vmware EDUCATION SERVICES

VMware Certified Design Expert – DTM

Design Defense Blueprint

VCDX-DTM

Design Defense Blueprint Version 1.4

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Disclaimer:

This blueprint is intended to provide information about the objectives covered by the VMware Certified Design Expert – DTM design defense exercise and related resources. The material contained within this blueprint is not intended to guarantee that a passing score will be achieved on the design defense exercise. VMware recommends that a candidate thoroughly understand the objectives indicated in this guide and utilize the resources and courses recommended in this guide where needed to gain that understanding.

Blueprint Author:

Mark D. Brunstad

Contributors:

Simon Long

Cabot Harrington

Matthew Mabis

Bryan Salek

Jack McMichael

Tommy Walker

Linus Bourque

Chuck Hirstius

Gourav Bhardwaj

Andre Leibovici

Stephane Asselin

Justin Venezia

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1. The VCDX-DTM Certification

1.1: Purpose and Structure of the Certification

The VMware Certified Design Expert – DTM is an advanced certification developed for architects of VMware Horizon Suite® solutions. The VCDX-DTM program measures a candidate's ability to design, implement, document, and test scalable, complex, Desktop Virtualization and Mobile Computing® environments that meet specific customer business objectives.

In his or her typical job role, the successful VCDX-DTM candidate holds primary responsibility for the architectural design of VMware View® or VMware Horizon View® solutions including configuration recommendations, integration of third-party components, implementation planning, and deployment validation processes and procedures.

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

- Attainment of the VMware Certified Advanced Professional – Desktop Administration (VCAP-DTA) certification
- Attainment of the VMware Certified Advanced Professional – Desktop Design (VCAP-DTD) certification

(*Requirements for current VCDX holders are detailed in section 4.2 of this guide.)

A candidate must achieve a VCP level certification before registering for the VCAP-DTA Exam or the VCAP-DTD Exam. Candidates can choose to take either the VCAP-DTA Exam or the VCAP-DTD Exam first.

When all these prerequisites have been achieved, a candidate may submit an application, as detailed in the *VMware Certified Design Expert – DTM (VCDX-DTM) Handbook & Application available at* www.vmware.com/go/vcdxdesktop . After a brief sketch of the candidate's professional qualifications, the application provides an overview of a VMware View®-based or VMware Horizon View®-based design 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), or a blend of actual and fictional elements. Note the language from the *Handbook & Application* on what type of design project is appropriate:

The design you submit must be for a VMware View-based or VMware Horizon View-based infrastructure…

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

Full details on the application-submission process are presented in the *Handbook & Application*.

Once submitted, the application will be reviewed by VMware design experts. 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.
- 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 VMware View-based or VMware Horizon View-based 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 presented.
- 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-DTM 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-DTM application is accepted, he or she will be invited to appear before a panel of other VCDX-DTM holders and defend its contents.

The certification is granted, not on the basis of 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

Note this description of the candidate, excerpted from the *Handbook & Application*:

In his or her typical job role, the successful VCDX-DTM candidate holds primary responsibility for the architectural design of VMware View® or VMware Horizon View® solutions including configuration recommendations, integration of third-party components, implementation planning, and deployment validation processes and procedures.

The VCDX-DTM certification process specifically avoids making certain kinds of requirements.

- No specific number of years of experience in VMware View or VMware Horizon View solution 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 VMware View-based or VMware Horizon View-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-DTM Application and Defense

2.1: Contents of Candidate Submission

The VCDX-DTM application form requires the attachment of design documentation on its associated project. 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-DTM application process, *conceptual design*, *logical design*, and *physical design* are defined as follows:

- Conceptual model: the mapping of design-client requirements to high-level solution components
- Logical design: the interrelation of the high-level 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 count or word count of an application. In the past, VCDX submissions by successful candidates have typically ranged between 100 and 300 pages, including the application form itself and all diagrams.

The typical submission of a successful candidate meets these criteria:

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

Candidates do not necessarily serve their own interests by submitting large quantities of material. Being concise and deleting extraneous matter help to 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 tangentially related materials. If an application refers to external resources such as vendor whitepapers, URLs for these documents rather than the documents themselves should be included in the submission.

The VCDX-DTM application form requires that other contributors to the submitted design be clearly identified, and the nature of their contribution explained. If material extracted from a template is included in the design, the candidate must identify that template as a contributor and cite its source. If the additional contributors are also submitting the design for consideration of the VCDX certification, you must declare the design is shared on the application.

The submitted design itself does not stand alone. Candidates who, during the defense session, fail to display mastery of the materials in the submission will not receive full marks.

2.2: Format and Structure of the Design Defense

Candidates should assume that the defense session's duration will occupy the entirety of a morning or an afternoon. 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 in this subsection.)
  - Throughout the 75 minute 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.

Candidates should prepare a short PowerPoint presentation for approximately the first 15 minutes of the defense that provides an executive summary of the design. Important diagrams from the design may be included in this presentation for quick reference. 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 design-client's requirements and the presented design, and show their interrelation 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 to contravene 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, including but not limited to VCDX-certified personnel, to identify components of enterprise-scale VMware View or VMware Horizon View solution design work.

In addition to the objectives listed in this document, candidates may be asked questions that relate to the objectives of VCDX-DTM's 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, 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 after a certain interval. This interval will vary depending on the deficiencies of the application and is at VMware's sole discretion. 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 opportunity to defend. Payment of a new defense fee will be required.

In either case, the candidate will be told generally which areas of his or her application or defense were insufficient. 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. All 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.
- Disclosing specific questions asked or exercises presented during the design session, whether orally, by email, Twitter, blogs, or any other form of dissemination.
- Submitting an application or attempting to present a defense under a false identity.
- Falsifying professional credentials.

Immediately before beginning their defenses, candidates will have their photo taken and a government-issued photo ID checked.

3. Objectives Covered in the VCDX-DTM Design Defense

3.1: Customer Requirements

Collect the customer requirements, constraints, and assumptions; map them into one or more infrastructure design qualities: availability, manageability, performance, recoverability, and security. These qualities are defined as follows:

Availability

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

Manageability

Requirements for ease of managing the environment and maintaining normal operations. Sub-qualities may include scalability and flexibility.

Performance

Required standards of responsiveness of components of the designed environment.

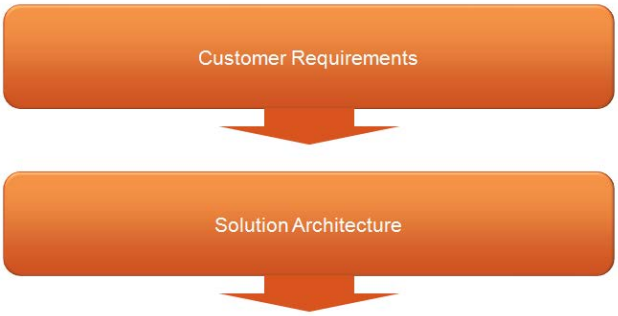
Recoverability

Requirements for the ability to recover from an unexpected incident that affects the availability of an environment.

Security

Requirements 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



Build relationship models among the design entities to create solutions based on the mapping of requirements, constraints, and assumptions to the following infrastructure design qualities.

Availability

Includes but not limited to considerations and analysis of

- single points of failure (SPOFs)
- redundancy options
- accessibility

Manageability

Includes but not limited to considerations and analysis of

- monitoring
- administration ease
- maintenance
- updates
- scalability and capacity planning

Performance

Includes but not limited to considerations and analysis of

- demand patterns
- potential bottlenecks
- resource management
- capacity planning
- workload balancing

Recoverability

Includes but not limited to considerations and analysis of

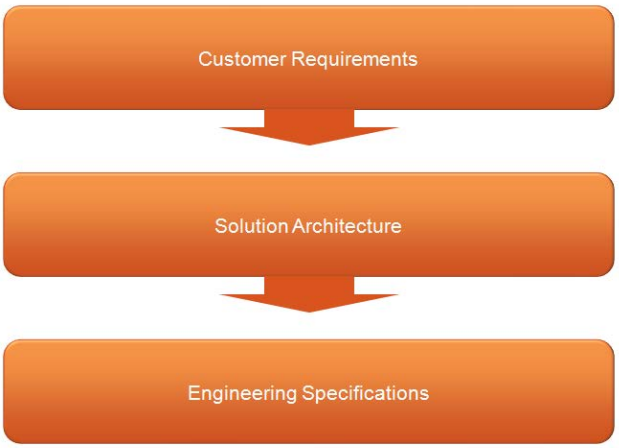
- potential data and component loss
- acceptable downtime
- methods for restoring components and service

Security

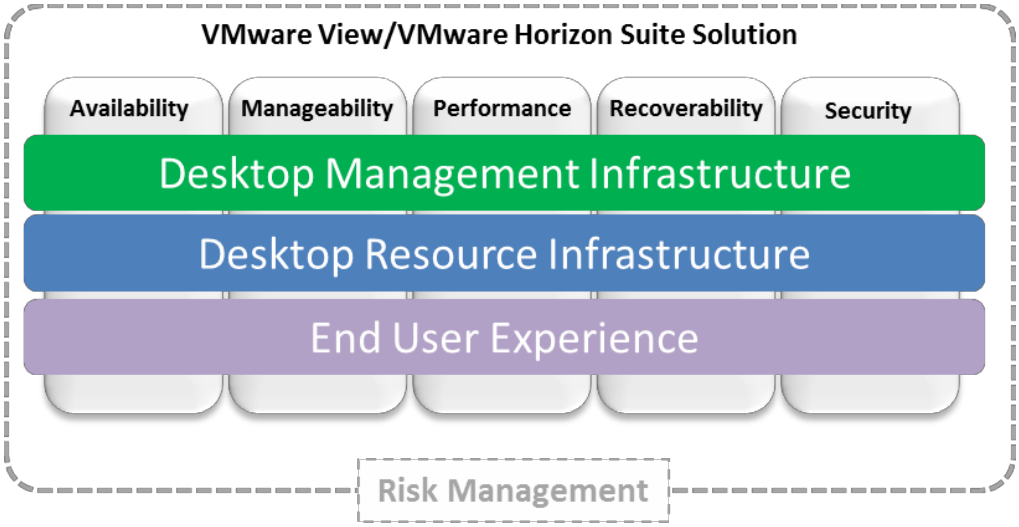
Includes but not limited to considerations and analysis of

- permissions
- user roles
- component access
- network security
- monitoring

3.3: Engineering Specifications



Propose detailed specifications for the technology stack, showing the components' mapping to the entities in the logical design. Some examples are listed below; they are for illustrative purposes only. This list is not intended to be exhaustive.



Desktop Management Infrastructure Details

Desktop Management Components

- VMware View/VMware Horizon Suite component sizing and configuration (e.g., VMware View, VMware Horizon View, VMware® Horizon Mirage™, VMware® Horizon Workspace™, VMware® vCenter™ Operations Manager™ for Horizon View, vCenter) as well as tools and procedures used for maintaining normal operations

Compute Layer

- management component sizing, specifications, and configurations supporting business requirements for managing the environment
- continuity features and configurations (e.g., vCenter Heartbeat, HA) supporting availability requirements for the management components

Network Layer

- network segmentation rationale and configuration details
- network features/configurations supporting management workload continuity, security, and availability requirements
- network characteristics (e.g., latency, throughput) supporting performance requirements

Storage Layer

- sizing and technical specifications supporting performance, capacity, resiliency, and security requirements of the design's management components

Desktop Resource Infrastructure Details

Compute Resources

- vSphere (vCenter, ESXi, and VM) configuration details and resources supporting desktop and/or mobile workload requirements

Network Resources

- configuration of physical and virtual components supporting desktop and mobile networking resiliency, continuity, availability, and security requirements
- characteristics (e.g., latency, throughput) supporting desktop and mobile network performance requirements

Storage Resources

- sizing and technical specifications supporting performance, capacity, resiliency, and security requirements of the design's desktop and mobile workloads

End User Experience Infrastructure Details

Endpoint Devices

- selection, configuration, performance, integration, security, and management of desktop and mobile endpoint devices

Peripherals

- selection, configuration, performance, integration, compatibility, security, and management of peripheral devices (e.g., printers, scanners, smart cards, audio)

Application Integration

- integration, delivery, resiliency, and lifecycle management of applications used in the solution

Profile Management

- profile management strategy supporting, security, SLA, and end user experience requirements

3.4: Implementation Guidance of Submitted Design

The requirement that implementation guidance be included in VCDX-Cloud design submissions reflects VMware's belief that VCDX-caliber enterprise architects are aware of, and respond to, the challenges of documenting, deploying and managing their designs.

Implementation plan

Create a workable plan for moving from hardware and software components to a deployed system that could be handed off to other personnel.

Installation guide

Define installation procedures for use by other personnel.

Operational procedures

Define routine operational procedures for use by other personnel.

Test/validation plan

Define a test/validation plan that confirms the customer's requirements were met.

3.5: Risk Management

The requirement that risk management guidance be included in VCDX-Cloud design submissions reflects VMware's belief that VCDX-caliber enterprise architects should identify and provide plans to mitigate risks inherent in their designs.

Risk identification

Identify inhibitors to successful implementation and operation of the architecture as designed.

Risk mitigation (planning)

Provide solutions to address, mitigate, and/or eliminate risks in the design.

Validation of risk management

Provide procedures for mitigating and or/resolving identified risks.

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

The presence of the defense session in the VCDX-Cloud process reflects VMware's belief that VCDX-caliber enterprise architects are capable of explaining and defending their design choices. Enterprise 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, as outlined in this document, 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

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

4. VCDX Paths and Suggested Courses

4.1: VCDX-DTM Path Options for Non-VCDX Certified Candidates

IF YOU ARE...	FIRST STEP	NEXT STEP	CERTIFICATION
Both VCAP-DTA and VCAP-DTD certified	Submit a successful VCDX-Desktop application and design	Defend your design before a VCDX panel	VCDX-Desktop
VCDX5-DCV or VCDX-Cloud certified	Earn VCAP-DTA and VCAP-DTD certifications	Submit a successful VCDX-Desktop application and design	VCDX-Desktop

While VCDX5-DCV or VCDX-Cloud certified candidates must submit a successful VCDX-Desktop application, they do not have to defend the design in front of a panel. VCDX5 has been renamed VCDX5-DCV (VMware Certified Design Expert 5 – Data Center Virtualization). Certification requirements are subject to change and may not be retroactive to previous versions. Please regularly check vmware.com/certification for updates.

The VCAP5-DCD Exam can be taken before or after the VCAP5-DCA Exam.

4.2: VCDX-DTM Path Options for VCDX Certified Candidates

VCDX3 and VCDX4-DCV holders must first upgrade to VCDX5-DCV to be eligible for VCDX-DTM application submission and certification. Current VCDX5-DCV holders in good standing are granted VCDX-DTM certification on achievement of the prerequisite VCAP certifications and acceptance of their VCDX-DTM application. A second in-person defense is not required, though there is a required 1-hour interview with panelists.

4.3: Suggested Courses

No coursework is required for VCDX5-DTM beyond those associated with its prerequisite certifications. 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, and is moderated by VMware certification staff.

The community is located at: http://communities.vmware.com/community/vmtn/certedu/certification/vcdx/

5.2: Building a VMware vCloud Test Environment

All VMware products, including vCloud Director, vRealize, and vSphere, can be downloaded and evaluated for 60 days. If you have the equipment to install a copy of ESXi 5.x, you can install ESXi in a VM. This would allow you to install multiple copies of ESXi and a copy of vCenter Server, followed by vCD and related components. For shared storage, obtain 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.