



NANODEGREE PROGRAM SYLLABUS

Hybrid Cloud Engineer



Overview

Udacity has partnered with hyperconverged infrastructure software leader Nutanix to teach cloud professionals the skills needed to use hybrid cloud infrastructure to meet the increasing requirements of enterprise applications and the fast pace of modern business.

This Nanodegree program, built in collaboration with experts from Nutanix – a leader in the cutting edge field of hyperconverged infrastructure software – takes cloud technology and data-center professionals on an in-depth journey into the design, deployment, and management of infrastructure and applications together on the Hybrid Cloud. Master the concepts you need to transform how your IT teams manage applications and support the business.

IN COLLABORATION WITH

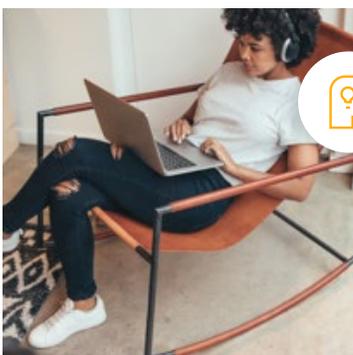


Estimated Time:
3 Months at
10hrs/week



Prerequisites:

- Comfortable with command line on Linux or Windows
- Experience with Virtual Machines using on-premise hypervisors or the public cloud
- Basic database and SQL familiarity



Flexible Learning:
Self-paced



Technical Mentor Support:

Our knowledgeable mentors guide your learning and are focused on answering your questions, motivating you and keeping you on track

Course 1: Modern Private Cloud Infrastructure

Hyperconverged Infrastructure (HCI) converges the entire datacenter stack. This course dives into the role of a hybrid cloud engineer and how to use HCI using Nutanix's Prism web console to configure the different components of a private cloud cluster. We discuss the importance of security and how to manage virtual machines, including data protection, risk calculation and creating backups. By the end of this course, students will be able to deploy and manage private cloud workloads using best practices and industry standards.

Project 1

Private Cloud Web
Application Infrastructure

In this project, you will use Nutanix's integrated lab environment to design a private cloud solution for your company's key revenue generator, an e-commerce web application. Your solution will require you to deploy and protect a web application across a web server VM, application VM, and database server VM on the private cloud.

LEARNING OUTCOMES

LESSON ONE	Introduction to Nutanix Hybrid Cloud	<ul style="list-style-type: none"> Describe the engineer's role in Service Level Agreements related to cloud applications
LESSON TWO	Journey to the Modern Hybrid Cloud	<ul style="list-style-type: none"> Determine the different models to support various Cloud initiatives
MID-COURSE PROJECT	Introduction to Nutanix HCI	<ul style="list-style-type: none"> Use the Prism interface to configure the software components of a hybrid cloud cluster
LESSON THREE	Hybrid Cloud Security	<ul style="list-style-type: none"> Apply security standard and best practices to secure your hybrid cloud
LESSON FOUR	Networking	<ul style="list-style-type: none"> Discuss the differences between physical and virtual networking Work with VLANs and the components of AHV networking
LESSON FIVE	Managing Virtual Machines in the Hybrid Cloud	<ul style="list-style-type: none"> Work with disc images to create and manage virtual machines Learn about the concept of High VM Availability
LESSON SIX	Data Protection	<ul style="list-style-type: none"> Learn about the complexities of data protection in a hybrid cloud world Apply data protection best practices, including backup

Course 2: On-Premises Private Cloud Automation

In this course, we will cover various tools and features that Nutanix provides to eliminate the process of manually operating infrastructure while extending up the stack to incorporate applications and maintenance operations. You will discover how Nutanix Prism Central eliminates IT intervention in performing repetitive, laborious tasks with Nutanix Calm automation to deliver simple, repeatable, and automated management of application creation, self-service consumption, and governance.

Project 2

Private Cloud SaaS: Three-Tier Web Application

The Vice President of Software Engineering at your company has asked you to design a blueprint for deploying a three-tier web application with a load balancer, web server and database VM hosted on the private cloud. You will need to test that the deployment works properly and that each VM is configured with the proper resources and tasks. Your developers will need to deploy new environments, the ability to scale in and scale out the web tier, and to backup the database at any time.

LEARNING OUTCOMES

LESSON ONE

Multiple Cluster and Workload Resources

- Manage categories, images and create custom roles using Prism Central and Prism Self Service

LESSON TWO

Calm Automation for Application Lifecycle Management

- Publish blueprints to the marketplace for customer self-service, on-demand application workloads.
- Complete a deployment, audit, and deprovision for VM Iaas

LESSON THREE

Creating and Publishing a Single VM Blueprint

- Create, manage and publish your own application blueprints

LESSON FOUR

Creating and Publishing a Multi-VM Blueprint

- Perform blueprint lifecycle management tasks
- Configure a Nutanix environment and create a multi-VM Calm blueprint

LESSON FIVE

Calm Automation for a 3-tier Web Application

- Use Calm to create a web server application
- Utilize Advanced Calm Actions

Course 3: Public and Hybrid Cloud Management

Now that we have learned how to operate a modern private cloud and automate private cloud workloads, this final course of the Nanodegree program will teach you how to augment our existing automation to use the public cloud in a hybrid manner. By the end of this course, you will be able to extend your previously created blueprint into the public cloud and will have a clearer understanding of how to architect and manage hybrid cloud workloads.

Project 3

Hybrid Cloud SaaS:
Three-Tier Web Application

Building off your work in the previous projects, you will now extend the model of your e-commerce company's basic web application to a hybrid cloud deployment in order to maximize high availability and scalable performance. In addition, you will be tasked with creating small and medium deployment scenarios.

LEARNING OUTCOMES

LESSON ONE

Strategies for Hybrid Cloud Design

- Evaluate infrastructure providers and tools to move workloads between clouds
- Remove single points of failure
- Accomplish agility using push button environments, configuration management, and automation across deployments

LESSON TWO

Working with a Public Cloud Infrastructure Provider

- Introduce Amazon Web Services (AWS) Elastic Compute Cloud
- Configure security features that VPC, IAM, SSH key pairs and security groups
- Configure AWS as a provider in a Calm project environment

MID-COURSE PROJECT

Implementing Hybrid Cloud Scalability and Deployment Choice

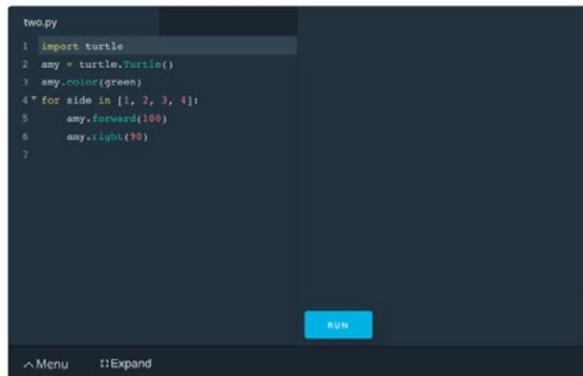
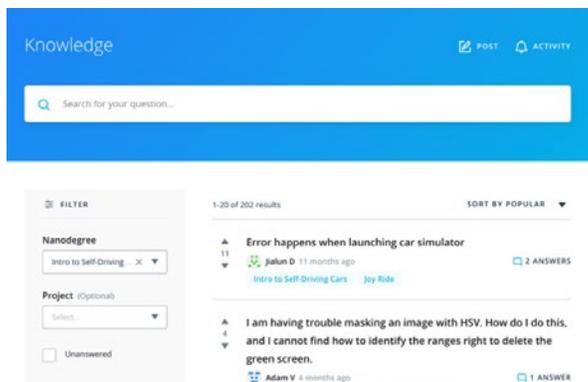
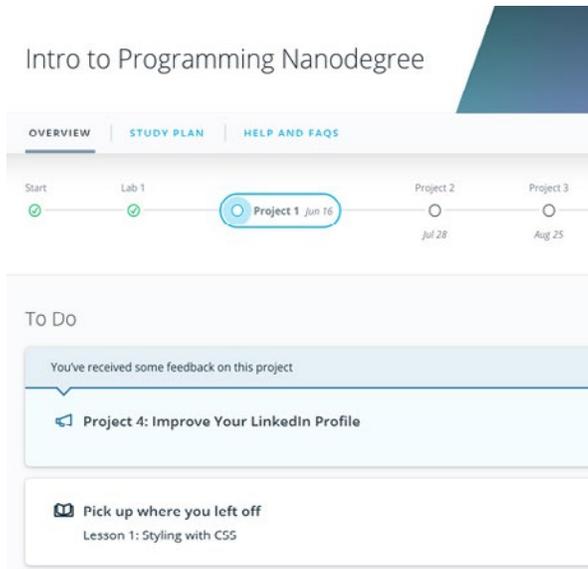
- Extend blueprints into the hybrid cloud
- Scale your application using application profiles

LESSON THREE

Hybrid Cloud Governance

- Configure cost policies
- Implement private cloud cost metering
- Use chargeback mechanism to drive financial accountability

Our Classroom Experience



REAL-WORLD PROJECTS

Build your skills through industry-relevant projects. Get personalized feedback from our network of 900+ project reviewers. Our simple interface makes it easy to submit your projects as often as you need and receive unlimited feedback on your work.

KNOWLEDGE

Find answers to your questions with Knowledge, our proprietary wiki. Search questions asked by other students, connect with technical mentors, and discover in real-time how to solve the challenges that you encounter.

WORKSPACES

See your code in action. Check the output and quality of your code by running them on workspaces that are a part of our classroom.

QUIZZES

Check your understanding of concepts learned in the program by answering simple and auto-graded quizzes. Easily go back to the lessons to brush up on concepts anytime you get an answer wrong.

CUSTOM STUDY PLANS

Create a custom study plan to suit your personal needs and use this plan to keep track of your progress toward your goal.

PROGRESS TRACKER

Stay on track to complete your Nanodegree program with useful milestone reminders.

Learn with the Best



Mark Lavi

PRINCIPAL DEVOPS
ADVOCATE, NUTANIX

With over twenty years of Silicon Valley experience, Mark was a senior web master at Netscape, Silicon Graphics, CNN, and News Corp., a Technology Evangelist in Netscape Developer Relations covering JavaScript and LDAP, and has held management roles in engineering and operations.



Cees van Eijk

SENIOR EDUCATION
MANAGER, NUTANIX

Cees has held various positions as an instructor, Big Data analyst, course developer, and product manager for mainframes and monolithic systems. In the field of virtualization and Cloud, he was a product manager and now manages the team of instructors at Nutanix.

All Our Nanodegree Programs Include:



EXPERIENCED PROJECT REVIEWERS

REVIEWER SERVICES

- Personalized feedback & line by line code reviews
- 1600+ Reviewers with a 4.85/5 average rating
- 3 hour average project review turnaround time
- Unlimited submissions and feedback loops
- Practical tips and industry best practices
- Additional suggested resources to improve



TECHNICAL MENTOR SUPPORT

MENTORSHIP SERVICES

- Questions answered quickly by our team of technical mentors
- 1000+ Mentors with a 4.7/5 average rating
- Support for all your technical questions



PERSONAL CAREER SERVICES

CAREER SUPPORT

- Github portfolio review
- LinkedIn profile optimization

FAQs + Contact Info

WHY SHOULD I ENROLL?

Cloud technology is rapidly advancing and changing the way we do business. Nearly 90% of companies rely on cloud computing, and spending on cloud services is estimated to have hit \$97 billion last year. As companies continue investing in cloud migration, Hybrid Cloud has emerged as the secure, flexible solution that many large and midsize companies are choosing. As a result, the demand for engineers who can build and maintain hybrid solutions is growing rapidly! That's why Udacity teamed up with Nutanix, the industry leader in hybrid cloud infrastructure software, to build the Hybrid Cloud Engineer Nanodegree Program.

In this program, you will work at the forefront of cloud technology, designing and deploying the cloud infrastructure solutions preferred by large and midsize companies across industries. You'll focus on building the skills needed to navigate the Nutanix Hyper-converged infrastructure platform, design a hybrid application deployment, translate infrastructure requirements into a CALM blueprint, and more. By the end of the program, you'll have a portfolio of three projects that demonstrates your skill designing and deploying hybrid cloud applications.

WHAT JOBS WILL THIS PROGRAM PREPARE ME FOR?

Companies are hiring Hybrid Cloud professionals for roles such as Hybrid Cloud Engineer, Cloud Systems Engineer, Cloud Architect, Cloud Infrastructure Engineer, Solutions Engineer, Systems Integration Engineer, Cloud DevOps Engineer, Software Engineer, Cloud Services Software Engineer, and more.

HOW DO I KNOW IF THIS PROGRAM IS RIGHT FOR ME?

This Nanodegree program is a great choice for experienced IT professionals or developers looking to advance their career - whether your background is with on-premise data centers and you're looking to gain knowledge of cloud infrastructure, or you're already familiar with cloud services but want to add on-premise solutions to your toolkit, the Hybrid Cloud Engineer Nanodegree Program will teach you what you need to transform how your IT teams manage applications and support the business.

ENROLLMENT AND ADMISSION

DO I NEED TO APPLY? WHAT ARE THE ADMISSION CRITERIA?

There is no application. This Nanodegree program accepts everyone, regardless of experience and specific background.



FAQs + Contact Info cont.

WHAT ARE THE PREREQUISITES FOR ENROLLMENT?

We recommend that students have prior experience with command line on Linux or Windows, and comfort using Virtual Machines, either in an on-premise or public cloud context.

IF I DO NOT MEET THE REQUIREMENTS TO ENROLL, WHAT SHOULD I DO?

Udacity's Intro to Cloud Computing course is a great way to brush up on foundational Cloud concepts. If you're looking to develop your programming skills, our [Intro to Programming](#) and [Full Stack Web Developer](#) Nanodegree programs would be the best pathway to take.

TUITION AND TERM OF PROGRAM

HOW IS THIS NANODEGREE PROGRAM STRUCTURED?

The Hybrid Cloud Engineer Nanodegree program is comprised of content and curriculum to support three projects. Once you subscribe to a Nanodegree program, you will have access to the content and services for the length of time specified by your subscription. We estimate that students can complete the program in three months, working 5-10 hours per week.

Each project will be reviewed by the Udacity reviewer network. Feedback will be provided and if you do not pass the project, you will be asked to resubmit the project until it passes.

HOW LONG IS THIS NANODEGREE PROGRAM?

Access to this Nanodegree program runs for the length of time specified in the payment card above. If you do not graduate within that time period, you will continue learning with month to month payments. See the Terms of Use and FAQs for other policies regarding [the terms](#) of access to our Nanodegree programs.

CAN I GET A REFUND?

Please see the Udacity Nanodegree program FAQs found [here](#) for policies on enrollment in our programs.

SOFTWARE AND HARDWARE - WHAT DO I NEED FOR THIS PROGRAM?

WHAT SOFTWARE AND VERSIONS WILL I NEED IN THIS PROGRAM?

For this Nanodegree program, you will need a desktop or laptop computer running recent versions of Windows, Mac OS X, or Linux, and an unmetered broadband Internet connection. There are no additional hardware or software requirements for this program, other than those outlined on Udacity's general [Technology Requirements](#) page.

