

**Server-side JavaScript with Node.js and Express**

**Course Number:** SCRPT-132
**Duration:** 2 days

**Overview**

Accelebrate's Server-side JavaScript with Node.js and Express training teaches experienced JavaScript developers how to create server-side applications with JavaScript and Node.js, culminating with an MVC application built on the Express framework that queries databases and calls back-end web services.

**Prerequisites**

Node.js training attendees should have a thorough knowledge of JavaScript. They should be familiar with web server application design concepts (such as accessing databases and SOA concepts), as well as basic HTML and CSS.

**Materials**

All JavaScript training attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

* A recent version of Google Chrome or Mozilla Firefox
* A local installation of Node.js
* Admin/root or sudoer privileges to install additional features during the class
* A JavaScript development tool of your choice
* Additional lab files that Accelebrate will provide

**Objectives**

* Learn why server-side JavaScript is useful
* Install Node.js
* Learn how Node.js is architected to allow high scalability with asynchronous code
* Create basic web applications with Node.js
* Automate tasks with Gulp
* Build an HTTP server using the core modules in Node.js
* Use stream I/O to efficiently serve the web pages
* Create modules to organize the server
* Test the reliability of the application with unit tests
* Convert the application to an MVC framework using Express
* Interface to a PostgreSQL and MongoDB database and a web service

**Outline**

* Introduction
* Foundation
	+ The Node.js framework
	+ Installing Node.js
	+ Using Node.js to execute scripts
* Node Projects
	+ The Node Package Manager
	+ Creating a Project/Package
	+ The package.json configuration file
	+ Global vs. local package installation
	+ Package Lock Files
	+ Installing, Uninstalling, and Upgrading Packages
	+ Configuring Script Commands
	+ NPM and NPX Commands
* HTTP
	+ The HTTP protocol
	+ Using the HTTP Module
	+ Building an HTTP server
	+ Rendering a response
	+ Processing query strings
	+ Configuring TLS
* File System
	+ Synchronous vs. asynchronous I/O
	+ Path and directory operations
	+ \_\_dirname and \_\_filename
	+ Asynchronous file reads and writes
* Modules
	+ Modularization
	+ The CommonJS and ES2015 Module specifications
	+ Defining modules with exports
	+ Modules are singletons
	+ Creating a package
	+ Module scope and construction
* Express
	+ Using Representational State Transfer
	+ The Model-View-Controller pattern
	+ Defining Jade (or Handlebars) templates
	+ Building a Front-end Controller
	+ Defining Routes
	+ Creating Actions
	+ Configuring Express to use Jade (or Handlebars)
	+ Using REST
	+ Reading POST data
	+ Building Pages with Jade (or Handlebars)
	+ Adding Middleware
	+ Static Content
	+ Request Body
	+ Cookies
	+ CORS
	+ Writing Middleware
* Data Sources
	+ How Node.js connects to databases
	+ RDBMS databases and NoSQL databases
	+ Connecting to RDBMS (PostgreSQL) and NoSQL databases (MongoDB)
	+ Performing CRUD operations
	+ Building client requests to web services
* Unit Testing
	+ What is Unit Testing?
	+ Unit Testing Frameworks and Libraries
	+ Jest Unit Testing Framework
	+ Tests and Test Suites
	+ Setup/Teardown Functions
	+ Assertions, Mocks, and Spies
* Deployment
	+ Production Deployment of Node.js App
	+ PM2 Process Manager
	+ Containerization of Node.js App
* Conclusion