Online VCDX Workshop

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Agenda

- Part 1 – Program and Process
- Part 2 – Design Scenario
- Part 3 – Troubleshooting Scenario
- Next Steps

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Introductions

- VCDX Workshop
  - Chris Colotti, VCDX #37, Principal Architect - VMware
    - VCDX Evangelist
    - Panel Member Alumni
    - Twitter @CColotti

- Attendees
  - Intended Audience
    - Architects
    - Administrators
    - Other interested groups
  - Partners and Customers Alike

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Supporting Material

- VMware Certification Site on VCDX

  - http://www.vmware.com/go/vcdx - Handbook & Application, Program Overview, VCDX Process Flowchart for Candidates, Design Defense Blueprint, VCDX Candidate Tips, VCDX Application & Defense Process, VCDX Boot Camp Slide Deck, VCDX Community, VCDX Study Guides & Books, VCDX Boot Camp Book, VCDX Boot Camp Videos, Exam Language Options

- VCDX Boot Camp series

  - http://vmwarecertificationvideos.com/vcdx_prep/
    1. VCDX Bootcamp – Part 1: Defending your design
    2. VCDX Bootcamp – Part 2: Design Scenario
    3. VCDX Bootcamp – Part 3: Troubleshooting Scenario
    4. VCDX Defense Preparation: Defending your Design
    5. VCDX Defense Preparation: Design Scenario Examples
    6. VCDX Defense Preparation: Troubleshooting Scenario Examples
    7. VCDX Defense Preparation: What Not to Say

- Books

  - VCDX Boot Camp: Preparing for the VCDX Defense - http://bit.ly/10rg0gZ

- Community Mentoring

  - http://vmw.re/1zeTnKu

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Program and Process

What is the VCDX Certification?

- VCDX is the highest tier of VMware® technical certification.
  - VCDX focuses on architectural design skills
    - Beyond VMware Certified Associate (VCA) certification
    - Beyond VMware Certified Profession (VCP) certification
    - Beyond VMware Certified Advanced Professional (VCAP/VCIX) certifications
  - We now offer four tracks for VCDX:
    - Datacenter Virtualization (VMware vSphere based)
    - Desktop (VMware View based)
    - Cloud (VMware vCloud Director **OR vCloud Automation Center** based)
    - Network Virtualization (VMware NSX)

- Why should you pursue VCDX certification?
  - To validate your capability to plan and design on VMware Technologies
  - To increase your value to customers and employers
  - Provides competitive advantage in marketplace
  - Community Recognition

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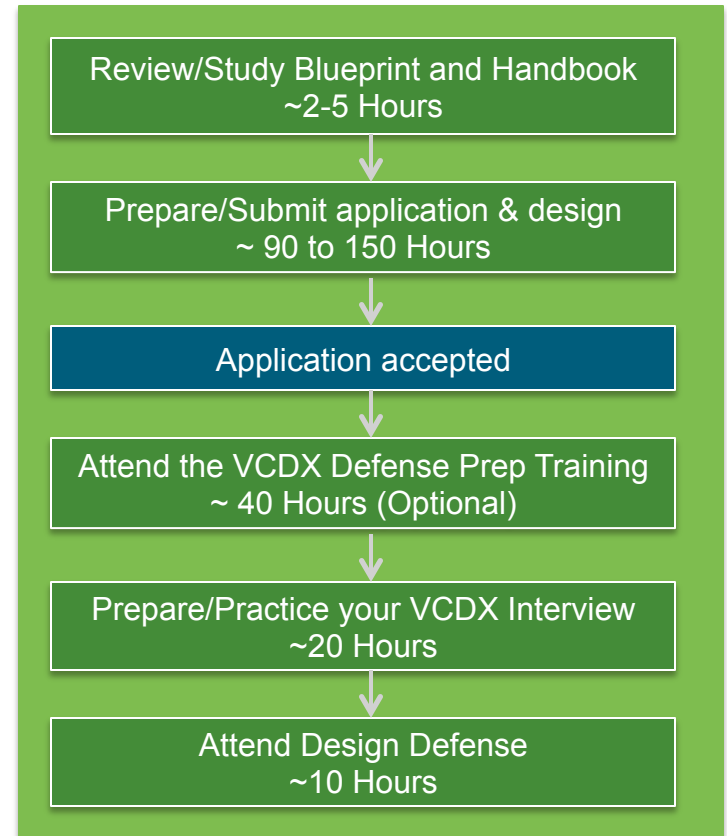
Now all VCDX's are also vExperts!

Certification Program Structure

The Road to Your VCDX

Review/Study Blueprint and Handbook
~2-5 Hours

↓

Prepare/Submit application & design
~ 90 to 150 Hours

↓

Application accepted

↓

Attend the VCDX Defense Prep Training
~ 40 Hours (Optional)

↓

Prepare/Practice your VCDX Interview
~20 Hours

↓

Attend Design Defense
~10 Hours

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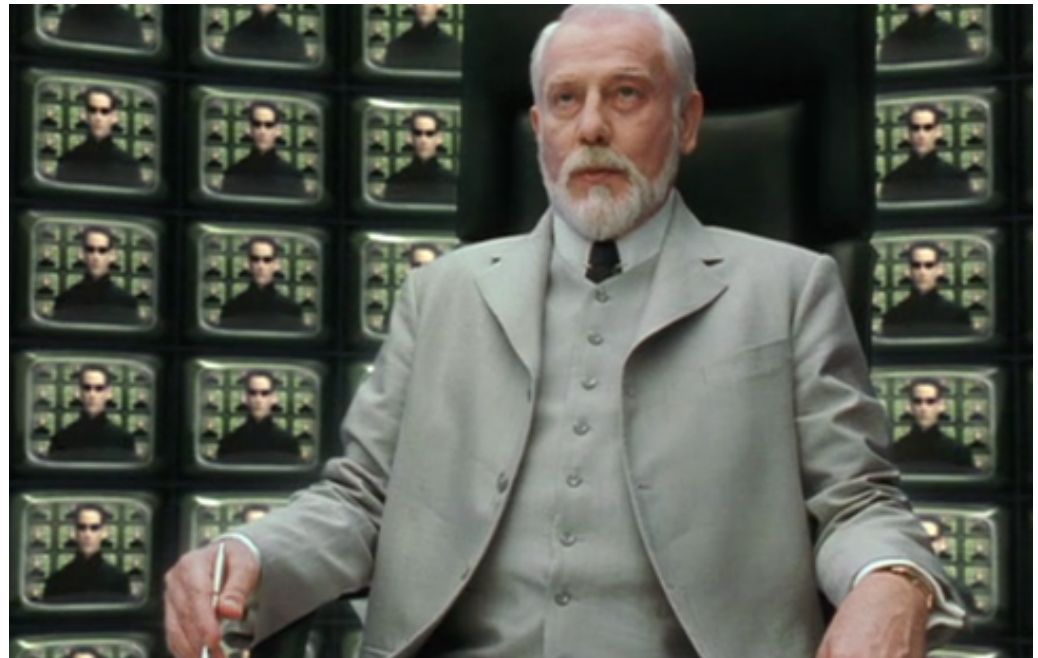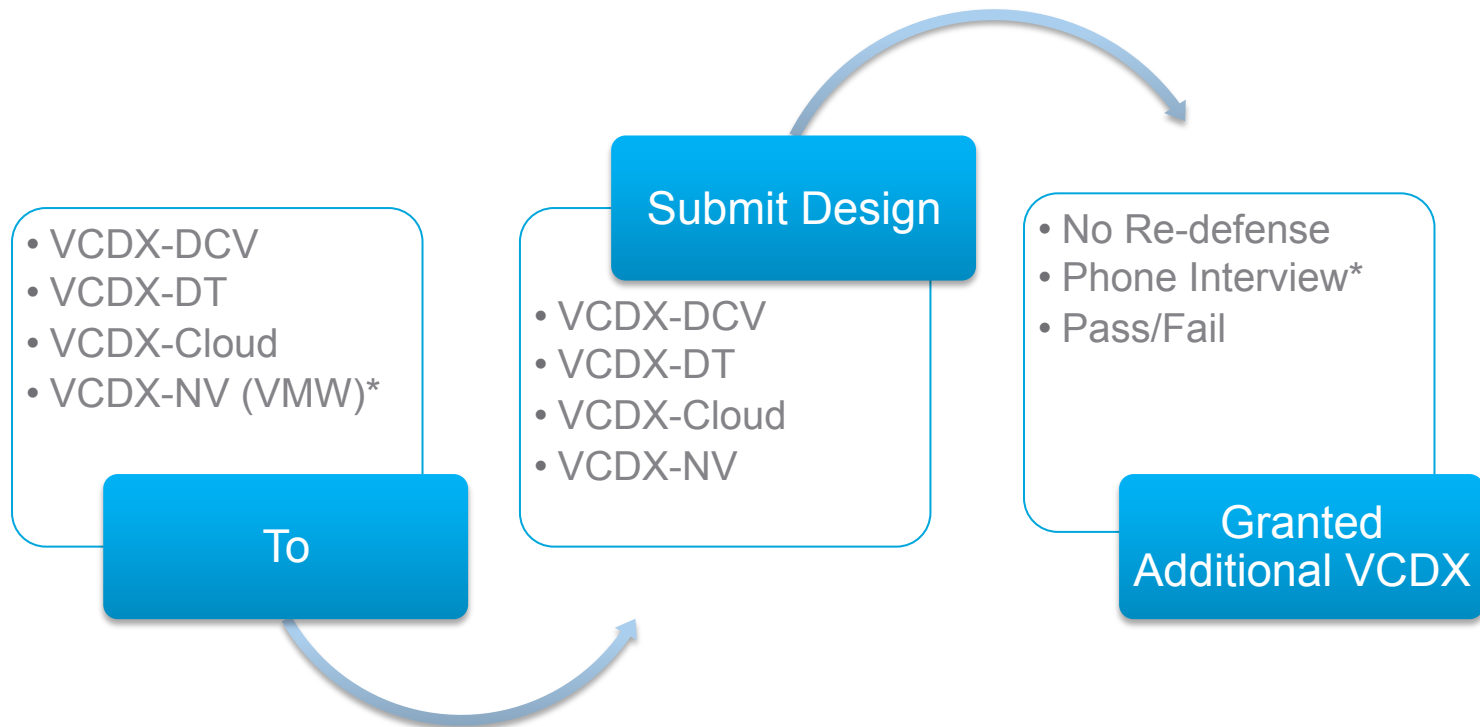
The DNA of a Successful VCDX Candidate

▪ Some real world experience in designing, architecting, presenting, and implementing solutions

▪ Does not ask what needs to be done, they actively seek out solutions when problems present themselves

▪ Traits
  – Self-Motivated and driven
  – Applies critical thinking
  – Organized and methodical
  – Process oriented
  – Confident and Adaptable
  – Innovative and Insightful
  – Inquisitive and proactive
  – Customer focused
  – Continuous learner
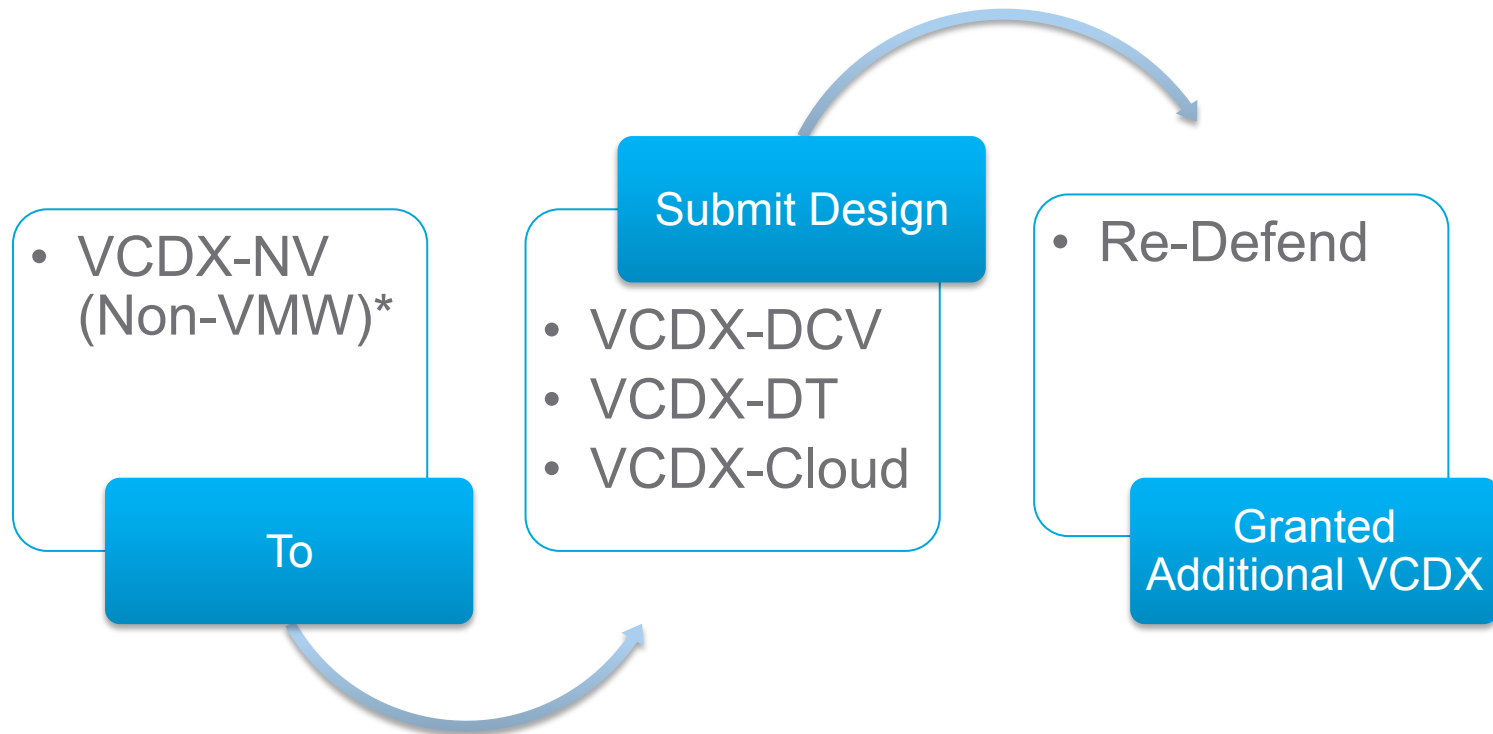 – Shows clarity of though

"The VMware Certified Design Architect"

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Multiple VCDX Attainment Workflow Option 1

- VCDX-DCV
- VCDX-DT
- VCDX-Cloud
- VCDX-NV (VMW)*

To

Submit Design

- VCDX-DCV
- VCDX-DT
- VCDX-Cloud
- VCDX-NV

- No Re-defense
- Phone Interview*
- Pass/Fail

Granted Additional VCDX

* Proposed Change for 2015

Multiple VCDX Attainment Workflow Option 2

- VCDX-NV (Non-VMW)*

To

Submit Design

- VCDX-DCV
- VCDX-DT
- VCDX-Cloud

- Re-Defend

Granted Additional VCDX

* Proposed Change for 2015

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Proposed VCDX-NV "Declaration" Process

- Sometime in 2015 we will ask VCDX-NV Applicants to declare:
  - VMware centric design
  - Non-VMware Centric design

- VMware Centric Designs
  - Will be defended like DT and Cloud
  - Evaluate Core vSphere fundamentals
  - Allow for pathway to other VCDX's without Re-defense

- Non-VMware Centric Designs
  - Current VCDX-NV Evaluation criteria
  - Less focus on vSphere core fundamentals
  - Network only centric applicants
  - Less desire for additional VCDX's other than NV

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Zero to Multiple Suggestion

- Start with DCV Design as foundation

- "Bolt On" or build the 2nd, 3rd, and 4th stories
  - Desktop/EUC
  - Cloud
  - Network Virtualization

- Grow the design from the base foundation
  - Maintain version consistency
  - Over long period foundation design might need updates

- Submit original design with changes for add on's
  - Clearly show new documentation
  - Follow multiple process without re-defense

- Why do 4 completely different designs from scratch?

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Demonstrating Design Experience & VCDX Tips

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What Demonstrates Design Expertise?

- **Demonstrate mastery of design considerations and rationales by:**
  - Identifying and understanding business requirements
  - Identifying constraints and risks
  - Understanding different architecture strategies
  - Making and justifying sound decisions
  - Understanding design choice impact
  - Understanding all design aspects, including inherent risks

- **During your design defense you should be able:**
  - To provide a complete solution that addresses all requirements, constraints, and risks
  - To answer all questions about your design and defend your design decisions
  - To effectively manage your time
    - Demonstrate your ability to work effectively in customer design meetings
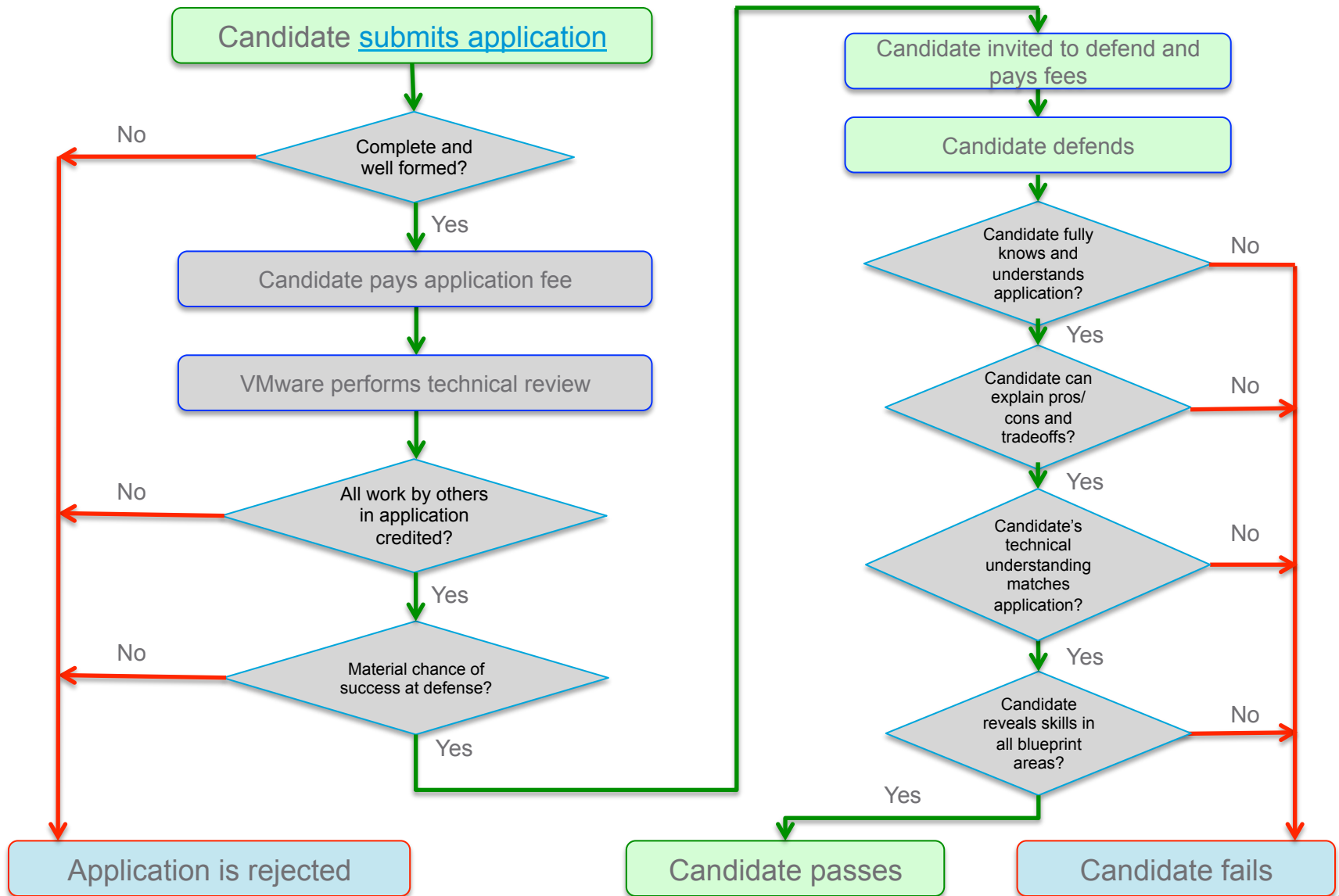
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What Demonstrates a Lack of Design Expertise?

- **Insufficient** Mastery of Design Skills is demonstrated by:
  - A design primarily focused on **delivery from templates** without addressing business requirements or design rationale
  - A candidate that **cannot articulate design strategies**
    - The candidate **cannot understand** or consider major aspects of a design
    - The candidate **cannot logically defend questions** pertaining to a design decision
  - A candidate that **cannot start a design process** in front of a customer
  - A candidate that **cannot troubleshoot potential design or implementation issues**

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VCDX Application – Selection of a Design

- The design you submit must be for an infrastructure…
  - where **business requirements** drive design and implementation decisions
  - suited for **mission-critical** applications
  - in a **managed** environment.
- The design you submit may be partially fictitious
  - You must defend fictitious components as if they were real
  - Designs are assumed to be either implemented or implementable.
  - If your design was not implemented it still needs to meet all the requirements.
- If your design is based on an actual project, you must have played an architect role in that project
  - But not necessarily the *sole* architect
- The primary design component will be based on the VCDX path chosen

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VCDX Process

Candidate submits application

Complete and well formed? — No → Application is rejected

Yes

Candidate pays application fee

VMware performs technical review

All work by others in application credited? — No → Application is rejected

Yes

Material chance of success at defense? — No → Application is rejected

Yes

Candidate invited to defend and pays fees

Candidate defends

Candidate fully knows and understands application? — No → Candidate fails

Yes

Candidate can explain pros/cons and tradeoffs? — No → Candidate fails

Yes

Candidate's technical understanding matches application? — No → Candidate fails

Yes

Candidate reveals skills in all blueprint areas? — No → Candidate fails

Yes → Candidate passes

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VCDX Application – Components

- Completed Application Form

- Signed Attestation and Statement of Conduct

- Mandatory documentation
  - Architectural design
  - Installation guide
  - Implementation plan
  - Testing plan
  - Standard operating procedures

- Registration Fee

Ensure that your submission is free of technical inconsistencies!

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Defense Day

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VCDX Interview Day

- Approved applicants are invited to interview
  - The interview is an on-site meeting with a panel of VCDX certified architects

- The interview process consists of three parts

  1. **The VCDX Defense** (75 minutes)
     - Deliver a short (~10 minute) presentation that introduces your design
     - Answer questions from panelists about the design you submitted
     - Provide further insight into your design decisions and rationales

  2. **The Design Scenario**
     - VCDX-DV & VCDX-NV = 30 minutes
     - VCDX-CMA & VCDX-DTM = 45 minutes
     - Demonstrate that you can begin to work through design issues in a methodical and logical manner

  3. **The Troubleshooting Scenario**
     - VCDX-DV & VCDX-NV =15 minutes,
     - VCDX-CMA & VCDX-DTM = 30 minutes
     - Demonstrate that you can begin to work through design or operational problems in a methodical and logical manner

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The VCDX Defense – Format

- Panel
  - 3 Panelists – VCDX certified, interact with candidate, record scores
  - 1 Facilitator – ensures rules and timelines are adhered to
  - Observers – VCDX certified, learning how to conduct defense, no interaction with candidate

- Environment
  - Room with whiteboard, 1-2 projectors, and presentation laptop
    - Personal laptops or PDAs not permitted in room
    - Bags stored in secured area
  - Timer (only pauses between sections)

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VCDX Defense – What we're looking for

From Conceptual Requirements to Logical Model

- Collect customer requirements/constraints/assumptions
  - Map the above into one or more infrastructure design qualities
    - Availability
    - Manageability
    - Performance
    - Recoverability
    - Security
    - Risk Management

- Build relationship models between design entities
  - Create solutions based on these mappings

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VCDX Defense – What we're looking for

From Logical Design to Physical Design

- Propose detailed specifications for the technology stack

- Show the components mapping to the entities in the logical design.

  - Virtual Machines

    - Including backup/recovery

  - Compute Resources

    - Including hosts and clusters

  - Storage Resources

    - Considerations of backup/recovery or replication methods of VMs and hosts

  - Network Resources

  - Virtual Infrastructure Management

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VCDX Defense – Tips

- Before your defense session…
  - Make a commitment & budget prep time
  - Minimum of 30-40 hours to complete the application and supporting documentation (not including the design itself)
  - Complex designs can take 300+ hours total
  - Consider forming a study group
  - Know your design thoroughly!
    - Review your design beforehand so that it is fresh on your mind
- During your defense session…
  - Use your time wisely & allow for time in all design areas
- Talk and think out loud
- Use diagrams frequently

Additional Tips

- What to do
  - Treat as any other customer interaction, be natural
  - Structure your thoughts, requirements gathering, and problem solving
  - Respect time constraints
    - Add reference and support material to end of your defense presentation
    - Keep answers clear and to the point
    - If you clearly understand a concept, be succinct in your explanations
  - Have others review your design
  - Practice explaining your design in English
  - Think critically about your design

- What not to do
  - Don't bring props (like posters)
  - Don't bring gifts for the panelists
  - Don't "Name Drop"
  - Don't quote blogs

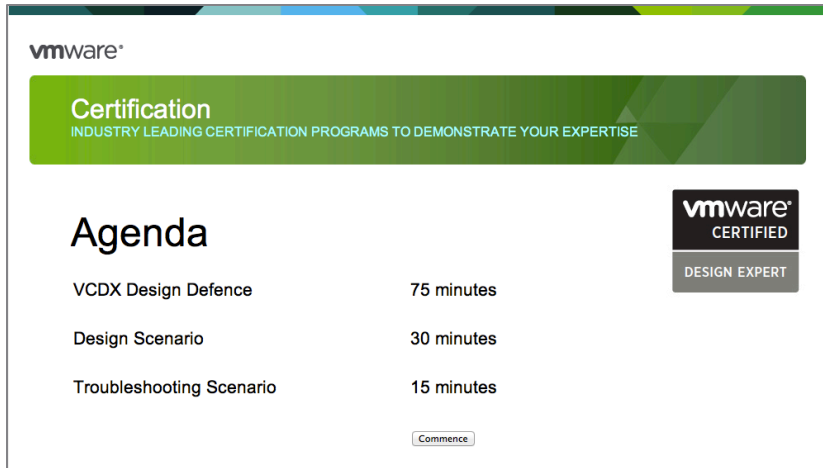**vm**ware®

Mock Defenses and Study Sessions

Planning study sessions and a mock defense

- Study Sessions
  - Identify other candidates
  - Study sessions focus on design content, design defense, and scenarios
    - Review designs for alignment with VCDX blueprints
    - Candidates present the defense presentation
    - Q&A on design areas
    - Use these slides to simulate the scenarios
  - Note: VCDX panelists are not permitted to review or comment on designs outside of VCDX defense reviews or as part of their work assignments

- Mock defense
  - Use similar environment (white board and projector) and timing
  - Have one person manage the clock and simulate the moderator
  - Have three people (if possible) act as panelists
    - Ask open ended questions, don't just hammer technology, _**Force Critical Thought**_
  - No time extensions. Focus on questions tied to design and VCDX blueprint

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Community Mentoring

- Community based volunteer program
  - Listed in the VCDX Directory

- It's up to you to reach out and ask for help

- Some [Rules of Engagement](#)
  - Panelists cannot:
    - Cannot review Design Submissions, or sit on mock panels
    - They can still help in other ways!
      - General Architecture and process guidance
  - Mentors should be
    - Helping with the overall process
    - Help develop communication skills
  - Mentors should NOT be
    - Helping build the design
    - Adding/removing specifics to the design
  - Twitter HashTag #VCDX

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Room Setup to Simulate Defense

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Certification
INDUSTRY LEADING CERTIFICATION PROGRAMS TO DEMONSTRATE YOUR EXPERTISE

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DESIGN EXPERT

Agenda

VCDX Design Defence	75 minutes
Design Scenario	30 minutes
Troubleshooting Scenario	15 minutes

Commence

Timer – http://timer.vcdx.es/

whiteboard

projector

6 4 5

moderator

panelists

water

candidate

Design Scenario

For All Scenarios

- You are in a Customer Role Play Situation!!

- Understand the business goals and use cases

- What is the problem we are trying to solve?

- Identify requirements and constraints

- Prioritize requirements
  - which on is the most important?
  - How do they relate to or impact our goals?

- Ask questions to clarify gaps
  - LISTEN TO AND USE THE ANSWERS!
  - Take notes

- Diagram proposed solutions for design
  - Validate and adapt proposed solutions

- **Use the whiteboard** and think out loud

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VCDX Design Scenario – Format

- Format

  - Design exercise **role play**

    - You will be given a situation/scenario that requires you to begin to architect a design

    - During the scenario, the panelists are your customers

    - The focus is on the journey to the solution, not the finished design

      - Think out-loud. Talk through the process to let the panelists see you work the problem

      - Ask questions to gather additional information for consideration

        - LISTEN to the responses and use the information given!

      - Go through the steps to demonstrate your strategy and thought process

      - Follow a thread to build your design on and Use diagrams

      - You are NOT expected to complete the design in the allotted time

- Duration

  - VCDX-DCV, VCDX-NV = 30 minutes total

  - VCDX-CMA, VCDX-DTM = 45 minutes total

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VCDX Design Scenario – Tips

Sketch your ideas:
Walk through the topology for the design on a whiteboard.

Think:
Do I have all the information needed? What are the requirements, constraints, assumptions, and risks? Am I meeting all the business requirements?

Do:
Ask questions!
What is your strategy?
What information do you need?
What clarification?
Is risk mitigation required due to some of the business requirements?

Don't:
Be silent as you work on the design.

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VCDX Design Scenario – Sample

- The following slides consist of a sample design scenario
  - Your actual design scenario will be different
  - Not all information is automatically provided
    - You must ask questions

- This will be a role play for attendees
  - You will participate as a VCDX candidate
  - We will ask you what you might think a VCDX panelist might do
  - You can ask questions on any aspect of the Design Scenario

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Design Scenario #1

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- Client has engaged a Managed Services Organization to run Capacity Planner in their environment. The average consolidation ratio is anticipated to be 15:1.

- NetApp Fibre Channel SAN is a constraint

- Budget requires re-use of old hardware where possible.

- New hardware: 2-CPU quad-core HP BL460c, 2 on-board NIC ports, 2 NIC ports on one mezzanine card, one free mezzanine slot. The customer has procured five of the new servers.

- Select the appropriate RAID levels required for the solution.

- Explain how the process of consolidation and containment will be implemented.

- Design a cluster for a two-host failure. During deployment of each phase of this project, factor in workload balancing across resources.

- Use best practices to create a design.

Phase	# Servers	Configuration
1	50	Two way dual core CPU 4 GB RAM 2 onboard NIC ports 160 GB internal disks
2	100	Two way dual core CPU 4 GB RAM 2 onboard NIC ports 160 GB internal disks
3	50	Two way dual core CPU 4 GB RAM 2 onboard NIC ports 160 GB internal disks

I/O Characteristics	# Servers
Read/Write (balanced)	90
Read Intensive	65
Write Intensive	45

Operating System	# Servers
Windows 2003	50
Windows 2008	50
RedHat Enterprise 5	50
Windows XP	50

Scenario 1 Analysis

- Constraints
  - NetApp Fibre Channel SAN
    - What model, what features, current configuration, expandability?
    - Was the NetApp purchased for this project?

- Requirements
  - Select appropriate RAID levels.
    - If NetApp is sufficient to support requirements, what RAID options are available? What options will support the application requirements? Do we need to consider storage tiering?
  - Explain implementation process for consolidation and containment of servers.
    - What are the steps for migrating the servers to virtual machines and how do we minimize the risk of server sprawl?
  - Design an N+2 cluster
    - What is the minimum number of ESX Servers? Add two to provide N+2.
    - Factor in details from the Capacity Planner information.

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Scenario 1 Analysis

- Details for follow up
  - Capacity Planner output
    - Can we see details? If not, can we find out specific information from the report?
  - NetApp Fibre Channel SAN
    - What model and what device firmware is used?
    - What features are installed/licensed, and what others can be added?
    - What storage is available? What can that be increased to?
    - Can the budget support additional storage requirements?
  - What are the full details of the new hardware?
    - Was this purchased for the project?
    - What is the processor family and speed?
    - What are the NIC port speeds? For on-board? For mezzanine card?
    - Do we need additional NIC cards?
    - Do we need a SAN card?

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Scenario 1 Analysis

- Details for follow up
  - Budget
    - What is the budget?
  - Existing Servers
    - What processor family and processor speed?
    - Can these servers be used to run ESXi or the management tools?
    - What are the NIC port speeds?
    - What type of storage is used? What is the performance characteristic? How much of the current disk is being used on each server?
    - What applications are running on each?
    - Why are there three phases? Is this due to the applications?
  - I/O Characteristics
    - What do the categories mean?
    - Do we have actual I/O metrics for each application?

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Scenario 1 Topology

- What to include
  - Management servers
  - Resource servers
  - Networking
  - Storage

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Troubleshooting Scenario

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VCDX
THE HIGHEST POSSIBLE LEVEL OF VMWARE CERTIFICATION

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CERTIFIED

DESIGN EXPERT

Home   Defence   Design   Troubleshoot

Troubleshooting Scenario

15:00

Start   Reset

VCDX-DV = 15 minutes
VCDX-Cloud, VCDX-DT = 30 minutes

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VCDX Troubleshooting Scenario – Format

Format

- Troubleshooting exercise **role play**
  - You will be given a problem scenario to troubleshoot
  - During the scenario, the panelists will pretend to be customers
  - The focus is on the journey to the solution, not the solution itself
    - Providing just an answer, with no rationale, is insufficient
    - Talk through the process
    - Think out-loud
  - Ask the "customer" questions to gather additional information for consideration

- Duration
  - VCDX-DV = 15 minutes total
  - VCDX-CMA, VCDX-DTM = 30 minutes total

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VCDX Troubleshooting Scenario – Tips

Sketch your ideas:
What does the scenario look like?

Think:
How do I normally troubleshoot an issue? Is the issue in the design, the implementation, or something else?

Do:
Show the different avenues you will take to get to the solution.
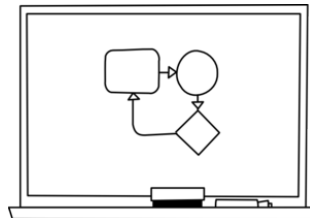
Don't:
I'm not sure what to do next. Am I on the right track?

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VCDX Troubleshooting Scenario – Sample

- The following slides consist of a sample troubleshooting scenario
  - Your actual troubleshooting scenario will be different
  - Not all information is automatically provided
    - You must ask questions
  - There may be multiple problem areas

- This will be a role play for attendees
  - You will participate as a VCDX candidate
  - We will ask you what you might think a VCDX panelist might do
  - You can ask questions on any aspect of the Troubleshooting Scenario

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Troubleshooting Process
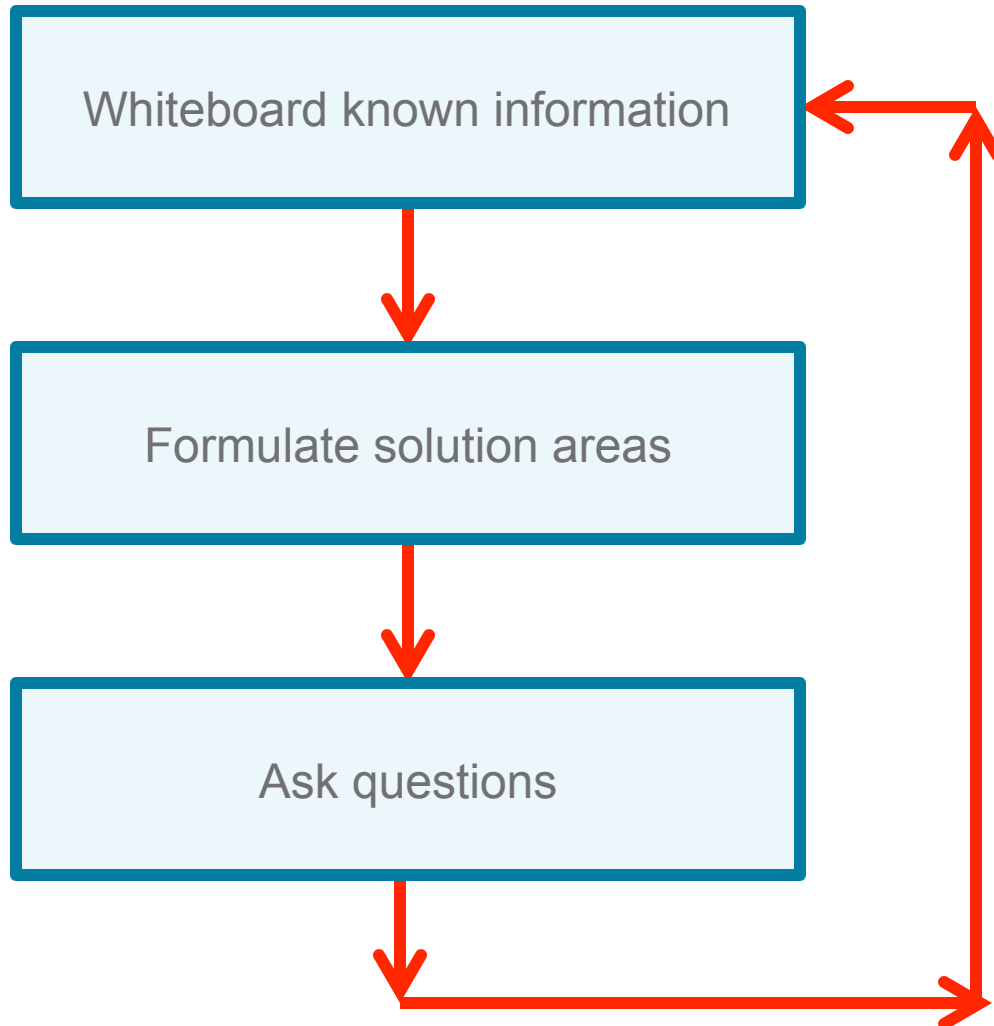
Troubleshooting Scenario #1

You have been asked to troubleshoot a recently built vSphere Proof-Of-Concept environment for a customer.

Reported Issues:
- The Microsoft Windows 2008 (64-bit) virtual machines on this particular ESX Server are hanging over a period of time.
  Some usergroups report loss of access to key applications.
- Access to the host will sometimes be non-responsive when connecting with a PuTTY SSH client.
- Virtual machines are experiencing sporadic slowness.

Configuration Details
- 100 virtual machines running on 5 ESX hosts (2 quad-core 2 GHz CPU, 64 GB RAM)
- The virtual machine's files are stored on a single LUN shared between hosts with a mixture of VMFS and RDM placement.
- 10 Gb backbone network; ESX hosts are redundantly connected to the production network.

Accompanying slide shows high-level diagram of the networking and storage layout.
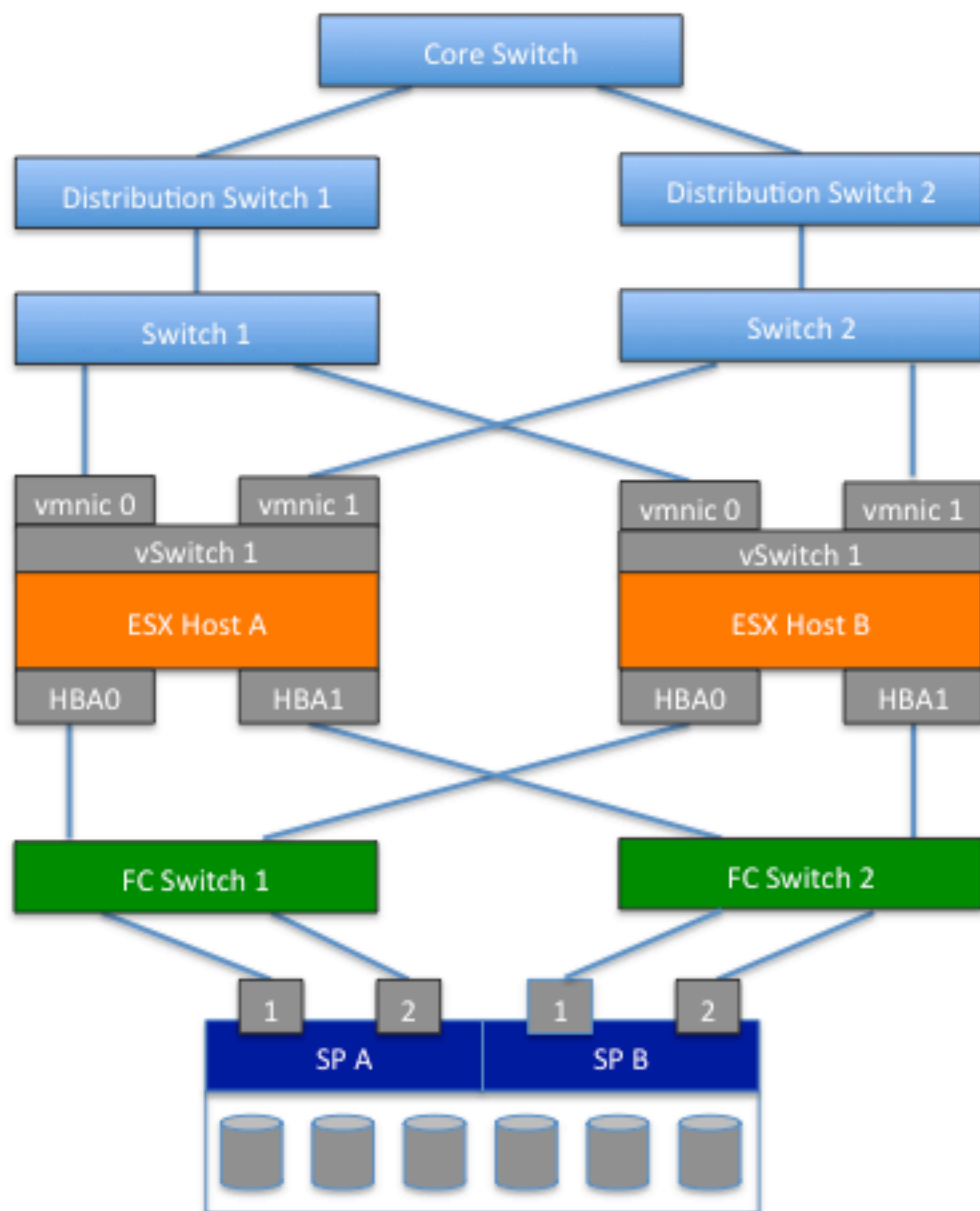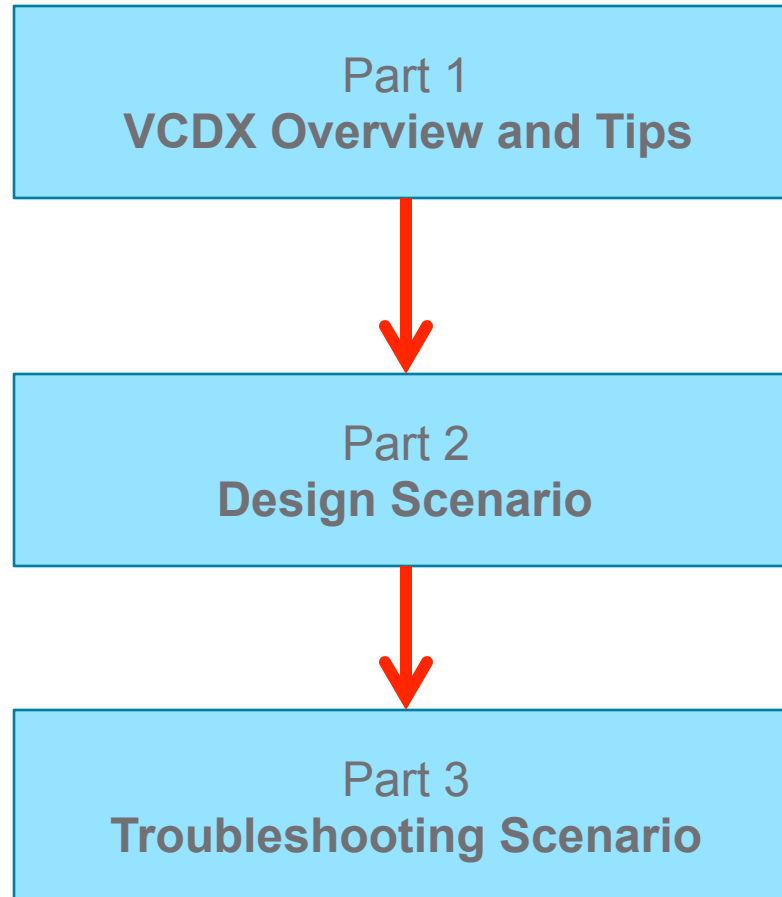
Scenario 1 Analysis

- Issues
  - One ESX server has virtual machines hanging over a period of time. Virtual machines are experiencing sporadic slowness (not easily repeatable).
    - **Candidate:** Can we try moving the VMs to another ESX server and see if the issue follows?
      - **Panelist:** Yes.
  - Users report loss of access to key applications.
    - **Candidate:** All applications or only applications running in the virtual machine?
      - **Panelist:** Only applications running in the virtual machine.
    - **Candidate:** All users or only some users?
      - **Panelist:** All users.
  - Access to the host using SSH is sometimes unresponsive.
    - **Candidate:** Are there times when this is more common?
      - **Panelist:** No. It is random.

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Scenario 1 Analysis

- Diagram
  - Candidate: I need to examine the diagram and see the connectivity between components. Is this the original configuration of the system?
    - Panelist: Yes this is the original configuration.
  - ~~Candidate: Has this problem occurred before? Have you opened a support ticket?~~
    - ~~Panelist: We have just started to notice this issue as we've expanded on the number of virtual machines? We have not opened a support ticket yet.~~
  - Candidate: Are there any warning or error messages shown?
    - Panelist: Where do I get that information? What log file?
  - Candidate: Please search the system log file for warning and error messages.
    - Panelist: I am showing LUN trespass messages
  - Candidate: Can we try having FC switch 1 move from SPA port 2 to SPB port 2 and FC switch 2 move from SPB port 2 to SPA port 2?
    - Panelist: Yes but we'll have to schedule downtime to test this out.

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Review & Next Steps

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Review

Part 1
VCDX Overview and Tips

Part 2
Design Scenario

Part 3
Troubleshooting Scenario

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Next Steps

- Select a design

- Prepare your design

- Prepare your application

- Prepare your presentation deck

- Run a mock defense

- Get into a study group

- Find a community mentor

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Next Steps – Your Presentation Deck

- Format is up to you

- K.I.S.S. – PPT 101
  - This is intended to be high level

- Sample Deck TOC
  - You
  - Project Overview
  - Requirements
  - Constraints
  - Assumptions
  - Risk Management
  - Compute
  - Storage
  - Networking
  - Etc, etc, etc

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Requirements

R001
  N+1 architecture at each location.

R002
  Infrastructure must be resilient to support frequent power outages and dependencies on alternative forms of energy such as solar, wind, and hydroelectric.

R003
  Provide details on cloud bursting methodology and process

Current Project

Develop a hybrid cloud solution for a service provider utilizing both local and remote resources. Local to minimize latency, and multiple geographically disparate datacenters to provide additional capacity and capabilities.

This includes villages in multiple countries across the Himalayan mountain range.

Vee M. Ware, Cloud Architect

Lead architect for hybrid cloud project, Bali Cloud Design Enterprises

B.S. Computer Science, SUNY at Buffalo, NY, 1999
M.S. Computer Science, Harvard, 2003

VMware Certifications: VCP-DV, VCAP-DCA, VCAP-DCD, VCDX-DV, VCAP-CIA, VCAP-CID, VCAP-CG
MSCE, Agile Scrum Master, PNP

VCDX Workshop

Thank you for attending!

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