UDACITY
FOR ENTERPRISE

SCHOOL OF CLOUD COMPUTING

Hybrid Cloud Engineer

NANODEGREE SYLLABUS

Overview

NUTANIX.

This goal of this Nanodegree Program is 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.

A graduate of this program will be able to:

- Design a private cloud solution for a company

- Understand the complexities of data protection in a hybrid cloud world

- Apply data protection in a hybrid cloud world

- Design a blueprint for deploying a three-tier web application

- Automate private cloud workloads

This program is comprised of 3 courses and 3 projects. Each project you build will be an opportunity to demonstrate what you've learned in the lessons. Your completed projects will become part of a career portfolio that will demonstrate your acquired skills in Hybrid Cloud Engineering.

Program Information

ESTIMATED TIME TO COMPLETE
3 months; study 10 hrs/week

LEVEL
Practitioner

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
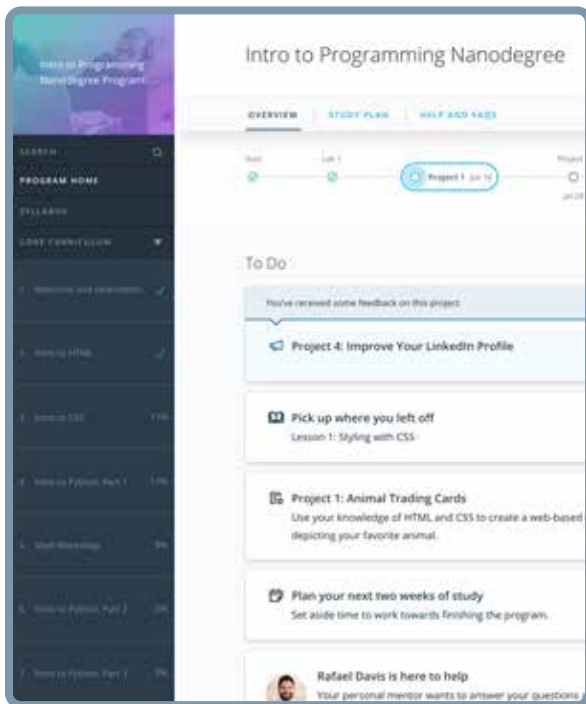
HARDWARE/SOFTWARE REQUIRED
- Desktop or laptop computer running recent versions of Windows, Mac OS X, or Linux
- Broadband internet connection

LEARN MORE ABOUT THIS NANODEGREE
Contact us at enterpriseNDs@udacity.com.

Our Classroom Experience

REAL-WORLD PROJECTS
Learners build new skills through industry-relevant projects and receive personalized feedback from our network of 900+ project reviewers. Our simple user interface makes it easy to submit projects as often as needed and receive unlimited feedback.

KNOWLEDGE
Answers to most questions can be found with Knowledge, our proprietary wiki. Learners can search questions asked by others and discover in real-time how to solve challenges.

LEARNER HUB
Learners leverage the power of community through a simple, yet powerful chat interface built within the classroom. Learner Hub connects learners with their technical mentor and fellow learners.

WORKSPACES
Learners can check the output and quality of their code by testing it on interactive workspaces that are integrated into the classroom.

QUIZZES
Understanding concepts learned during lessons is made simple with auto-graded quizzes. Learners can easily go back and brush up on concepts at anytime during the course.
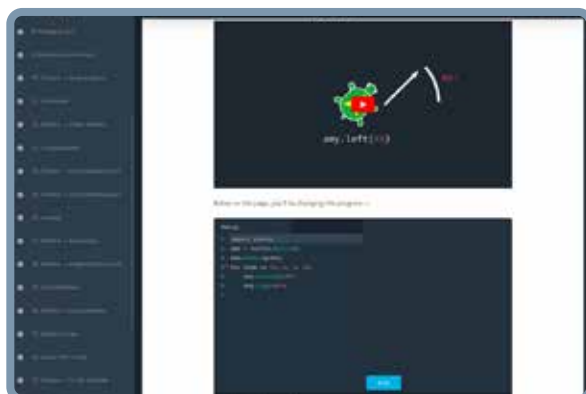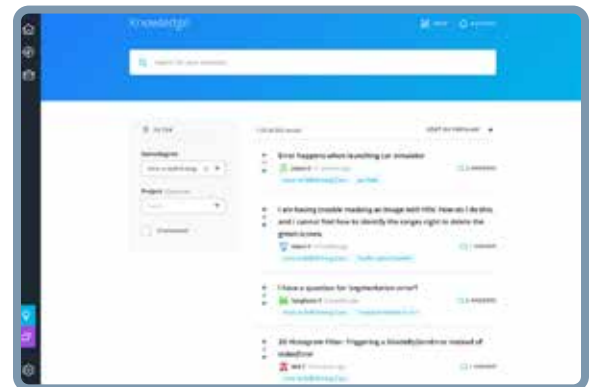
CUSTOM STUDY PLANS
Mentors create a custom study plan tailored to learners' needs. This plan keeps track of progress toward learner goals.

PROGRESS TRACKER
Personalized milestone reminders help learners stay on track and focused as they work to complete their Nanodegree program.

Learn with the Best

Mark Lavi
INSTRUCTOR

With over twenty years of Silicon Valley experience, Mark was a senior web master at Netscape, Sillicon 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
INSTRUCTOR

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 Coud, he was a product manager and now manages the team of instructors at Nutanix.

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.

LESSON TITLE	LEARNING OUTCOME
INTRODUCTION TO NUTANIX HYBRID CLOUD	• Describe the engineer's role in Service Level Agreements related to cloud applications
JOURNEY TO THE MODERN HYBRID CLOUD	• Determine the different models to support various Cloud initiatives
INTRODUCTION TO NUTANIX HCI	• Use the Prism interface to configure the software components of a hybrid cloud cluster
HYBRID CLOUD SECURITY	• Apply security standard and best practices to secure your hybrid cloud
NETWORKING	• Discuss the differences between physical and virtual networking • Work with VLANs and the components of AHV networking
MANAGING VIRTUAL MACHINES IN THE HYBRID CLOUD	• Work with disc images to create and manage virtual machines • Learn about the concept of High VM Availability
DATA PROTECTION	• 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.

LESSON TITLE	LEARNING OUTCOME
MULTIPLE CLUSTER AND WORKLOAD RESOURCES	• Manage categories, images and create custom roles using Prism Central and Prism Self Service
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 laas
CREATING AND PUBLISHING A SINGLE VM BLUEPRINT	• Create, manage and publish your own application blueprints
CREATING AND PUBLISHING A MULTI-VM BLUEPRINT	• Perform blueprint lifecycle management tasks • Configure a Nutanix environment and create a multi-VM Calm blueprint
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.

LESSON TITLE	LEARNING OUTCOME
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
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
IMPLEMENTING HYBRID CLOUD SCALABILITY AND DEPLOYMENT CHOICE	• Extend blueprints into the hybrid cloud • Scale your application using application profiles
HYBRID CLOUD GOVERNANCE	• Configure cost policies • Implement private cloud cost metering • Use chargeback mechanism to drive financial accountability

Our Nanodegree Programs Include:
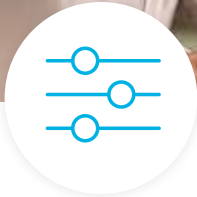
Pre-Assessments

Our in-depth workforce assessments identify your team's current level of knowledge in key areas. Results are used to generate custom learning paths designed to equip your workforce with the most applicable skill sets.

Dashboard & Progress Reports

Our interactive dashboard (enterprise management console) allows administrators to manage employee onboarding, track course progress, perform bulk enrollments and more.

Industry Validation & Reviews

Learners' progress and subject knowledge is tested and validated by industry experts and leaders from our advisory board. These in-depth reviews ensure your teams have achieved competency.

Real World Hands-on Projects

Through a series of rigorous, real-world projects, your employees learn and apply new techniques, analyze results, and produce actionable insights. Project portfolios demonstrate learners' growing proficiency and subject mastery.

Our Review Process

Real-life Reviewers for Real-life Projects

Real-world projects are at the core of our Nanodegree programs because hands-on learning is the best way to master a new skill. Receiving relevant feedback from an industry expert is a critical part of that learning process, and infinitely more useful than that from peers or automated grading systems. Udacity has a network of over 900 experienced project reviewers who provide personalized and timely feedback to help all learners succeed.

Vaibhav
UDACITY LEARNER

"I never felt overwhelmed while pursuing the Nanodegree program due to the valuable support of the reviewers, and now I am more confident in converting my ideas to reality."

now at
CODING VISIONS INFOTECH

All Learners Benefit From:

Line-by-line feedback for coding projects

Industry tips and best practices

Advice on additional resources to research

Unlimited submissions and feedback loops

How it Works

Real-world projects are integrated within the classroom experience, making for a seamless review process flow.

- Go through the lessons and work on the projects that follow
- Get help from your technical mentor, if needed
- Submit your project work
- Receive personalized feedback from the reviewer
- If the submission is not satisfactory, resubmit your project
- Continue submitting and receiving feedback from the reviewer until you successfully complete your project

About our Project Reviewers

Our expert project reviewers are evaluated against the highest standards and graded based on learners' progress. Here's how they measure up to ensure your success.

900+
Expert Project Reviewers
Are hand-picked to provide detailed feedback on your project submissions.

1.8M
Projects Reviewed
Our reviewers have extensive experience in guiding learners through their course projects.

3
Hours Average Turnaround
You can resubmit your project on the same day for additional feedback.

4.85 /5
Average Reviewer Rating
Our learners love the quality of the feedback they receive from our experienced reviewers.

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For more information visit: **www.udacity.com/enterprise**