

**Manipulating AWS CDK Using TypeScript**

**Course Number:** SCRPT-196WA  
**Duration:** 1 day

**Overview**

TypeScript easily integrates into AWS infrastructures, making it an ideal language for managing AWS CDK (Cloud Development Kit). This Manipulating AWS CDK Using TypeScript training course teaches developers how to use TypeScript to build complex cloud applications. Attendees learn how to define AWS assets, including S3 Buckets and Lambdas, and then use TypeScript to deploy, manage, and remove them from an AWS account using CDK commands.

**Prerequisites**

All attendees must have the following:

* Basic knowledge of JavaScript
* Working knowledge of core AWS services and public cloud implementation
* Experience using AWS services’ web consoles.

**Materials**

All TypeScript AWS CDK training attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

* A modern web browser and an Internet connection free of restrictive firewalls so that the student can connect by SSH or Remote Desktop (RDP) into AWS virtual machines
* Google Chrome and/or Firefox
* Other modern browsers as desired
* IDE/development environment of your choice
* Other free software and lab files that Accelebrate would specify

**Objectives**

* Set up and configure AWS CDK
* Understand the CDK workflow
* Work with AWS constructs
* Understand TypeScript basics
* Understand AWS cloud formation concepts
* Use CDK to manage buckets and files
* Define and deploy Lambdas
* Perform unit testing of TypeScript projects using Jest

**Outline**

* Introduction to the AWS CDK
  + AWS Cloud Development Kit
  + AWS Cloud Resources
  + Using AWS Cloud Resources
  + Provisioning Cloud Applications
  + Automation
  + CDK Workflow
  + AWS Cloud Formation Stacks
  + Constructs
  + AWS Construct Library
  + Construct Types
  + The AWS Cloud Development Kit (CDK)
  + CDK CLI Commands
  + CDK bootstrap
  + CDK init Command
  + Compatible Programming Languages
  + CDK Code
  + TypeScript Compilation
  + CDK Synth Command
  + CDK Deploy Command
* AWS CloudFormation and Stacks
  + What is CloudFormation?
  + CloudFormation WebConsole
  + Templates
  + CloudFormation Designer
  + The Designer Resource GUI
  + The Designer Template Editor
  + Sample Templates
  + Resource Stacks
  + Resource Types
  + Deploying Stacks
  + Updating Stacks
  + Updating a Stack Directly
  + Updating Using Change Sets
  + Deleting Stacks
  + DELETE\_FAILED when Deleting a Stack
* TypeScript Basics
  + What is TypeScript
  + TypeScript vs. JavaScript
  + Benefits of TypeScript
  + TypeScript Support
  + Setting up a Standalone TypeScript Development Environment
  + TypeScript Features
  + The Type System – Defining Variables
  + The Type System – Defining Arrays
  + Type in Functions
  + Type Inference
  + Defining Classes and Functions
  + Class Methods
  + Visibility Control
  + Class Constructors
  + Class Constructors – Alternate Form
  + Arrow Functions
  + Importing and Exporting Code
  + Arrow Function Compact Syntax
  + let and const
  + 'var' Variable Scope
  + 'let' Variable Scope
  + The 'const' keyword
  + Template Strings
  + Code Modules
  + Basic Export/Import Syntax
  + Export Statements
  + Import Statements
  + Programming Editors
* AWS CDK Setup
  + Setup Overview
  + HW/SW Environment
  + Accounts, Credentials & Permissions
  + AWS-CLI installation
  + aws configure
  + Some aws-cli Commands
  + AWS-CDK installation
  + Some cdk Commands
  + Initializing a CDK Project
  + cdk bootstrap and CDKToolkit
  + Removing CDKToolkit
  + AWS Toolkit for Visual Studio Code
  + AWS Toolkit for VSC - Explorer
  + AWS Toolkit for VSC - Commands
* Working with S3 in the AWS CDK
  + S3 Overview
  + Managing Buckets and Files
  + The AWS-CDK
  + The CDK Application Project
  + The app-stack Code File
  + Create a Basic S3 Bucket
  + Setting Properties on a Construct
  + Construct Properties
  + Removal Policy
  + Versioned Property
  + BucketName
  + websiteIndexDocument Property
  + S3 Bucket Website URL
  + Deploying the Stack/Bucket
  + Deploy files to a Bucket
  + The BucketDeployment Object
  + File prefixes
* Programming Lambdas in the AWS CDK
  + AWS Lambda Overview
  + Managing AWS Lambdas
  + The AWS-CDK
  + The CDK Application Project
  + The app-stack Code File
  + Create a Basic Lambda
  + The lambda.Function Construct
  + Function Construct Properties
  + The lambda function
  + Deploying a Lambda
  + Testing a Lambda in the Lambda Web Console
  + Invoking a Lambda using AWS-CLI
  + Invoke Lambda via REST API Endpoint 1/2
  + Invoke Lambda via REST API Endpoint 2/2
* Unit Testing with Jest
  + Jest Testing Framework
  + Jest is Installed with Various Frameworks
  + Unit Tests
  + Anatomy of a Unit Test
  + Example Test Function
  + Common Matchers
  + Test Suites
  + Setup and Teardown
  + Running Tests
  + Running Tests in Watch Mode
  + Running Tests with Code Coverage
  + Testing async code with done
  + Testing Promise-Based Async Code
* Conclusion