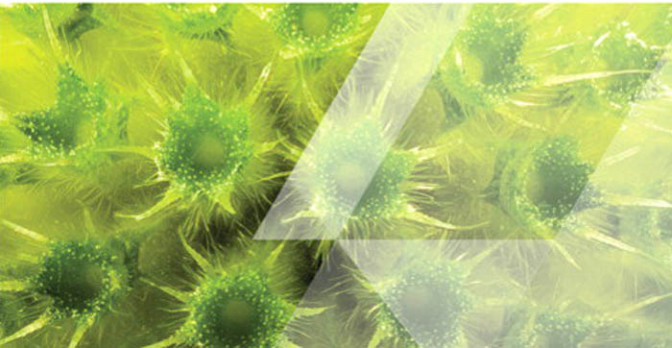




VCDX Boot Camp

Preparing for the
VCDX Panel Defense

John Arrasjid, VCDX 001
Ben Lin, VCDX 045
Mostafa Khalil, VCDX 002



VCDX Boot Camp

**Preparing for the
VCDX Panel Defense**

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Preparing for the VCDX Panel Defense

John Yani Arrasjid, Ben Lin, Mostafa Khalil

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*To Amy, Catherine, Sofi, Lila, Mom, and Dad, who have supported all my projects
and helped put a balance between life and work. I love you.*

—John Yani Arrasjid

To Mom and Dad

—Ben Lin

To my wife and best friend, Gloria, for her unconditional love

—Mostafa Khalil

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Foreword

In my role as VMware's Chief Technology Officer for more than 11 years, I see education as important throughout one's life, especially in advancing one's career. I had the pleasure of attending Stanford University in the early 1990s. There, I met the founders of VMware and worked on a project that would become the foundation of our company. This education-centric environment was the perfect petri dish for the growth of this amazing company. Such environments require you to step back and gain perspective before jumping into something new. They also provide a burst of can-do spirit that helps you take on problems that might otherwise be far too daunting. This combination of education and confidence helped launch our company. That same great combination is present in the VMware Certified Design Expert (VCDX) program.

I'd like to welcome you to this enablement tool that teaches the VMware Architecture Design principles and methods embodied in the VCDX program. These same principals and methods were used in developing the industry-recognized vCloud Architecture Toolkit (vCAT) to enable architects, administrators, and consumers of Cloud to realize the full potential of this revolutionary technology. For this reason, VCDX holders are considered a hot commodity; they are recognized as thought leaders in a dynamic industry with almost unlimited growth potential. Joining this elite group is a journey that does not end with achieving the certification. It requires continuous education, the ability to learn from your experiences, and a structured approach to addressing customer needs in your designs. It is not easy to become a VCDX, but it is certainly easier if you have a mentor—or, better yet, three—to help you begin the journey.

Having worked with John and Mostafa for more than 10 years, I trust that their guidance will absolutely meet your high expectations. I've been watching John play in Elastic Sky, VMware's house band, since 2004, including when the band opened for Foreigner, INXS, the Killers, and John Bon Jovi. Mostafa I've also known for a long time: He was one of our very early employees and is an industry-recognized storage expert in virtualization; his signature is on an I-beam in our corporate Promontory building complex. Ben continues to actively work on cloud solutions as a Cloud Specialist. I have supported the work that he, John, and Mostafa have done both inside and outside VMware.

John started development work on the VCDX Boot Camp back in 2008. At the same time, he started the VCDX tips series on Twitter, which thousands of aspiring virtualization architects follow. The VCDX boot camps and the VCDX tips were so successful that readers asked for a compendium of these tips, to help peel back the curtain of mystery that seems to surround the certification. In this book, John, Ben, and Mostafa have worked to cover the important details that can help you successfully develop designs as you work toward the ultimate goal of achieving VCDX.

The VMware Certification Program began early in the history of VMware, when x86 virtualization was revolutionary and the program focused on our original Workstation, GSX, and ESX products. Because the technology was new, there was a requirement to educate end users and practitioners and to validate expertise to employers and customers. Since that time, VMware has continued to grow and innovate. The company has revolutionized End User Computing and introduced the world to Cloud and the Software-Defined Data Center. The certification program has evolved and now includes the Professional (VCP), Advanced Professional (VCAP), and Expert (VCDX) levels, each with several areas of specialization.

VCDX now covers data center virtualization with VCDX-DCV, desktop with VCDX-DT, and cloud computing with VCDX-Cloud. This supports the specialized architecture design skills required to serve the growing needs of our customers (internal, external, big business, small business), partners, and internal teams.

The team has provided a history of the program, best practices and tips for success, and actual scenarios that you can use in running your own boot camps, study sessions, or mock defenses. In your daily work life, you can reference this book to help you take a VCDX-style approach for design success. This book will help you understand this highly sought-after certification with supporting material to help improve your scoring potential. It provides details that remove some of the mysteries and mystique behind the program, including the in-person design defense. If you are a VCP- or VCAP-certified individual, you can learn more about the practices VCDX holders use in developing robust, complex, computing environments with VMware and related technologies.

The VCDX program is now in its sixth year. It differentiates individuals by requiring them to prove certain skills in front of a panel of VCDX, in much the same way a Master's or PhD defense is done. The process demands significant time and effort, but everyone can benefit from going through it. As I've said to VMware employees, the VCDX is VMware's PhD equivalent.

I believe that success in developing technology, services, and solutions and using these in customer solutions requires a solid base of expert-level architecture skills, with VCDX at the top. The benefits to an architect might appear obvious, but others who learn the VCDX design method also reap benefits. This can include understanding how to review designs others have created.

It's been an amazing ride at VMware for so many reasons, including the great products, legendary customer success stories, and a whole new partner ecosystem around virtualization. But the reason I've enjoyed the ride the most has been my fellow employees and their amazing work. You'll be hard-pressed to find anyone who exemplifies the VMware spirit

like John, Mostafa, and Ben. Guys, congratulations on a great book, and I'll be looking forward to seeing you in action again at VMworld. And to all the readers, I wish you the best on your journey as an architect!

Dr. Stephen Herrod, PhD
General Catalyst, Managing Director
March 2013

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Introduction

A journey of a thousand miles begins with a single step.

—Lao-Tzu

Attaining VMware Certified Design Expert (VCDX) certification can seem like a daunting proposition. Numerous exams are required. Hours are consumed preparing a comprehensive application package. The final step is an oral interview that has unnerved even the most experienced architects.

Anyone with the desire to improve and develop certain skills is well on the path toward VCDX. The amount of time invested in the process varies based on your current experience and skills. The journey may seem long and arduous, but it is because this accreditation represents the pinnacle of VMware certification. That alone provides much of the incentive and allure.

Initially, the clandestine nature of the process enhanced the appeal. This wasn't intentional—just a by-product of a radically new advanced certification. The void was partially filled by bloggers, followed by a proactive approach towards eliminating confusion through increased transparency. This book further demystifies the process and provides a systematic approach.

Embarking on the path yields benefits even if the end result does not include attainment of expert certification. The path is time consuming and challenging, but the entire process is a tremendous learning experience. For many people, achieving the highest certification is the starting point, not the culmination, of a longer journey toward mastering technology architecture and greater things to come.

The points made in this book are common, and you may have already considered them to some degree. The intent is not to provide cookie-cutter instruction manuals, which only stifle creativity. Instead, we share insight and perspective based on prior experiences, to structure and guide your approach. That said, reading a book on architecture does not make one an architect. There is no substitute for real-world experience.

Years of design experience and mastery of enterprise architecture are not needed to make the attempt. It's largely about gaining experience—the *right* experience—and learning from those who have come before you. This book aims to put you on the right trajectory.

Will you take on the challenge? Your journey begins now.

Who Should Read This Book

VCDX certification is for virtualization architects and has demonstrated a large value proposition. With the expansion, we now have certifications covering data center virtualization (VCDX-DCV), cloud (VCDX-Cloud), and desktop (VCDX-DT) technologies. If you are currently working with VMware technologies and solutions as an architect, any one of these could be a valuable certification for you. This book helps peel back the curtain and removes the mystery behind both the VCDX program and the recommendations for success in the Panel Defense.

Goals and Methods

The primary goal of this book is to increase the number of VCDX individuals supporting VMware solutions.

To aid you in gaining the knowledge and understanding of success criteria, this book includes the following components:

- **Prerequisites:** This component defines what is needed to reach the Panel Defense. It includes the prerequisites and the recommended steps for completing them. It also provides suggestions on selecting and developing a design and completing the application process.
- **The Defense:** This component describes what is included in the defense, the timelines, and selected methods for preparation. It covers all three areas of defending your design and conducting the design and troubleshooting scenarios.
- **The Design Scenario:** Chapter 6 “The Design Scenario,” includes recommendations for conducting the design scenario. It provides four sample design scenarios, with analysis, to help you understand what is expected of a candidate in architecting a solution.
- **The Troubleshooting Scenario:** Chapter 7 “The Troubleshooting Scenario,” includes recommendations for conducting the troubleshooting scenario. It provides four design scenarios, with analysis, to help you understand the skills and approach required of a candidate in troubleshooting a problem from an architect perspective.

How to Use This Book

This book was written in the order that the authors believe is best for learning about the program, preparing for the defense, and conducting the defense. If you are familiar with the VCDX program, you can skip to select chapters as needed. If you are new to the program, we recommend that you read the book cover to cover. This book enables you to target specific areas to which you want to devote additional time or attention. It provides

the flexibility to move among chapters as you work on the different areas on which candidates are evaluated. The sections are also designed to support you in conducting a mock defense, a boot camp, or a study session with others.

The core chapters, Chapters 1 through 7, cover the following topics:

- **Chapter 1, “Certification Overview.”** This chapter focuses on the certification program and the history behind the development of the VCDX program.
- **Chapter 2, “Preparation.”** This chapter focuses on the required steps in preparing for your defense. It also provides recommendations for running your own boot camp or study group.
- **Chapter 3, “The Design.”** This chapter focuses on selecting and creating a design, embellishing the content with design decisions and design patterns to support the VCDX Blueprint. It helps you understand all aspects within the design and other supporting documents.
- **Chapter 4, “Defense Overview.”** This chapter focuses on what is involved in the panel defense. It provides a recommended approach for each of the three parts of the defense.
- **Chapter 5, “Design Defense.”** This chapter focuses on the details in the first part of the defense. It includes tips for developing your presentation and responding to panelist questions.
- **Chapter 6, “The Design Scenario.”** This chapter focuses on the progression of the design scenario. It provides details on how to work through the session for this section and achieve maximum scoring opportunities. The chapter includes four example design scenarios, covering VCDX-DCV, VCDX-Cloud, and VCDX-DT.
- **Chapter 7, “The Troubleshooting Scenario.”** This chapter focuses on the progression of the troubleshooting scenario. It provides details on how to work through the session provided for this section and achieve maximum scoring opportunities. The chapter includes four example troubleshooting scenarios, covering VCDX-DCV, VCDX-Cloud, and VCDX-DT.

Preparation is essential—do not rush the process. Allocate sufficient time to complete and submit a solid design that meets the VCDX Blueprint guidelines. For defense schedules and additional program details, check out the VMware Certified Design Expert site at <http://www.vmware.com/go/vcdx>.

The VCDX Panel Defense and This Book

The material included in this book comes from five years of conducting panel defenses. This book includes additional quotes and insights from other VCDXs who wanted to share their unique experience.

Book Content Updates and Bonus Material

VMware Press will periodically post additional content on the web page associated with this book, at <http://www.pearsonitcertification.com/title/9780321910592>. We also recommend that you periodically check this page on the Pearson IT Certification website to view any errata or supporting book files that are available.

About the Authors



John Y. Arrasjid, VCDX-001, is a Principal Architect at VMware, leading development of VMware Validated Architectures. He has been with VMware since 2003. He developed IP and software for his first six years as a Consulting Architect and currently does so as a Principal Architect, VMware Ambassador, and vExpert. John regularly speaks at VMware conferences and related workshops and industry events, including VMworld, VMware Partner Exchange, VMware vForum, VMware User Groups (VMUG), and the USENIX LISA conference.

John has been the lead architect and chief product owner for the VMware vCloud Architecture Toolkit (vCAT) since 2011. The latest release of vCAT 3.1 will be released through VMware Press in printed format; the online electronic version is accessible for free at <http://www.vmware.com/go/vcat>.

John's publications include three books in the USENIX Association Short Topics in System Administration series: *Deploying the VMware Infrastructure*, *Foundation for Cloud Computing with VMware vSphere 4*, and *Cloud Computing with VMware vCloud Director*.

During his past ten years at VMware, John has developed multiple consulting engagement materials and conference tutorials that focus on security, performance, and availability of virtualized and cloud infrastructures. John's earlier work at VMware included development of free backup (vmsnap) and recovery (vmres) tools for VMs using snapshot technology.

John participated in the initial development of the VCDX program and continues his support with online and onsite workshops (VCDX Tips, VCDX Boot Camp, #vBrownbag Boot Camp Live Online) and this book.

John is a member of the USENIX Association (and LISA SIG), where he serves as vice president of the Board of Directors. He can be followed on Twitter as @vcdx001 and can be seen playing guitar and ukulele with the VMware Elastic Sky band and at The Strawberry Music Festival.



Ben Lin, VCDX-045, is currently a Global Cloud Specialist and has been with VMware since 2008. He holds VCDX3/4/5 certifications and actively participates in VCDX panels and development activities. Ben graduated from the University of California, Berkeley with a Bachelor of Science in Electrical Engineering and Computer Sciences.

Ben coauthored the book *Cloud Computing with VMware vCloud Director* and was closely involved with cloud designs and deployments since the inception of vCloud Director. He works with global customers in the Americas, providing thought leadership and expertise in designing cloud solutions.

Ben has been a lead architect for the VMware vCloud Architecture Toolkit (vCAT) and has created numerous reference architectures, service kits, and whitepapers used by field and partners worldwide. He regularly presents at conferences such as VMworld, VMworld Europe, Partner Exchange, LISA, HotCloud, and vForum. Follow him on Twitter at @blin23.



Mostafa Khalil, VCDX-002, is a Technical Support Director on the Global Support Services team. He has been with VMware since 1999, at the top of the escalation ladder in support.

Mostafa specializes in storage-related technologies and holds VCDX3/4/5 certifications. He has published the book *Storage Implementation in vSphere 5.0, Technology Deep Dive*.

Mostafa regularly speaks at VMware conferences and workshops (VMworld and Partner Exchange) and other industry events. Follow him on Twitter at @mostafaVMW.

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Doug's 19 years in IT span a variety of roles and industries. His job responsibilities have included design, implementation, and operation of directory services, network and storage infrastructure solutions, training and lab management, and system administration. Doug has a Bachelor of Science in Computer Science from the University of Arizona and holds several top-level industry certifications, including VMware Certified Design Expert (VCDX) and HP's Master ASE Converged Infrastructure Architect. He has been a session presenter and content contributor to the hands-on labs at VMworld conferences and regularly serves on the review board for certifying new Master ASE-CI candidates.

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Michael has been designing and deploying VMware solutions since 2002 as a consultant or project manager. He specializes in the design and project implementation of virtualization solutions for UNIX-to-Linux migrations, business-critical applications, disaster avoidance, mergers and acquisitions, and public and private cloud. Michael has been in the IT industry since 1995 and has consulted as a project manager and architect since 2001. He is regularly called on to consult and speak on all aspects of virtualizing business-critical applications at events and for organizations across the globe. Michael also holds VCP-DT, VCP-Cloud, MCSE (NT-2003), and ITIL Foundation, and he is experienced in PMP and Prince 2 project-management methodologies. He is an avid supporter of the VMware community and is the author and maintainer of the Long White Virtual Clouds blog (<http://longwhiteclouds.com>), which discusses all things related to VMware, cloud, and virtualizing business-critical applications.

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John, Ben, Mostafa

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