

VMware Certified Design Expert – Data Center Virtualization 2021

1. The VCDX-DCV Certification	3
1.1 : Purpose and Structure of the Certification	3
1.2 : Intended Audience.....	4
2. The VCDX-DCV Application and Defense.....	5
2.1: Contents of Candidate Submission	5
2.2: Format and Structure of the Defense.....	6
2.3: How Objectives Relate to Components of the Design Defense	7
2.4: Languages	7
2.5: Time Limit.....	7
2.6: Scheduling a Defense	7
2.7: Retake Policies	7
2.8: Applicant Integrity.....	8
3. Objectives Covered in the VCDX-DCV Design Defense.....	8
3.1: Customer Requirements	8
3.2: Solution Architecture	9
3.3: Engineering Specifications	11
3.4: Implementation Guidance of Submitted Design	12
3.5: Risk Management	13
3.6: Technical Communication.....	13
3.7: Objectives Related to the Defense Session’s Interactive Exercises	13
4. VCDX Paths and Suggested Courses	14
4.1: VCDX-DCV Path Options.....	14

4.2: Suggested Courses.....	15
5. Additional Resources.....	15
5.1 : VCDX Community	15
5.2: Building a VMware vSphere Test Environment.....	15
5.3 : Defense Rehearsal.....	15

1. The VCDX-DCV Certification

1.1 : Purpose and Structure of the Certification

The VMware Certified Design Expert – Data Center Virtualization (VCDX-DCV) is an advanced certification developed for design architects of VMware enterprise deployments. The VMware Certified Design Expert program measures a candidate's ability to gather and interpret requirements, plan, create, document, and test an implementable design for a VMware technology-based data center infrastructure that meets customer objectives and constraints.

Achieving the VCDX-DCV certification requires prior completion of the following steps:

- Earning the current VMware Certified Professional – Data Center Virtualization (VCP-DCV) certification
- Earning the current VMware Certified Implementation Expert – Data Center Virtualization badge
- For upgraded VCIX badges from a previous version, the most current VMware Certified Advanced Professional – Data Center Virtualization Design (VCAP-DCV Design) certification is required

When all the prerequisites have been achieved, a candidate may submit an application that includes all the components detailed in the *VMware Certified Design Expert – Data Center Virtualization (VCDX-DCV) Handbook & Application*. After a brief sketch of the candidate's professional qualifications, the application provides an overview of a VMware vSphere®-based design and project that the candidate wishes to present and defend. The submitted project may be actual (in other words, it was built on behalf of a real design client), fictional, or a blend of actual and fictional elements.

The design you submit must be for an infrastructure:

- where business requirements drive design and implementation decisions
- that is suited for mission-critical applications
- is in a managed environment.

Full details on the application and submission policies and process are available at <http://vcdx.vmware.com/policies-and-procedures>.

Once submitted, the application will be reviewed by VMware design experts and current VCDX certified professionals. It may be rejected on any of the following grounds:

- The application form or the supporting documentation contains the work of others that is not explicitly marked as such and credit given.
- The submission is not detailed enough in describing design considerations, justifications and their impact. It should demonstrate the candidate's clear understanding of the deployment and operational implications of the virtual infrastructure design.
- Design documents submitted do not include the required documentation listed in the *Handbook & Application*. The application package must include all supporting documentation requested.
- The documentation is not consistent with the design.
- The application merely echoes published sample implementations, templates, and defaults, without demonstration of the candidate's design skills.
- The application proposes a defense of a design that is not robust or complex enough to demonstrate the breadth of knowledge and design skills required of the VCDX-DCV certified individual.
- Technical misunderstanding has led to a faulty design that will have significant and detrimental impact on the integrity of the deployed architecture.
- The application package is not delivered in the requested formats.
- The application package is not submitted on time.

If a candidate's VCDX-DCV application is accepted, he or she will be invited to appear before a panel of VCDX certified professionals and defend its contents.

The certification is granted not based on the submitted design, but rather on the knowledge, skills, and abilities of the candidate. The design and the design defense session are the tools by which the candidate's knowledge, skills, and abilities are evaluated.

1.2 : Intended Audience

The successful VCDX-DCV candidate holds primary responsibility for gathering and vetting customer requirements to create an architectural design consisting of virtual infrastructure, configuration recommendations and planning, and identification of deployment validation processes and procedures within the data center virtualization technical solution-track. The successful VCDX-DCV is able to create detailed documentation with a logical structure, can present and defend rationale for a solution, and understands all facets of the design.

The VCDX-DCV certification process specifically avoids making certain kinds of requirements:

- No specific number of years of experience in VMware vSphere-based virtual infrastructure design is required.
- Candidates are not required to be employed by particular types of companies.
- No specific higher-education requirement is made.
- No specific job role or job title is required.

Nevertheless, candidates will be at a distinct advantage if their day-to-day job role focuses on the VMware vSphere based designs of enterprise scale and complexity, with visibility into their implementation and the results obtained after those deployments go live. Candidates are responsible for developing appropriate hands-on skills related to architecture design.

2. The VCDX-DCV Application and Defense

2.1 : Contents of Candidate Submission

The VCDX-DCV application form requires project design and associated documentation. A completed application contains pointers into that documentation, calling reviewers' attention to particular contents. Candidates are encouraged to submit conceptual model diagrams, logical design diagrams, and physical design diagrams, as well as written documentation, using the formats specified in the *Handbook & Application*.

For purposes of the VCDX-DCV application process, the terms *conceptual design*, *logical design*, and *physical design* are defined as follows:

- Conceptual design: the mapping of client requirements to high-level design solution components
- Logical design: the interrelation of the high-level design solution components, omitting hardware details and physical layout
- Physical design: the physical components of the as-built solution and their physical connections, presented in a manner useful to installation personnel

There is no required minimum page or word count of an application. Common VCDX submissions by successful candidates have typically ranged between 100 and 300 pages, including the application form and all diagrams. Note that large quantities of material do not add to the chances of success. Being concise and deleting extraneous matter helps direct reviewers' focus to the parts of your application you deem most relevant. VMware reserves the right to require the resubmission of applications deemed to contain duplication, needless restatement or elaboration, or unreasonable quantities of related materials. If an application refers to external resources such as vendor whitepapers, include URLs for these documents rather than a copy of the document.

The typical submission of a successful candidate meets the criteria:

- It includes all items required by the VCDX-DCV application form.
- It contains sufficient documentation to cover the scope of the project it describes.
- It addresses all areas of the VCDX-DCV blueprint.

Clearly identify other contributors to your submitted design and describe the nature of their contribution. If material extracted from a template is included in the design, the candidate must identify the template and cite

its source. If the additional contributors are also submitting the design for the VCDX certification, you must declare the design as shared on the application, and all candidates must apply at the same time.

The submitted design does not stand alone. Candidates must display mastery of the materials during the defense session to receive passing scores.

2.2: Format and Structure of the Defense

Plan on the defense session's duration occupying the entirety of a morning or an afternoon, including check-in, setting up, and breaks. During this session, the candidate will be asked to perform the following tasks:

- Orally defend the submitted design (75 minutes)
 - Concisely explain the design and justify the decisions made to create it. (Plan on spending no more than 15 minutes on this part.)
 - Throughout the defense, respond to questions posed by panelists.
- Work through a design problem posed by the panelists, in the format of an oral discussion. (45 minutes)

These tasks are performed as separate timed sections of the defense with a short break in between them.

Candidates should prepare a PowerPoint presentation to use during the approximately first 15 minutes of the defense. The presentation should provide an executive summary of the design. Important diagrams from the design may be included in this presentation for quick reference during the defense. Do not attempt to reproduce every detail of the design in this presentation; focus on what is most relevant to the requirements, constraints, and assumptions underlying the design, as well as your design choices.

VMware does not disclose the precise mechanism by which the defense is scored. Instead, it offers the following guidance to candidates:

- Look for opportunities to display the thought process behind your design decisions.

Keep in mind the mapping between the client's requirements and the design and show the relationship during the defense.

- Look for opportunities to display your expert-level understanding

of VMware best practices, which includes both your understanding of why they are considered best practices and also when and why to contradict them.

2.3: How Objectives Relate to Components of the Design Defense

Section 3 of this document lists objectives for the design defense. They summarize what the defense exercise is intended to measure. These objectives are developed by subject-matter experts who all hold the VCDX credential and know the scope of and how to identify components of enterprise-scale vSphere design work.

In addition to the objectives listed in this document, candidates may be asked questions that relate to the objectives of the prerequisite certifications.

2.4: Languages

All defenses are conducted in English. Candidates should not assume any time extensions for non-native speakers of English.

2.5: Time Limit

The total time for the defense session, excluding breaks and other logistics such as check-in, will be 120 minutes.

2.6 : Scheduling a Defense

Candidates whose applications are accepted will be invited to work with VMware's certification team to select an opportunity to defend. VMware will publish a list of upcoming opportunities worldwide to defend at <http://vcdx.vmware.com/calendar>.

2.7: Retake Policies

If a candidate's application is rejected, it may be resubmitted. Payment of a new application fee will be required with resubmission.

If a candidate's defense is scored as not passing, he or she may reschedule for a future defense using the same design. He or she will not

need to go through the design review stage again, only the defense, if using the same design. Payment of a new defense fee will be required.

However, if the candidate wishes to use a different design, or significantly alter the design, then a new review and associated payment of the application fee will be required. VMware reserves the right to determine what is considered significant.

In either case, the candidate will be told generally which areas of his or her application or defense were insufficient. When resubmitting or rescheduling a second defense, the candidate must include a change log detailing any differences in the design and documentation from the original submission. VMware will not disclose the precise scoring of applications and defenses.

In no case may a candidate have multiple submissions under review at the same time.

2.8: Applicant Integrity

VMware reserves the right to refuse certifying a candidate who violates integrity policies. The following are considered breaches of integrity and are grounds for disqualification or revocation:

- Presenting others' work as your own or allowing the appearance of plagiarism to arise.
- After the defense, disclosing specific questions asked or exercises presented during the design session, whether orally, by email, Twitter, blogs, or any other form of communication.
- Submitting an application or attempting to present a defense under a false identity.
- Falsifying professional credentials.
- Other illegal or unethical practices of cheating, plagiarizing, or stealing the content or methods of the certification.

Before beginning the defense, candidates will have their government-issued photo ID checked.

3. Objectives Covered in the VCDX-DCV Design Defense

3.1 : Customer Requirements



- Ask probing questions to determine specific requirements and considerations, based on business objectives.
- Collect, sort, and validate customer requirements and constraints for Architecture through meetings with key stakeholders.
- Clarify any areas that might be ambiguous or prevent development of a complete design.
- Document and provide evidence of limited assumptions, including reasoning for its classification as an assumption rather than inclusion as a requirement or constraint.

Deliver highly available operation in compliance with SLAs, as measured by percent uptime of relevant components.

Manageability

- Manage the environment and maintain normal operations, including scalability, lifecycle management, and capacity management.

Performance

- Meet expectations or SLAs of responsiveness of components for the designed environment.

Recoverability

- Formulate how to restore components and service within acceptable data and component loss/downtime, from a significant unexpected incident that affects the environment.

Security

- Plan for overall data control, confidentiality, integrity, accessibility, governance, and risk management, often including the ability to demonstrate or achieve compliance with regulation.

3.2: Solution Architecture



- Develop and document a complete solution through architectural design that addresses customer requirements and constraints.
- Defend design decisions and be able to provide alternative options along with the relative merits and drawbacks of those options.
- Articulate solution to stakeholders demonstrating excellent communication skills.

Availability

- Design for the considerations and analysis of single points of failure (SPOFs), redundancy options, and accessibility
- Maps availability requirements to infrastructure design and documents risks and assumptions

Manageability

- Design for the considerations and analysis of monitoring, administration ease, maintenance, updates, scalability, and capacity planning
- Maps manageability requirements to infrastructure design and documents risks and assumptions

Performance

- Design for the considerations and analysis of demand patterns, potential bottlenecks, resource management, capacity planning, and workload balancing
- Maps performance requirements to infrastructure design and documents risks and assumption

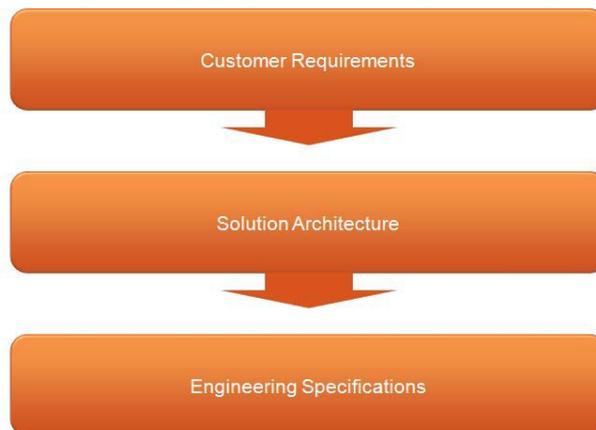
Recoverability

- Design for the considerations and analysis of potential data and component loss, acceptable downtime, and methods for restoring components and services
- Maps recoverability requirements to infrastructure design and documents risks and assumptions

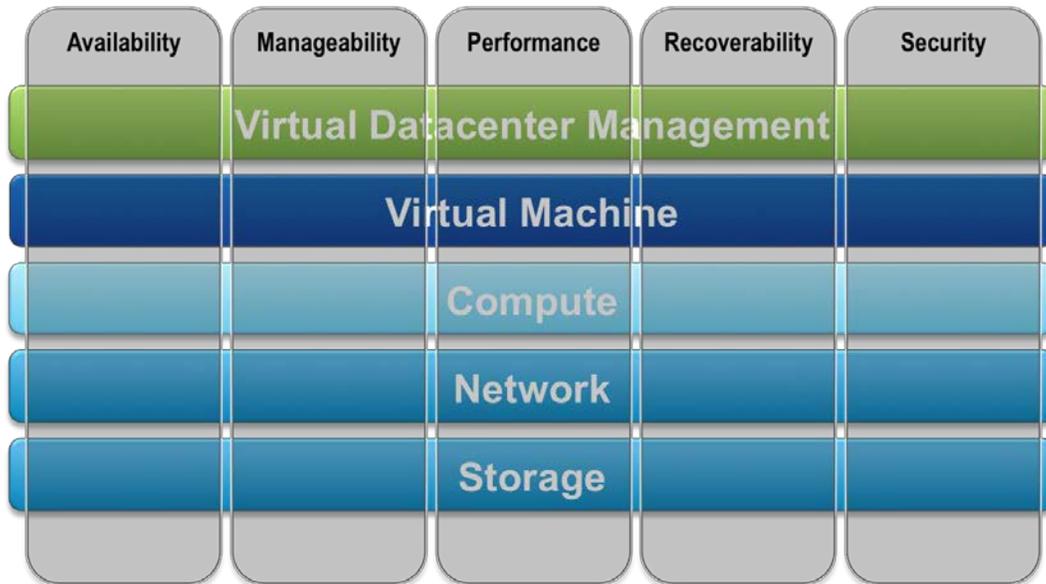
Security

- Design for the considerations and analysis of permissions, user roles, component access, network security, and monitoring
- Maps security requirements to infrastructure design and documents risks and assumptions

3.3: Engineering Specifications



- Formulate, document, and justify detailed design elements required to deploy and configure logical and physical components.
- Use the solution architecture to derive engineering specifications.



Virtual Data Center Management

- Specifies features and functions for managing and maintaining normal operations

Virtual Machines

- Specify sizing and configurations, taking into account workload policies on policies

Compute Resources

- Specify sizing and configurations for host and clusters

Network Resources

- Specify sizing and configurations for network resources

Storage Resources

- Specify sizing and configurations for storage resources

3.4 : Implementation Guidance of Submitted Design

- Create documentation and processes to implement the infrastructure as designed, validate that it was implemented correctly, and maintain and operate it post-implementation.

Implementation plan

- Supply a workable plan for implementing the solution as designed, validate that it was done correctly, and operate it going forward.

Installation guide

- Document installation procedures to implement the design as architected; detailed enough for a VCP to implement the design.

Operational procedures

- Document standard operational procedures for VCP-level personnel to operate and maintain the environment.

Test/validation plan

- Define and perform a test/validation plan that confirms the design functions as intended
- Provide guidance on expected results.

3.5 : Risk Management

- Identify and provide validated plans to mitigate risks inherent in the design.

Risk identification

- Determine and identify inhibitors to successful implementation, operation, and functionality of the design.
- Explain identified risks to business and technical audiences, along with options for avoidance or mitigation and the benefits and drawbacks for each.

Risk mitigation

- Document plans to address, mitigate, and/or eliminate risks in the design
- Provide thoughtful solutions to mitigate risk in the design.

Validation of risk management

- Validate that procedures for mitigating identified risks were successful.

3.6 : Technical Communication

- Succinctly and clearly explain design rationale via written, verbal, and visual communication.
- Receive and act upon constructive criticism and be able to adapt to change.
- Construct appropriate and relevant questions that garner information that is put into action.

3.7: Objectives Related to the Defense Session's Interactive Exercises

The presence of the defense session in the VCDX-DCV process reflects VMware's belief that VCDX-caliber architects are capable of explaining and defending their design choices. Architects are often required to do so in a format of the design client's choice, not their own. The format of the defense session is intended to provide a common, uniform challenge to candidates that simulates the various forms of defense a real design client might demand of an architect.

Design Judgment and Technique

Throughout the defense, show how selections were made among reasonable alternatives, as well as how the final design met requirements and constraints. Identify assumptions. If improper design decisions were made, explain why and how they could have been improved. If typical best practices were contravened, justify the decisions to do so.

Successful Interactive Design Exercise

Respond interactively to a presentation of requirements and constraints to show the ability to produce a design which satisfies a customer's needs.

For all the above objectives:

Knowledge and Skills

- o Determine the relevant information required to understand the current customer environment. Know what questions to ask.
- o Given a design requirement and data set within a multi-site environment, determine which components to include in a design.
- o Given results of requirement-gathering activities, identify the business requirements.
- o Given business requirements, analyze and determine the impact of the requirements on the design.
- o Succinctly and clearly explain design rationale.

4. VCDX Paths and Suggested Courses

4.1 : VCDX-DCV Path Options

All paths to VCDX-DCV, including upgrade paths, require achievement of, or upgrade to, VCPA6-DCV Design.

If you are:	Complete:			You will receive:
VCDX-DCV or Emeritus	Earn current VCAP-DCV Design			VCDX-DCV and removal of Emeritus status
VCDX5-DCV	Earn current VCAP-DCV Design			VCDX-DCV
VCDX in another track	Earn the prerequisite current VCAP-DCV Design and VCAP-DCV Deploy	Submit a successful VCDX- DCV application and design	Pass a VCDX-DCV remote one-hour defense	VCDX-DCV

4.2: Suggested Courses

No coursework is required for VCDX-DCV beyond those associated with its prerequisite credentials (VCP-DCV, VCAP-DCV Design and VCAP-DCV Deploy). See those programs for course suggestions.

5. Additional Resources

5.1 : VCDX Community

VMware provides an online community for VCDX candidates. This community contains valuable information from other candidates and existing VCDX personnel.

The community is located at:

<http://communities.vmware.com/community/vmtn/certedu/certification/vcdx/>

5.2: Building a VMware vSphere Test Environment

All VMware products, including VMware vSphere 6.x, can be downloaded and evaluated for approximately 60 days. If you have the equipment to install a copy of ESXi 6.x, you can install ESXi in a VM. This would allow you to install multiple copies of ESXi and a copy of vCenter Server. For shared storage, you may use the vSphere Storage Appliance or download a virtual appliance that contains an iSCSI target. Several of these are available on the [appliance marketplace](#).

5.3: Defense Rehearsal

Candidates who are invited to defend should rehearse before their appearance. Here are guidelines for making this rehearsal most effective.

- Make your presentation to an audience of people who understand

VMware technology and design processes.

- Require that your audience read your submission before the session.
- Encourage audience members to ask questions at any time during your presentation.
- Encourage audience members to demand justification of why important decisions were made.
- Have a whiteboard at your disposal and make frequent use of it. You can also direct audience members to look at particular pages in your submission.
- Manage your time. Enforce a strict 75 minute time limit.
- All discussion should be in English.

Exam Content Contributors

Doug Baer
Mark Gabryjelski
Joseph Griffiths
Matt Kozloski
Mohan Potheri
Jean-Francois Richard
Joe Silvagi
Harold Simon
Christian Stijbos
Matt Vandenberg



VMware, Inc. 3401 Hillview Avenue Palo Alto CA 94304 USA Tel 877-486-9273 Fax 650-427-5001 www.vmware.com
© 2021 VMware, Inc. All rights reserved. The product or workshop materials is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at <http://www.vmware.com/download/patents.html>. VMware is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies.

VMware warrants that it will perform these workshop services in a reasonable manner using generally accepted industry standards and practices. THE EXPRESS WARRANTY SET FORTH IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE SERVICES AND DELIVERABLES PROVIDED BY VMWARE, OR AS TO THE RESULTS WHICH MAY BE OBTAINED THEREFROM. VMWARE WILL NOT BE LIABLE FOR ANY THIRD-PARTY SERVICES OR PRODUCTS IDENTIFIED OR REFERRED TO CUSTOMER. All materials provided in this workshop are copyrighted by VMware ("Workshop Materials"). VMware grants the customer of this workshop a license to use and make reasonable copies of any Workshop Materials strictly for the purpose of facilitating such company's internal understanding, utilization and operation of its licensed VMware product(s). Except as set forth expressly in the sentence above, there is no transfer of any intellectual property rights or any other license granted under the terms of this workshop. If you are located in the United States, the VMware contracting entity for the service will be VMware, Inc., and if outside of the United States, the VMware contracting entity will be VMware International Limited.