# Finding your way in today's rapidly changing tech environment

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# Here's what to expect and how it will impact your organization.

Staying on top of the latest technology has always been a challenge for businesses. But it's never been more difficult than it is today. And the rate of change is accelerating. In 2016 alone, nearly a dozen core technologies for software development and IT operations are expected to get major updates—changes that will make it more difficult than ever to keep up with, let alone prepare for, the challenges your organization will face in the future.

## INDUSTRY-WIDE TRENDS ARE DRIVING BIG CHANGES IN TECHNOLOGY

According to industry analysts IDC and Forrester Research, we are in the beginning stages of a significant transformation in the IT landscape.[1] The IT industry has always been disruptive, but emerging technologies, new ideas, practices and vendors are driving immense changes that your organization may not be prepared for.

Interestingly, the technologies driving the biggest shifts are not new. The cloud, big data, open source and machine learning have all been around for years, but are only now reaching the mass adoption at the enterprise level that is changing how software is created and IT is managed.

Cloud-based architecture requires a higher level of automation, as custom code can be difficult to maintain in a cloud-native environment. So software platforms like Puppet and Chef are being written with this new level of automation to make it easier to build, deploy and maintain off-premises applications. Software development is trending toward new architecture practices that include containerization and micro-services (or service-oriented architecture) that help eliminate inefficiencies and communication failures.

And more and more, the term big data truly refers to BIG data—so much information that organizations are forced to create new processes to store, manage and analyze it all. Advances in artificial intelligence may make the process more manageable, but at a cost to human analysts and data scientists who simply can't process the sheer volume of data that companies are capturing today.

**THE CHANGES IN TECHNOLOGY ARE ALSO DRIVING NEW JOB TRENDS.**

Technology advances are also driving corresponding shifts in employment, changing long-standing jobs and career paths in new ways. OS security management, server management and allocation are shifting to cloud computing services, while software engineers who previously only wrote code are being tasked with new operational roles—adding responsibility for code deployment, as well as managing application services and production environments.

Instead of hiring new employees with the right certifications, smart organizations will be looking for employees who can learn new skills as technologies come on line.

What were previously two very different career paths—IT and development—are beginning to merge into the less defined area of DevOps. The engineers hired to fill these new hybrid roles need to learn and understand everything from code repository management and basic operating system skills to monitoring, deployment and troubleshooting live code in a production environment.

In addition, they will need to know how to design and support web platforms, understand standard web programming languages, know front end technologies and frameworks, and be comfortable working with application servers and database technologies. Periodic changes and updates to any of these pieces will require new training to understand the impacts each update will have on an organization's technology stack.

## HOW WILL YOUR EMPLOYEES KEEP UP?

These changes are already underway, which means organizations are already (or soon will be) adopting different approaches to database management, new programming languages, emerging enterprise applications, up-and-coming vendors, and emerging frameworks in the next few years. All of this presents a hiring challenge for organizations trying to keep up with the changes. Employees with old certifications and outdated skills simply will not have the experience needed to work with the emerging technologies.

Instead of hiring new employees with the right certifications, smart organizations will be looking for employees who can learn new skills as technologies come on line. Technology will change as quickly as new employees join your organization, but it doesn't make sense for companies to bring on new employees every time a job description or technology is updated. There is already serious demand for developers who can learn on the fly and keep themselves relevant.

Perhaps more importantly, these same organizations will need to provide existing employees with access to training that can be consumed as needed, so they too can keep up with the changes. Weeklong training classes and official certifications are already giving way to badges, micro-certifications and a variety of programs that can be pieced together to fit an organization's unique needs. Smart organizations will take a piecemeal approach to training employees—combining several short courses that address each individual part of an organization's technology stack and the custom code, frameworks and platforms they use to support it.

## SO WHAT CHANGES ARE COMING?

It's not possible to list all of the upcoming changes to popular languages and certifications, or all of the new technologies employees will need to master. However, Pluralsight's curriculum team compiled a short list of a few of the most important updates we saw in 2016 (and some to look out for in 2017). If you haven't already embraced these changes or are questioning whether they're right for your organization, these roundups should help you decide.

### ASP.NET

This year, Microsoft released ASP.NET Core 1.0 (and soon after 1.1), a new name for ASP.NET 5.0, but also a massive, completely written-from-scratch updated that lays the foundations for the future of ASP.NET. While this update is not a replacement for ASP.NET 4.5, it does include long anticipated changes like MVC and Web API, a shift from DNX to CLI, big changes in security (token-based authentication and resource based authorization), webhooks and much more.

### Java 9 (expected release March 2017)

The next version of Java will introduce a module system (jigsaw) for the Java SE platform and SDK to improve scalability. New features include jshell, a command line tool that adds native support for REPL (read-evaluate-print-loop), a standardized benchmarking solution, as well as full support of HTTP/2, and web sockets.

### AngularJS 2.0

Announced in 2014, the latest version of Angular is a rewrite of the entire framework to include mobile, modules and ES6. However, it doesn't include support for 1.3 or 1.4, so organizations who have yet to migrate over may experience broken applications if they have custom code based on previous versions.

### VMware product updates

Among the recent changes VMware has announced are 2017's VSAN 6.2 update, last year's update to ESXi 6.0 (version 1a was released at the end of 2015), and Workstation 12, released last year adding support for Windows 10, OpenGL 3.3 and IPv6 NAT.

### Windows Server 2016

Microsoft's latest server OS includes a variety of new features, including new storage services (block level, volume-based replication), failover clustering, support for HTTP/2 network virtualization, and server anti-malware that is installed by default without the GUI-windows, without the windows.


## STANDARD IT CERTIFICATIONS ALSO GET SIGNIFICANT UPDATES.

Software isn't the only area that experienced significant updates and changes that will impact IT teams. Several standard certification tests have been updated to ensure knowledge of the Internet of Things, cloud-based solutions and network programmability. Here's a sample of what you can expect.

### Cisco Certifications

At the end of 2015, Cisco announced several big changes to its CCIE Data Center and CCNA Security certifications. The new frameworks ensure that the certifications will evolve as the role of IT evolves. As a result, now individuals need to demonstrate their ability to design, implement and troubleshoot data center issues, as well as show their understanding of advanced virtualization, automation and end-to-end management of the data environment.

### Juniper Network Certifications

Several JNCP certifications reached EOL at the end of May. New certifications include JNCIP-ENT, JNCIS-ENT and JNCDS-WAN.

### MCSA and MCSE

It's difficult to say what Microsoft's plans are for certifications in the future. Some experts suggest that they may move toward micro-certifications and possibly allow a collection of these to add up to a traditional credential like the MCSA or MCSE. But at this point, the company hasn't clearly signaled its intentions.

### VCP6-DCV

The requirements for certification have changed to reflect changes to the underlying technology from 5.5 to 6.0. Test objectives are still the same, but there are significant changes to the tasks within objectives in the certification tests. The new tasks help better define where learners should spend time learning.

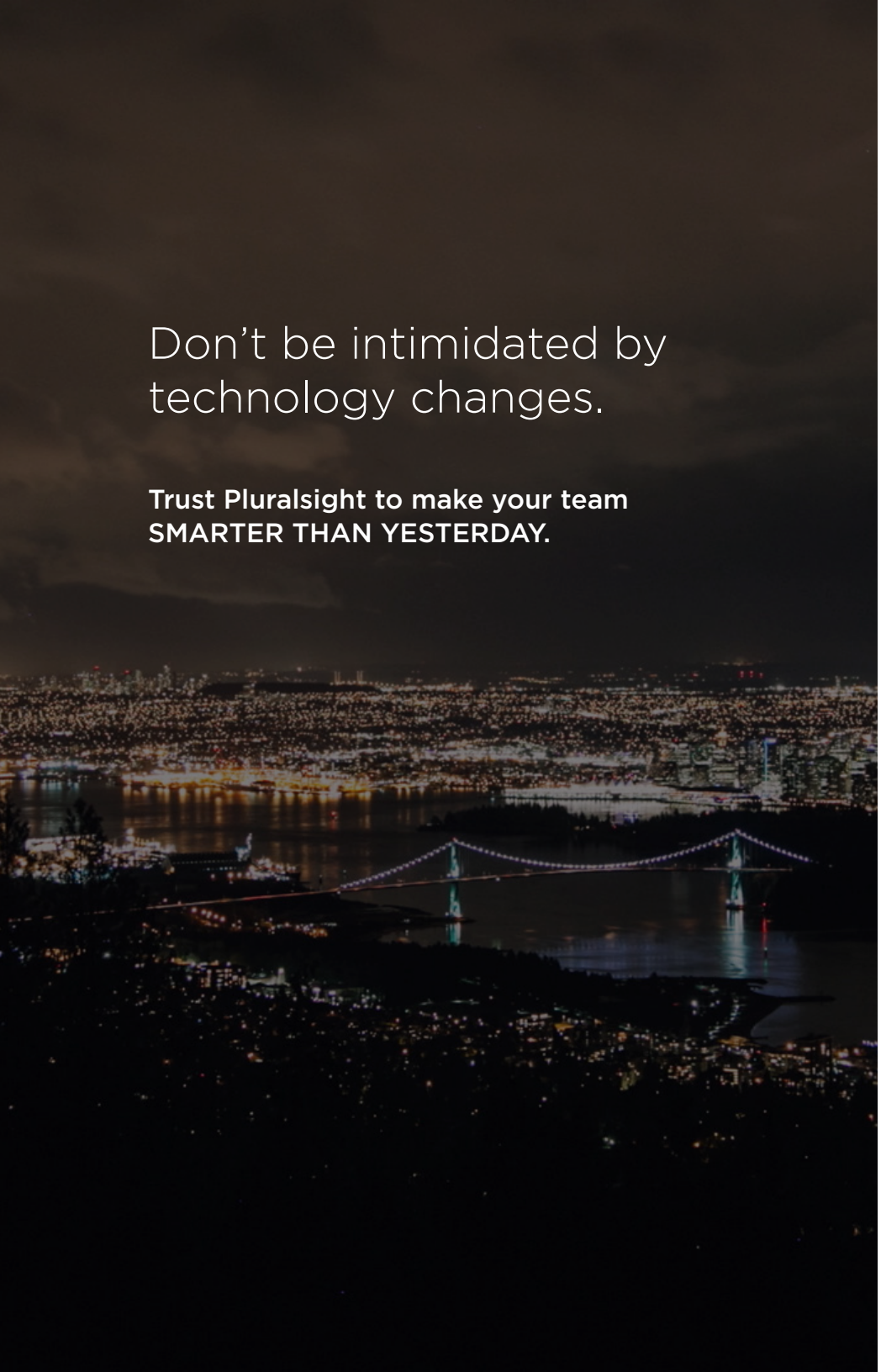
### Cisco R&S and Linux

Other than incremental updates to reflect changes in the technology, we don't expect any major changes to either Cisco or Linux in the near future.

## CHANGES ARE ON THE HORIZON. HOW WILL YOUR ORGANIZATION RESPOND?

The rate of change in tech is accelerating faster than ever.  The advances in processing power, data storage, enterprise mobile and bandwidth are enabling opportunities that were simply impossible before now.[2]

But new opportunities bring new challenges for managing data, software and people. Pluralsight is committed to helping you identify the ways technology is changing and the impact it will have on your organization. And we'll provide the training you need to stay on top of it all. One thing is certain. It will take the right people and a steady approach to training to keep up with the technology and stay ahead of your competition.



# Don’t be intimidated by technology changes.

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**Sources**


1 “5 IT industry predictions for 2017 from Forrester and IDC”, by Bernard Golden, CIO Magazine, Nov. 20, 2015.

2 “2017 Technology Industry Outlook: Interview with Paul Sallomi” Deloitte.com.


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