3 2 2 5 lab configuring vlans and trunking

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VLAN Trunking: A Comprehensive Guide

Introduction

Virtual LANs (VLANs) enable the logical segmentation of a physical network into multiple, isolated subnetworks. Trunking is an essential VLAN configuration technique that allows hosts on different VLANs to communicate with each other.

How to Configure Trunking VLAN

Step 1: Create VLANs

Create the necessary VLANs using the "vlan" command:

```
switch(config)# vlan [VLAN ID]
```

Step 2: Assign Ports to VLANs

Assign specific ports to each VLAN as access ports:

```
switch(config-if)# switchport access vlan [VLAN ID]
```

Step 3: Configure Trunk Ports

Configure a port as a trunk port to carry traffic for multiple VLANs:

```
switch(config-if)# switchport trunk encapsulation dot1q
```

Step 4: Allow VLAN Communication

Allow hosts on different VLANs to communicate by removing the default VLAN 1 from the trunk and explicitly permitting the desired VLANs:

```
switch(config-if)# switchport trunk allowed vlan add [VLAN ID]
```

VLAN Configuration Step by Step

1. Create VLANs.
2. Assign ports to VLANs.
3. Configure trunk ports.
4. Allow VLAN communication.

What to Allow Hosts on VLAN 10 to Communicate to Hosts on VLAN 20?

To allow hosts on VLAN 10 to communicate to hosts on VLAN 20:

1. Configure a trunk port between the switches connecting VLAN 10 and VLAN 20.
2. Remove VLAN 1 (the default VLAN for trunk ports) from the trunk using `switchport trunk allowed vlan remove 1`.
3. Add VLAN 10 and VLAN 20 to the trunk using `switchport trunk allowed vlan add 10` and `switchport trunk allowed vlan add 20`.

Testing and Validating VLAN Trunking

1. Connect hosts to the switch ports assigned to different VLANs.
2. Ping hosts on different VLANs to verify communication.
3. Use network monitoring tools to confirm correct VLAN separation and communication.

Difference Between Trunking and VLAN

- **VLAN:** Logical segmentation of a network into multiple isolated subnetworks.

- **Trunking:** Allows hosts on different VLANs to communicate by carrying traffic for multiple VLANs over a single physical link.

Main Purpose of VLAN Trunking Protocol

To allow VLANs to communicate with each other by encapsulating data frames with VLAN tags.

How Trunking Works in VLAN

- Trunk ports encapsulate traffic with VLAN tags, indicating the VLAN to which the traffic belongs.
- Switches receive and forward traffic based on the VLAN tags, ensuring delivery to the appropriate VLANs.

Number of VLANs per Port

Depending on the switch model, a single port can typically support multiple VLANs.

Difference Between LAN and VLAN

- **LAN:** Physical network that interconnects devices within a limited geographical area.
- **VLAN:** Logical network created within a LAN to isolate traffic based on specific criteria, such as department or function.

80/20 Rule in VLAN

- Out of all possible VLANs, only a small percentage (around 20%) are typically used, while the majority (80%) remain unused.

Making VLANs Talk to Each Other

VLANs can talk to each other using:

- **Trunk ports:** Carry traffic for multiple VLANs.

- **VLAN trunking protocols:** Encapsulate data frames with VLAN tags.

Does Each VLAN Need Its Own Subnet?

Yes, each VLAN should ideally have its own subnet to maintain logical separation and prevent IP address conflicts.

Common VLAN Problems

- Misconfigured trunk ports

- Incorrect VLAN assignment to ports

- Port tagging issues

- Security breaches due to misconfigured VLAN configurations

Identifying VLAN on Trunk

Use the "show interface trunk" command to display the VLANs allowed on a trunk port.

VLAN Tagging Identification

VLAN tagging can be identified by looking for an additional field in the Ethernet frame header that contains the VLAN ID.

Types of Trunking

- **ISL (Inter-Switch Link):** Cisco proprietary trunking protocol.

- **802.1Q:** Standard trunking protocol used by most switches.

- **802.1ad (QinQ):** Double tagging of VLANs for extended trunking capabilities.

- **VXLAN (Virtual Extensible LAN):** Overlay network technology that allows VLANs to be extended across physical networks.

Purposes of Trunking

- **VLAN Communication:** Allows hosts on different VLANs to communicate.
- **Link Aggregation:** Bundles multiple physical links into a single logical trunk link for increased bandwidth.
- **Network Segmentation:** Isolates traffic between different VLANs, improving security and network efficiency.

Importance of Trunking to VLAN Configuration

Trunking is essential for VLAN configuration because it:

- Enables communication between hosts on different VLANs.
- Allows for efficient use of network resources.
- Improves network security by isolating traffic.

Benefits of VLANs

- **Improved Security:** Isolates traffic and prevents unauthorized access to data.
- **Increased Flexibility:** Allows for easy reconfiguration and expansion of the network.
- **Enhanced Performance:** Optimizes network traffic and reduces congestion.

Requirements for Inter-VLAN Communication

- **Trunk Ports:** Carry traffic for multiple VLANs.
- **VLAN Trunking Protocols:** Encapsulate data frames with VLAN tags.
- **VLAN Configuration:** Allow the desired VLANs on trunk ports and remove unnecessary VLANs.

VLAN Trunking Methods

- **In-Band Tagging:** VLAN tags are carried within the Ethernet frame header.
- **Out-of-Band Tagging:** VLAN tags are carried in a separate data stream.

- **Hybrid Tagging:** Combines both in-band and out-of-band tagging techniques.

What is Trunking?

Trunking is a technique that allows multiple logical channels (VLANs) to be carried over a single physical link.

Number of VLANs in a Switch

The number of VLANs that can be created in a switch varies depending on the switch model, typically ranging from 255 to 4096.

VLAN Trunking Protocol

802.1Q is the most commonly used VLAN trunking protocol, which adds a 4-byte VLAN tag to Ethernet frames.

Enabling Trunking on Interface

`switchport trunk encapsulation dot1q` command enables trunking on an interface, allowing it to carry multiple VLANs.

Adding VLAN in Trunk Port

`switchport trunk allowed vlan add [VLAN ID]` command adds the specified VLAN to the list of allowed VLANs on a trunk port.

Configuring Access and Trunk Ports

- **Access Port:** Assigns a port to a specific VLAN and only allows traffic from that VLAN.
- **Trunk Port:** Carries traffic for multiple VLANs and allows inter-VLAN communication.

VLAN 1 on Trunk

By default, VLAN 1 is allowed on trunk ports. However, it is recommended to explicitly remove VLAN 1 from the trunk and allow only the desired VLANs.

How Trunking Works in Networking

In networking, trunking combines multiple physical links into a single logical channel (trunk). Data from different VLANs is multiplexed onto the trunk and demultiplexed at the receiving end, allowing inter-VLAN communication.

Checking if Interface is Trunk or Access

`show interface [interface name]` command displays the interface type (trunk or access).

Protocol for Configuring Trunking

VLAN trunking is typically configured using the 802.1Q protocol, which adds a 4-byte VLAN tag to Ethernet frames.

VLAN Configuration Command

`vlan [VLAN ID]` command creates a VLAN.

Displaying VLANs Command

`show vlan` command displays the configured VLANs.

Default VLAN for Trunk

VLAN 1 is the default VLAN for trunk ports. However, it is recommended to remove VLAN 1 from the trunk and allow only the desired VLANs.

VLAN Trunking Operation

VLAN trunking encapsulates data frames with VLAN tags and forwards them over trunk ports, enabling inter-VLAN communication.

Difference Between Trunk and VLAN

- **Trunking:** Allows data from multiple VLANs to be carried over a single physical link.
- **VLAN:** A logical network segment that isolates traffic from other VLANs.

Inter-VLAN Communication Requirement

To communicate between VLANs, trunk ports, VLAN trunking protocols, and appropriate VLAN configurations are required.

Maximum VLANs per Port

The maximum number of VLANs that can be configured on a single port varies depending on the switch model and implementation.

VLAN Trunk Tagging Type

VLAN trunk ports use in-band tagging, where VLAN tags are carried within the Ethernet frame header.

VLAN 1 and VLAN 2 Communication

By default, VLAN 1 can communicate with VLAN 2 if inter-VLAN routing is enabled. However, for increased security, it is recommended to configure specific VLANs for inter-VLAN communication.

What is The Search for WondLa about? Parents need to know that The Search for WondLa is the first book in a dystopian fantasy trilogy by Tony DiTerlizzi. It's the story of a girl named Eva Nine, who was raised underground by a robot but comes to the surface and searches for fellow humans as she tries to survive.

What is WondLa based on? WondLa (originally titled The Search for WondLa) is an animated sci-fi fantasy series based on the books The Search for WondLa, A Hero for WondLa, and The Battle for WondLa by Tony DiTerlizzi, produced by Skydance Animation and developed by Bobs Gannaway, who also serves as the

showrunner and executive producer with ...

Does WondLa ever find humans? The second book, A Hero for WondLa, was published on May 8, 2012. In it, Eva Nine, finally finding other humans, is thrilled when she and her friends are rescued by a human boy named Hailey Turner and taken to New Attica (possibly a rebuilt version of Attica, New York), a seemingly peaceful human colony.

What age is WondLa appropriate for? I give WondLa 4.5 out of 5 stars and recommend it for ages 8 to 12.

What happened to the earth in WondLa? Orbona is a planet in its star's habitable zone. Formerly known as Earth and inhabited by humans and billions of species of animals, native life on the planet all but ended when Terra Terminal Hibernation occurred, and Earth's biosphere collapsed.

Is WondLa a kids show? This lively series is a sci-fi treat for younger viewers. WondLa presents a compelling character in the scrappy, adventurous Eva, and a wild world for her to discover and explore.

What happens in WondLa? It's difficult not to give all the good stuff away, but roughly speaking Wondla is the story of 12-year-old Eva Nine's journey from her secluded underground Sanctuary into the wider world above of Orbona. It's the story of Eva finding out who she is, and finding a place for herself in that world.

What is the plot of the battle for WondLa? What's the Story? After fleeing the human city and its leader, Cadmus Pryde, Eva Nine is on the run with Hailey, hiding from both aliens and humans. She heads out to find Zin, an alien she hopes will help stop his treacherous brother, Loroc.

What is the plot of the hero for WondLa? Synopsis. Eva Nine has finally found what she has always been looking for: other human beings. Having been rescued by Hailey Turner, Eva couldn't be happier, and now Hailey is taking Eva and her friends to the human city of New Attica, where humans of all shapes and sizes live in apparent peace and harmony.

What is the plot of Mpho's search? Forced off Baas du Toit's farm after a sheep goes missing, Mpho Mapanga decides to go to Johannesburg to find his father. Life

on the streets is tough but Mpho makes a good friend in Themba and manages to earn a reasonable living from his shoe-shine business. But how is he going to find his father in this huge city?

What happened to Earth in WondLa? Orbona is a planet in its star's habitable zone. Formerly known as Earth and inhabited by humans and billions of species of animals, native life on the planet all but ended when Terra Terminal Hibernation occurred, and Earth's biosphere collapsed.

Solution Numerical Methods Engineers Fifth Edition

Q1: What is the purpose of the fifth edition of Solution Numerical Methods Engineers?

A1: The fifth edition of Solution Numerical Methods Engineers provides comprehensive and up-to-date coverage of numerical methods for engineering problems. It includes new chapters on machine learning, data mining, and computational modeling, as well as updated coverage of existing topics such as linear systems, nonlinear equations, and numerical integration.

Q2: Who is the target audience for this book?

A2: Solution Numerical Methods Engineers is designed for undergraduate and graduate students in engineering who are interested in learning about numerical methods. It is also a valuable reference for practicing engineers who need to solve complex engineering problems.

Q3: What are the key features of the fifth edition?

A3: The key features of the fifth edition of Solution Numerical Methods Engineers include:

- Over 1,000 fully worked-out examples
- Over 1,500 practice problems
- A comprehensive online resource center
- An updated bibliography

Q4: How is the fifth edition different from the fourth edition?

A4: The fifth edition of Solution Numerical Methods Engineers differs from the fourth edition in several ways. The most notable changes include:

- The addition of new chapters on machine learning, data mining, and computational modeling
- The addition of over 500 new practice problems
- The expansion of the online resource center
- The inclusion of a new bibliography

Q5: Where can I purchase the fifth edition of Solution Numerical Methods Engineers?

A5: The fifth edition of Solution Numerical Methods Engineers can be purchased from the publisher, CRC Press, or from online retailers such as Amazon.com.

What percentage is a 5 on AP Microeconomics? 75% or more = 5.

Is the AP Microeconomics test hard? Microeconomics may not be one of the hardest AP subjects, but students need to make sure they are prepared before enrolling. Keep reading to get answers to common questions about the AP Microeconomics exam and develop a test-taking strategy.

How hard is it to get a 3 on AP Micro? AP Microeconomics is considered quite easy, with class alumnae rating it 4.5/10 for overall difficulty (the 20th-most-difficult out of the 28 large AP classes surveyed). The pass rate is about average vs other AP classes, with 66% graduating with a 3 or higher.

What is the passing rate for AP Microeconomics? The pass rate for the AP Microeconomics exam has been relatively high in recent years. In 2021, around 69.9% of students scored a 3 or higher, which is generally considered passing. When it comes to getting a good score, here are some study strategies you can follow: 1.

Is AP Macro or micro harder? Most combined courses are organized accordingly, beginning with Microeconomics and progressing through Macroeconomics. Pass rates on the respective AP exams also suggest that Macroeconomics is slightly more

challenging.

Is AP Micro curved? What is the average AP® Microeconomics score? The exam is curved, which changes the average score somewhat each year. Many factors contribute to this, including changing student populations and varying difficulty of questions.

Do colleges care about AP Econ? While it's true that colleges consider AP scores in their evaluations, they don't generally weight AP scores heavily in the admissions process. Instead, they care more about the AP courses you've taken and the grades you've received in those classes, as this reflects your willingness to challenge yourself academically.

What is the easiest AP class?

What is the hardest AP class?

Is a 70 a 5 on the AP exam? Usually, a 70 to 75 percent out of 100 translates to a 5. However, there are some exams that are exceptions to this rule of thumb. The AP Grades that are reported to students, high schools, colleges, and universities in July are on AP's five-point scale: 5: Extremely well qualified.

Are AP exams curved? AP test scores are indeed "curved," but it's more accurate to call it a "scaling process." Instead of a traditional curve that compares your performance to other students' performance, the AP exam scaling process converts your raw score (the number of points you earned through multiple-choice questions and free- ...

Why is AP Econ so hard? In AP Macroeconomics, students use charts, graphs, and data to explain economic concepts. They may also determine economic outcomes based on certain situations. This type of exam requires critical thinking and problem-solving skills.

What AP has the lowest pass rate? Looking at the numbers, the hardest AP test is Physics 1. In May 2022, just 43.3% of test-takers passed, and only 7.9% received a perfect score. Other hard AP exams include US History, Macroeconomics, Chemistry, and Calculus AB.

How do I ace my AP Microeconomics exam?

How long should I study for AP Microeconomics? Overall, you should expect to study for at least 8 hours a week, or more than an hour every day. It is highly recommended that you study for even longer, considering that you are not supplementing your studies with a class that you are also taking in school.

Do you need calculus for microeconomics? Students who study microeconomics will need linear algebra, calculus, and geometry. Microeconomics uses mathematics to highlight phenomena or draw graphs to represent human actions.

Should I take AP Microeconomics or macroeconomics first? Taking into account all of the above, most economics students are better off studying microeconomics first, and then progressing on to macroeconomics. That way, the principles of economics can be learned on an individual level, before being applied to the wider society and world.

Is Macro easier then micro? Some students find AP Micro to be easier because it's more concrete, dealing with specific examples and situations, while others prefer AP Macro since it deals with broader concepts. Ultimately, it depends on whether you prefer studying the larger picture of the economy or the detailed workings of markets.

How many people get a 5 on AP Macro? How do I get a 5 on AP® Macroeconomics? Great question! First, it is important to note that on average, around 17% of test takers achieve the top score. It is definitely challenging, but by no means impossible.

Is AP Micro math based? AP Microeconomics is equivalent to a one-semester introductory college course in economics. There are no prerequisites for AP Microeconomics. Students should be able to read a college-level textbook and possess basic mathematics and graphing skills. Each unit is broken down into teachable segments called topics.

Is there a break in the AP Micro exam? In general, an AP exam has two sections. The first section consists of multiple-choice questions, and the second section consists of free-response questions. Students are allowed to take a break between Sections I and II.

Should I report a 3 on an AP exam to UC? Although the College Board reports all AP test results to us, students should be aware AP test scores lower than 3 will not adversely affect their chances for admission.

Should I submit a 3 on an AP exam? The first thing that you should do is check the AP Score credit policy for the colleges that you are applying to. If they will give you credit for the 3, then by all means, report it! On the other hand, if they only give credit for a 5 on that exam (not even for a 4), you may want to hold off.

Is 8 APs in high school good? For the most part, the more selective the school you hope to attend, the more APs you should take—within reason. For Ivies and other top 30 schools, aim for 8-12 or more, if feasible. For the top 30-50 schools, 5-8 will usually suffice. Of course, make sure you're not overloading yourself.

What percent correct is a 5 on an AP exam? Usually, a 70 to 75 percent out of 100 translates to a 5. However, there are some exams that are exceptions to this rule of thumb.

What percent is a 5 on the AP macro test?

What is the AP grading scale 5? AP Exams are scored on a 5-point scale. The final score for each AP Exam is reported on a 5-point scale that offers a recommendation about how qualified you are to receive college credit and placement—but each college makes its own decisions about what scores it will grant credit or placement for.

What is the 5 rate for AP stats? Getting a 5 takes careful content knowledge, targeted practice and dedicated studying. Only around 14% earn the top score for the AP® Statistics exam. To get a 5, start studying ASAP® and focus on applying concepts to specific situations.

What is a 69 on an AP exam? As a general guide, though, you can consider roughly more than 70% correct as being in the 5 range, 50-69% for a score of 4, 40-49% for a score of 3, 30-39% for a 2, and below 30% would likely be a 1. Again, these ranges are approximations and can vary by subject and by year.

Is an 80 a 5 on the AP exam? As for percentages, these aren't usually released by the College Board. However, historical data sometimes shows that for many exams, you might need to correctly answer at least 70-80% of questions to land a 5, but again, it varies by subject.

What is a 50% on the AP exam?

Are AP exams curved? AP test scores are indeed "curved," but it's more accurate to call it a "scaling process." Instead of a traditional curve that compares your performance to other students' performance, the AP exam scaling process converts your raw score (the number of points you earned through multiple-choice questions and free- ...

What percent is a 3 on AP microeconomics? The 2024 AP Microeconomics Exam scores: 5: 17%; 4: 25%; 3: 23%; 2: 21%; 1: 14%.

How hard is it to get a 5 in AP Macro? How do I get a 5 on AP® Macroeconomics? Great question! First, it is important to note that on average, around 17% of test takers achieve the top score. It is definitely challenging, but by no means impossible.

Can you get a 0 on an AP exam? Hi there! Definitely not a weird question—it's good to understand all aspects of the AP exams, especially when stress is running high. To answer your question directly, no, you can't score a literal zero on an AP test; the scores range from 1 to 5.

Can you get a 6 on an AP exam? The talk of a '6' on an AP exam is indeed just a myth. Advanced Placement (AP) exams are scored on a scale of 1 to 5, with 5 being the highest possible score. The College Board, which administers the AP exams, has never awarded a 6 on any AP exam.

How many questions do you have to get right to pass the AP exam? A passing score is a three. Who scores the sections? The multiple choice sections are scored by computer. The free response sections are scored by teachers during the annual AP Reading conference held each June.

Which AP is the hardest?

What is the easiest AP class?

What is the least passed AP exam? AP Physics 1 is the hardest AP class with the least passing rate of 51.6. It means almost half of the students fail this exam. It's 3 hours exam consist of 50 MCQs and 5 free-response questions.

> *the search for wondla 1 tony diterlizzi bossmallore*, *solution numerical methods engineers fifth edition*, *ap microeconomics review with answers*

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3 2 2 5 LAB CONFIGURING VLANS AND TRUNKING

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