeeping

Please turn off all Cell Phones and (and for the Dinosaurs in the room) Pagers!
Opening Statements

• Some of this content is solely my opinion.
  – YMMV

• Other people here may have other ideas.
  – If so, please speak up.
  – We want to benefit from your knowledge.
Agenda

• Why Certify?
• Getting your priorities straight.
• What you need to know.
• Learning Resources
• Getting Organized
• Valuable(?) Tips
Why Certify?
Here’s what it’s worth to you.

<table>
<thead>
<tr>
<th>Certification</th>
<th>Pay Range(^1)</th>
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<tr>
<td>CCNA</td>
<td>$40K - $59K</td>
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<td>CCNP</td>
<td>$60K - $120K</td>
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<td>CCIE</td>
<td>$120K &amp; up</td>
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\(^1\) Depends on experience as well as location. YMMV
Agenda

• Why Certify?
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Getting your priorities straight.

• Money
  – What did your Bachelor's degree cost\(^1\)?
    • $40,000?
    • $80,000?
    • $120,000 or more
  – Did it get you that Network Job you wanted?
    • Probably not if you’re here listening to this.
  – How much are you willing to spend to certify?
    • For a CCNA, CCNP, CCIE???
      – (Remember those salary ranges in the previous slide.)

\(^1\) I’m assuming here you have one. Even if you don’t this still applies.
Getting your priorities straight.

- Time
  - How many years did that Bachelors take?
    - 4 Years
    - 6 Years
    - (In my case) 16 Years!!!!
  - How many hrs/wk are you willing to devote for that salary?
    - 15 Hours (3 hrs * 5 days)?
    - 10 Hours (2 hrs * 5 days)?
    - 5 Hours? (1 hr * 5 days)?
    - None
      - I have to many important TV shows / PC Games to study
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Reality – What you need to know

What a CCNA really needs to know.

Test Questions

Stupid Questions
Example: Stupid Questions

- What is the pin-out of a straight through Ethernet cable?
  - Match the wire colors to pin numbers.
    - Blue: Pin-1
    - Blue-White: Pin-2
    - Orange: Pin-3
    - Orange-White: Pin-4
    - Green: Pin-5
    - Green-White: Pin-6
    - Brown: Pin-7
    - Brown-White: Pin-8

- Stupidity Rational
  - How often do you build your own cables?
  - Why would you trust your memory for this?
  - If you want to know if the cable is straight-through, compare the ends. If they are the same, it’s a straight-through cable.
Example: Stupid Questions

- What is the correct IOS command to adjust EIGRP Hello time to 5 seconds?
  a) R1(conf)# ip eigrp hello interval 10 5
  b) R1(conf-int)# ip eigrp hello-interval 5 10
  c) R1(conf-int)# ip eigrp hello interval 5 10
  d) R1(conf)# ip eigrp hello-interval 10 5

- Stupidity Rational
  - This is what CLI help is for!!!
Dealing with Stupid Questions

- Memorize everything in the book
  - Sure, if you have photographic memory.
  - Or if your name is Kim Peek

- Use Practice Exams
  - Best defense against stupid questions.
What you need to know

• ICND1

  – Networking Fundamentals
    • The TCP/IP and OSI Networking Models
    • Fundamentals of Ethernet LANs
    • Fundamentals of WANs
    • Fundamentals of IP v4 Addressing & Routing

  – Ethernet LANs and Switches
    • Building Ethernet LANs with Switches
    • Installing and Operating Cisco LAN Switches
    • Implementing Ethernet Virtual LANs
    • Troubleshooting Ethernet LANs
What you need to know

- ICND1 (cont)
  - IP Version 4 Addressing and Subnetting
    - Perspectives on IPv4 Subnetting
    - Analyzing Classfull IPv4 Networks
    - Analyzing Subnet Masks
    - Analyzing Existing Subnets
  - Implementing IP Version 4
    - Operating Cisco Routers
    - Learning IPv4 Routes with OSPFv2
    - Configuring and Verifying Host Connectivity
  - Advanced IPv4 Addressing Concepts
    - Subnet Design
    - Route Summarization
What you need to know

• ICND1 (cont)
  – IPv4 Services
    • Basic IPv4 Access Control Lists
    • Advanced IPv4 ACLs and Device Security
    • Network Address Translation
  – IP Version 6
    • Fundamentals of IP Version 6
    • IPv6 Addressing and Subneting
    • Implementing IPv6 Addressing on Routers
    • Implementing IPv6 Addressing on Hosts
    • Implementing IPv6 Routing
What you need to know

• ICND2

  – LAN Switching
    • Virtual LANs
    • Spanning Tree Protocol
    • Troubleshooting LAN Switching

  – IP Version 4 Routing
    • Troubleshooting Routing
    • Creating Redundant First-Hop Routers
    • Virtual Private Networks

  – IP Version 4 Routing Protocols
    • Implementing OSPF for IPv4
    • Implementing EIGRP for IPv4
    • Troubleshooting Routing Protocols
What you need to know

- ICND2 (cont)
  - Wide Area Networks
    - Implementing Point-to-Point WANs
    - Frame Relay Concepts & Implementation
    - Identifying Other Types of WANs
  - IP Version 6
    - Troubleshooting IPv6 Routing
    - Implementing OSPF for IPv6
  - Network Management
    - Managing Network Devices
    - Managing IOS Files
    - Managing IOS Licensing
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Books

CCNA 200-120 Official Cert Library, Updated 3rd Edition
by Odom, Wendell
Cisco Press

• 2 Book Set w/DVD’s
  • ICND1 100-101 Official Cert Guide
  • ICND2 200-101 Official Cert Guide
  • 26 free CCNA Network Simulator labs

Available:
www.nerdbooks.com
1681 Firman Drive
Richardson, TX 75081
Books

CCNA Deluxe Study Guide, 1st Edition
by Todd Lammle & William Tedder
Sybex
ISBN-10: 1118789709

• Includes Bonus Study Tools
  • Practice Test Environment with > 1000 Questions
  • CCNA Virtual Lab 4.0 Lite Network Simulator
  • Audio and Video from CBT Nuggets
  • E-Book Versions available

Available:
www.nerdbooks.com
1681 Firman Drive
Richardson, TX 75081
Books

**CCNA Routing & Switching Certification Kit**
Exams 100-101, 200-201, 200-120
*by Todd Lammle & William Tedder*
Sybex
ISBN-10: 111878958X

• Boxed Set
  • CCNA Routing and Switching Study Guide
  • CCNA Virtual Lab, Titanium Edition 4.0
  • CCNA Review Guide, with CDROM

Available:
[www.nerdbooks.com](http://www.nerdbooks.com)
1681 Firman Drive
Richardson, TX 75081
Search Engines

• Use as a supplement to your reading
  – Read something and you still don’t get it?
    • Not every author’s explanation will work for you.
  – Google the topic
    • Tons of sites will come up
      – Try to Google a specific question to narrow the results
    • One of them should explain it in a way that works for you.
Forums

- Discussions
- Post Questions
  - Cisco Learning Network
    learningnetwork.cisco.com
    • Official Cisco Certification Web Site
  - Cisco Support Community
    supportforums.cisco.com
  - Many others
    • Google a question to find other Forums
CCO - Cisco Connection On-Line

- Get access to all Cisco Documentation
  - Command Reference
  - Configuration Guide
- Create an account if you don’t have one
  - You’ll need it anyway.
CCO - Cisco Connection On-Line
# Networking Software (IOS & NX-OS)

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<th>IOS 15 Releases</th>
<th>15.3M&amp;T</th>
<th>15.1M&amp;T</th>
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<td>15.0S</td>
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| IOS 12 Releases |
|-----------------|---------|-------|------|------|
| 12.4 Mainline   | 12.3 Mainline | 12.2 S | 12.2 SR |
| 12.4 Special and Early Deployments | 12.3 T | 12.2 SE | 12.2 SX |
| 12.4 T          | 12.2 Mainline | 12.2 SG | 12.2 T |

Cisco DocWiki: IOS and NX-OS Software
CCO - Cisco Connection On-Line

Networking Software (IOS & NX-OS)
Cisco IOS 15.3M&T

HOME
SUPPORT
PRODUCT SUPPORT
CISCO IOS AND NX-OS SOFTWARE
Cisco IOS 15.3M&T
Software Downloads, Release and General Information
Reference Guides
Configure
Troubleshoot and Alerts

Automate Network Status and Inventory
Free service sends product status, alerts and more.
Learn how

Most Requested Resources
- Configuration Examples and Text Notes (2)
- Configuration Guides (66)
- Troubleshooting Text Notes (1)

See All Related Community Content
CCO - Cisco Connection On-Line

Software Downloads, Release and General Information

Download Software
Release Notes (1)

Reference Guides

Command References (71)
Command References (71)

Configure

Configuration Examples and TechNotes (2)
Configuration Guides (65)

Troubleshoot and Alerts

Troubleshooting TechNotes (1)
CCO - Cisco Connection On-Line

High Availability Configuration Guide, Cisco IOS Release 15M&T

IP
- First Hop Redundancy Protocols Configuration Guide, Cisco IOS Release 15M&T
- IP Addressing Configuration Guide Library, Cisco IOS Release 15M&T
- IP Application Services Configuration Guide, Cisco IOS Release 15M&T
- IP Switching Cisco Express Forwarding Configuration Guide, Cisco IOS Release 15M&T
- IP Switching Cisco IOS Switching Paths Overview Configuration Guide, Cisco IOS Release 15M&T
- IP Switching Configuring Multicast Distributed Switching Configuration Guide, Cisco IOS Release 15M&T
- IPv6 Configuration Library, Cisco IOS Release 15M&T
- Service Advertisement Framework Configuration Guide, Cisco IOS Release 15M&T

IP Multicast
- IP Multicast Configuration Guide Library, Cisco IOS Release 15M&T

IP Routing
- IP Routing: BFD Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: BGP Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: EIGRP Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: ISIS Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: LISP Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: ODR Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: OSPF Configuration Guide, Cisco IOS Release 15M&T
- IP Routing: RIP Configuration Guide, Cisco IOS Release 15M&T
- Performance Routing Configuration Guide, Cisco IOS Release 15M&T

LAN Switching
- LAN Switching Configuration Guide, Cisco IOS Release 15M&T
- Medionet
Videos

• Bowler CBT DVD’s
  – Cisco R&S Series 1 and 2
    • Covers R&S CCNA through CCIE
      – RIP, OSPF, EIGRP, BGP Redistribution, ACL’s, etc
      – Uses GNS3
      – Allows you to pause video and follow along.
    • Currently (continuously?) on sale $125
      – List Price: $499
  – Other courses available
Videos

- CBT Nuggets
  - CCNA through CCIE
    - R&S, Data Center, Wireless, more . . .
    - ICND1 Course
      http://www.cbt nuggets.com/it-training/cisco-ccna-icnd1-100-101
    - ICND2 Course
  - Virtual Labs
  - Offline Training
  - Practice Exams
  - Coaches
Videos

• CBT Nuggets

  – Pricing
    • Free – Seven Day Trial
    • Basic Plan – Monthly $99
    • Premium Plan – Six Months $564
      – Test Prep, Virtual Lab, Mobile Device, Coaches
      – Contact Heidi and get free T-Shirt or Hat
        » Tell her you learned about CBT Nuggets @ DFWCUG
CUG Study Group

- DFW Cisco Users Group
  - Periodic Study Groups
    - CCNA, CCNP, CCIE
    - Typically meet once a week
    - Check with CUG Training Officer
  - Collective Learning
    - No Instructor
    - Each member takes turn presenting a topic to group.
      - OSPF, EIGRP, STP, etc
Mentor

- Friend or Relative
  - CCNP, CCIE or equivalent experience
  - Get together via WebEx or Citrix
  - Review/Discuss Reading Material
  - Work on Lab together
Classroom Training

- Cisco Academy
  - DCCCD & TCC
  - CCNA Courses (1 Semester each)
    - Cisco Exploration 1 - Network Fundamentals
    - Cisco Exploration 2 - Routing Protocols & Concepts
    - Cisco Exploration 3 - LAN Switching and Wireless
    - Cisco Exploration 4 - Accessing the WAN
  - Uses “Packet Tracer” Simulator
Classroom Training

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    • Cisco Exploration 1 - Network Fundamentals
    • Cisco Exploration 2 - Routing Protocols & Concepts
    • Cisco Exploration 3 - LAN Switching and Wireless
    • Cisco Exploration 4 - Accessing the WAN
  – CCNP Courses (1 Semester each)
    • CCNP Routing - Implementing IP Routing
    • CCNP Switch - Implementing IP Switching
    • CCNP TSHOOT - Maintaining & Troubleshooting IP Networks
Classroom Training

• Global Knowledge
  – CCNA Courses
    • CCNAX v2.0 - CCNA R&S Boot Camp
      – 5 Day Course
      – $3695 USD or 37 Cisco Learning Credits
    • ICND1 - Interconnecting Cisco Network Devices 1
      – 5 Day Course
      – $3295 USD or 33 Cisco Learning Credits
    • ICND2 - Interconnecting Cisco Network Devices 2
      – 5 Day Course
      – $3295 USD or 33 Cisco Learning Credits
Classroom Training

• INE (Internetwork Experts)
  – CCNA
    • CCNA Routing & Switching Online Workbooks
    • CCNA Routing & Switching Courses
    • CCNA Routing & Switching Practice Exams
    • CCNA Routing & Switching Training Bundle
  – Free On-Line CCNA Course Material!!
    • Google “INE CCNA Free”
      – “640-802 CCNA Exam Course - Introduction - INE.com”
      – Old test material but still very useful
      – Also on INE Training YouTube Channel
Classroom Training

• Bootcamps
  – CCNA, CCNP & CCIE Exam/Lab Bootcamps
    • Intense 1-2 Week Course
    • Prepares you for all aspects of the Exam/Lab
      – Most CCNA Exam Simulators don’t have all CLI Commands
        » You need to know exactly “how” they expect you to solve the problem.
        » Your preferred solution may not be acceptable even though it is a good answer.
      – Basically there are 3 ways to answer
        » The right way
        » The wrong way
        » The CCNA way ← You want this one
Classroom Training

• Bootcamps
  – Question:
    • Why are there 3 ways to answer!!!
  – Answer:
    • CCNA/CCNP Training teaches Routing like you were in Elementary School.
      – They often omit certain details to simplify the protocol.
    • The Exams often assume this level of knowledge.
      – This can result in you giving the wrong “right” answer if you have studied the protocol in depth.
      – Bootcamps help teach you what is the “right” wrong answer for the test!
IETF RFC’s

• Read the Protocol RFC’s
  – CCIE Study Only!!!
    • Remember there’s the Right Way, Wrong Way & CCNA Way!
    • This isn’t the case for the CCIE Test.
  – Knowing exactly how the protocol works often beats trying to memorize configuration commands.
    • If you know how the protocol works you can often use CLI Help to find what you need.
Practice Tests

• Boson Practice Tests
  – Money Back Guarantee
    – Fail within 60 days of purchase
  – CCNA
    • ExSim-Max for Cisco 100-101 ICND1 $99
    • ExSim-Max for Cisco 200-101 ICND2 $99
    • ExSim-Max for Cisco 200-120 CCNA $119
  – CCNP
    • ExSim-Max for Cisco 300-101 ROUTE $99
    • ExSim-Max for Cisco 300-115 SWITCH $99
    • ExSim-Max for Cisco 300-135 TSHOOT $99
Practice Tests

• Free Practice Tests¹
  – Google for “ExamCollection”
    • Requires Visual Exam Certification software
      – Demo version is free (limited usage count)
      – Full version is <$30
    • Download practice tests for free
      – Cisco, Microsoft, others
      – Complete test in a single .vce file
  – Google for “9tut”
    • Practice questions on web site

¹Warning: Some of these sites may be considered illegal by Cisco! Use at your own risk.
Network Simulators

GNS3 Jungle
Beta
Graphical Network Simulator
Cost: Free

Allows you to build networks
Get “hands-on” experience

www.gns3.com

- Requires a copy of an IOS Image.
  - You want 15.0 code for CCNA
- Requires some configuration to get it to run reliably.
Network Simulators

**Boson CCNA Simulator**
Graphical Network Simulator
Cost: $179

Allows you to build networks
Get “hands-on” experience

[www.boson.com](http://www.boson.com)
Network Simulators

Cisco Packet Tracer
Graphical Network Simulator
Cost: Free
- (Only through Cisco Academy)

Allows you to build networks
Get “hands-on” experience
Not a full IOS CLI set (CCNA only)
Network Simulators

Cisco VRL
Graphical Network Simulator
Cost: $199/year

Allows you to build networks
Get “hands-on” experience
Covers IOS, IOS-XR, IOS-XE and NX-OS

- Intro Video by CBT Nuggets

- Cisco VRL YouTube Channel
  [https://www.youtube.com/channel/UC41WuzXlJCGY5qLsuZ8aHkQ](https://www.youtube.com/channel/UC41WuzXlJCGY5qLsuZ8aHkQ)
Network Simulators

- Cisco VIRL Videos
  - CBT Nuggets
  - Cisco VIRL Webinar
    - 1:22 – 15:00 – Overview
    - 50:20 – 58:05 – Sneak Peek at what’s next
Agenda

- Why Certify?
- Getting your priorities straight.
- What you need to know.
- Learning Resources
- **Getting Organized**
- Valuable(?) Tips
How do you eat an Elephant?

“One bite at a time!”
Eating the CCNA Elephant

• Split it into two parts
  – ICDN1 Test
    • CCENT Certification
  – ICDN2 Test
    • CCENT + ICDN2 Test = CCNA
Knowledge Mental Vapor Pressure

Retention

Time

Reading + Lab Work

Reading Only
Knowledge Mental Vapor Pressure

Knowledge Gap

OSPF

EIGRP

Knowledge

Study OSPF

Time

Study EIGRP

Required Knowledge
Knowledge Mental Vapor Pressure

No Knowledge Gaps

Knowledge

OSPF  EIGRP

Required Knowledge

Time

Study EIGRP

Study OSPF
Timeline

Network Fundamentals
Ethernet LANs and Switches
IP Version 4 Addressing and Subnetting
Implementing IP Version 4
Advanced IPv4 Addressing Concepts
IPv4 Services
IP Version 6
Review & Practice Test
Test
Timeline


WEEK9 | WEEK10 | WEEK11 | WEEK12 | WEEK13 | WEEK14 | WEEK15 |
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# Subnet Calculator

### CIDR1

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### Mask

- 255
- 254
- 252
- 251
## Subnet Calculator

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## Subnet Calculator

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<th>MASK</th>
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<td>192.168.3.176</td>
<td>/27</td>
<td>255.255.255.224</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBNET-START</th>
<th>SUBNET-END</th>
<th>NEXT-SUBNET</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.3.160</td>
<td>192.168.3.191</td>
<td>192.168.3.192</td>
</tr>
</tbody>
</table>
## Subnet Calculator

<table>
<thead>
<tr>
<th>ADDRESS /CIDR</th>
<th>MASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.222.133.21 /20</td>
<td>255.255.240.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBNET-START</th>
<th>SUBNET-END</th>
<th>NEXT-SUBNET</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.222.128.0</td>
<td>10.222.143.255</td>
<td>10.222.144.0</td>
</tr>
</tbody>
</table>
# Subnet Calculator

<table>
<thead>
<tr>
<th>/0</th>
<th>/1</th>
<th>/2</th>
<th>/3</th>
<th>/4</th>
<th>/5</th>
<th>/6</th>
<th>/7</th>
<th>-</th>
<th>CIDR1</th>
</tr>
</thead>
<tbody>
<tr>
<td>/8</td>
<td>/9</td>
<td>/10</td>
<td>/11</td>
<td>/12</td>
<td>/13</td>
<td>/14</td>
<td>/15</td>
<td>-</td>
<td>CIDR2</td>
</tr>
<tr>
<td>/16</td>
<td>/17</td>
<td>/18</td>
<td>/19</td>
<td>/20</td>
<td>/21</td>
<td>/22</td>
<td>/23</td>
<td>-</td>
<td>CIDR3</td>
</tr>
<tr>
<td>/24</td>
<td>/25</td>
<td>/26</td>
<td>/27</td>
<td>/28</td>
<td>/29</td>
<td>/30</td>
<td>/31</td>
<td>/32</td>
<td>CIDR4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>256</th>
<th>128</th>
<th>64</th>
<th>32</th>
<th>16</th>
<th>8</th>
<th>4</th>
<th>2</th>
<th>1</th>
<th>HOST</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>128</td>
<td>192</td>
<td>224</td>
<td>240</td>
<td>248</td>
<td>252</td>
<td>254</td>
<td>255</td>
<td>MASK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>/CIDR</th>
<th>MASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.222.5.21</td>
<td>/29</td>
<td>255.255.255.248</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBNET-START</th>
<th>SUBNET-END</th>
<th>NEXT-SUBNET</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.222.5.16</td>
<td>10.222.5.23</td>
<td>10.222.5.24</td>
</tr>
</tbody>
</table>
Host “A” is unable to communicate with Host “C”. Why?
## Subnet Calculator

### CIDR4

<table>
<thead>
<tr>
<th>/0</th>
<th>/1</th>
<th>/2</th>
<th>/3</th>
<th>/4</th>
<th>/5</th>
<th>/6</th>
<th>/7</th>
<th>-</th>
<th>CIDR1</th>
</tr>
</thead>
<tbody>
<tr>
<td>/8</td>
<td>/9</td>
<td>/10</td>
<td>/11</td>
<td>/12</td>
<td>/13</td>
<td>/14</td>
<td>/15</td>
<td>-</td>
<td>CIDR2</td>
</tr>
<tr>
<td>/16</td>
<td>/17</td>
<td>/18</td>
<td>/19</td>
<td>/20</td>
<td>/21</td>
<td>/22</td>
<td>/23</td>
<td>-</td>
<td>CIDR3</td>
</tr>
<tr>
<td>/24</td>
<td>/25</td>
<td>/26</td>
<td>/27</td>
<td>/28</td>
<td>/29</td>
<td>/30</td>
<td>/31</td>
<td>/32</td>
<td>CIDR4</td>
</tr>
</tbody>
</table>

### Address / CIDR / Mask

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>/CIDR</th>
<th>MASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>172.155.5.1</td>
<td>/23</td>
<td>255.255.254.0</td>
</tr>
</tbody>
</table>

### Subnet Calculator

<table>
<thead>
<tr>
<th>SUBNET-START</th>
<th>SUBNET-END</th>
<th>NEXT-SUBNET</th>
</tr>
</thead>
<tbody>
<tr>
<td>172.155.4.0</td>
<td>172.155.5.255</td>
<td>172.155.6.0</td>
</tr>
</tbody>
</table>

### Host / Mask

<table>
<thead>
<tr>
<th>256</th>
<th>128</th>
<th>64</th>
<th>32</th>
<th>16</th>
<th>8</th>
<th>4</th>
<th>2</th>
<th>1</th>
<th>HOST</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>128</td>
<td>192</td>
<td>224</td>
<td>240</td>
<td>248</td>
<td>252</td>
<td>254</td>
<td>255</td>
<td>MASK</td>
</tr>
</tbody>
</table>
Subnet Practice

172.155.4.0 – 172.155.5.255

172.155.4.111/23 172.155.5.111/23

A

B

172.155.10.12/23 172.155.10.1/22

C

D

172.155.11.202/23 172.155.10.12/23

10.244.3.2/30 10.244.3.5/30

10.244.3.2/30 10.244.3.5/30

172.155.5.1/23 172.155.4.0 – 172.155.5.255
## Subnet Calculator

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>/CIDR</th>
<th>MASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>172.155.10.1</td>
<td>/22</td>
<td>255.255.252.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBNET-START</th>
<th>SUBNET-END</th>
<th>NEXT-SUBNET</th>
</tr>
</thead>
<tbody>
<tr>
<td>172.155.8.0</td>
<td>172.155.11.255</td>
<td>172.155.12.0</td>
</tr>
</tbody>
</table>

CIDR1: 0 - 7
CIDR2: 8 - 15
CIDR3: 16 - 23
CIDR4: 24 - 31

- **/0** 256
- **/1** 128
- **/2** 64
- **/3** 32
- **/4** 16
- **/5** 8
- **/6** 4
- **/7** 2
- **/8** 1

**/>22</22** 255.255.252.0
Subnet Practice

172.155.4.0 - 172.155.5.255

172.155.8.0 - 172.155.11.255
# Subnet Calculator

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>/CIDR</th>
<th>MASK</th>
<th>SUBNET-START</th>
<th>SUBNET-END</th>
<th>NEXT-SUBNET</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.244.3.2</td>
<td>/30</td>
<td>255.255.255.252</td>
<td>10.244.3.0</td>
<td>10.222.3.3</td>
<td>10.244.3.4</td>
</tr>
</tbody>
</table>
Subnet Practice

10.244.3.0 - 10.244.3.3

172.155.5.1/23
172.155.5.111/23
172.155.8.12/22
172.155.11.202/22
172.155.4.0 – 172.155.5.255
172.155.8.0 – 172.155.11.255

A
B
C
D

172.155.4.111/23
172.155.5.111/23
172.155.10.1/22
172.155.8.12/22
10.244.3.2/30
10.244.3.5/30

X