



modis

MIGRATION

EFFICIENCY

SECURITY

Leveraging the cloud:

From basic activities to advanced usage.



Cloud computing generated \$100 billion in 2012, which is estimated to be an impressive \$500 billion by 2020.¹ What was once an innovative technology of the future is now the standard way of doing business.

The challenge for companies is to leverage what still works well from their in-house legacy infrastructure and augment that with a new cloud-based infrastructure to meet their future needs. Learn how to transition to advanced cloud usage and build a strong team for your company.

A decorative graphic consisting of a dark grey grid with a yellow line and dots. The line starts at a dot on the left, goes up to a higher dot, then down to a lower dot, then up to a higher dot, and finally up to a dot on the right. The background is a dark grey grid with a yellow line and dots.

“Cloud is about efficiency, economy, scalability, elasticity and doing things faster and better.”

- Reynaldo Mincov Junior²

Good foundations need good enterprise architecture.

Enterprise architecture integrates management of the IT infrastructure currently in place while designing and building the infrastructure needed for the future. The value in this discipline is in presenting leadership with signature-ready recommendations to alleviate disruptions and achieve business objectives more quickly. ³

“Enterprise architecture applies architecture principles and practices to guide organizations through the business, information, process and technology changes necessary to execute their strategies.” ⁴

Enterprise architecture methodologies are shifting toward an Agile approach. Previous methodologies primarily focused on processes and tools. An Agile approach, in contrast, emphasizes individuals and interactions. ⁵ This methodology also improves the project team’s enterprise architecture awareness, enhancing focus and functionality.

Wondering if Agile is right for your team? Read our free white paper, “Overcoming the Waterfall: The Path to Agile”, to learn the benefits of the Agile methodology and the positions needed to implement it.



The first step: making the leap to the cloud.

Migrating to cloud technology involves moving legacy in-house systems, including enterprise resource planning (ERP), human resources management, and similar enterprise applications, into the cloud.

Companies who have migrated to the cloud

NETFLIX

In 2008, Netflix made their move to the cloud primarily based on their cost reduction strategy. Their initial experience was mixed. It took seven years (2008-2015) to move most of their systems to the cloud using Amazon Web Services (AWS), with full migration complete in 2016. They initially faced major database corruption issues and were unable to ship DVDs to customers for three days, but were able to resolve these.

Netflix now has eight times the clients they had in 2008. The improved scalability has allowed Netflix to expand its service to more than 130 new countries, becoming a truly global Internet TV network. Even though there are still some challenges, Netflix says they are not constrained by the limitations they previously faced. ⁶

COCA-COLA

Coca-Cola embraced the cloud in 2011 and has never looked back. The beverage giant went from 3-4% of its 2,000 applications being hosted in the cloud to having almost all of them in the cloud. Their CTO anticipates within the next five years the company will be “as cloud-based as it will ever be.” Coca-Cola says they benefit from wide coverage through Google’s presence. The company sees the cloud as a long-term approach. ⁷

Top cloud-based careers. ^{8,9}

In addition to the benefits companies have received since the introduction of the cloud, remote IT career options have opened up for employees and contractors.

Information Security Analyst

Instructs users on security policies and procedures. Monitors cloud activity and ensures data is protected from unauthorized users. Identifies, reports and resolves security violations.

MEDIAN SALARY: \$120,901

IT Project Manager

Creates, manages and executes project plans to support the ongoing needs of the IT department. Coordinates resources, establishes deadlines, and assigns responsibilities. Tracks the progress of projects and compiles status reports for senior management.

MEDIAN SALARY: \$112,299

Help Desk Support

Assists end users in resolving cloud related issues by fielding telephone calls and email communication, diagnosing problems, and performing troubleshooting activities. Documents, tracks and monitors the problem to facilitate a timely resolution.

MEDIAN SALARY: \$60,758

Cloud Architect

Defines and executes cloud automation strategy for enterprise applications and application components. Supports, maintains and develops cloud based software. Builds innovative and reliable solutions to meet demanding customer needs.

MEDIAN SALARY: \$131,798

Network Administrator

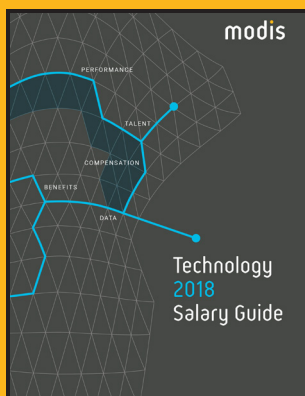
Supports, designs, maintains and monitors internal and external networks. Implements and manages all systems, applications, security and network configurations. Resolves cloud performance issues and establishes a disaster recovery plan. Recommends upgrades, patches, and new applications and equipment.

MEDIAN SALARY: \$117,387

Cloud Developer

Builds elastic computation and storage. Automates feedback loop of monitoring resources. Controls the cloud's size, speed and robustness as needed.

MEDIAN SALARY: \$95,165



To learn more about IT jobs and the salaries associated with them, request your free copy of the latest Modis Salary Guide.

Building a foundation for the future.

Companies develop the foundation needed for future big data and business analytics capabilities when they begin their transition to the cloud. This foundation is composed of a three-tiered cloud infrastructure.¹⁰

The intermediate steps: combining cloud services.

Public cloud falls within the standard cloud-computing model whereby the general public can access applications and use the available storage provided by service providers for free or on a pay-per-usage model. These are highly scalable and self-serve.¹¹

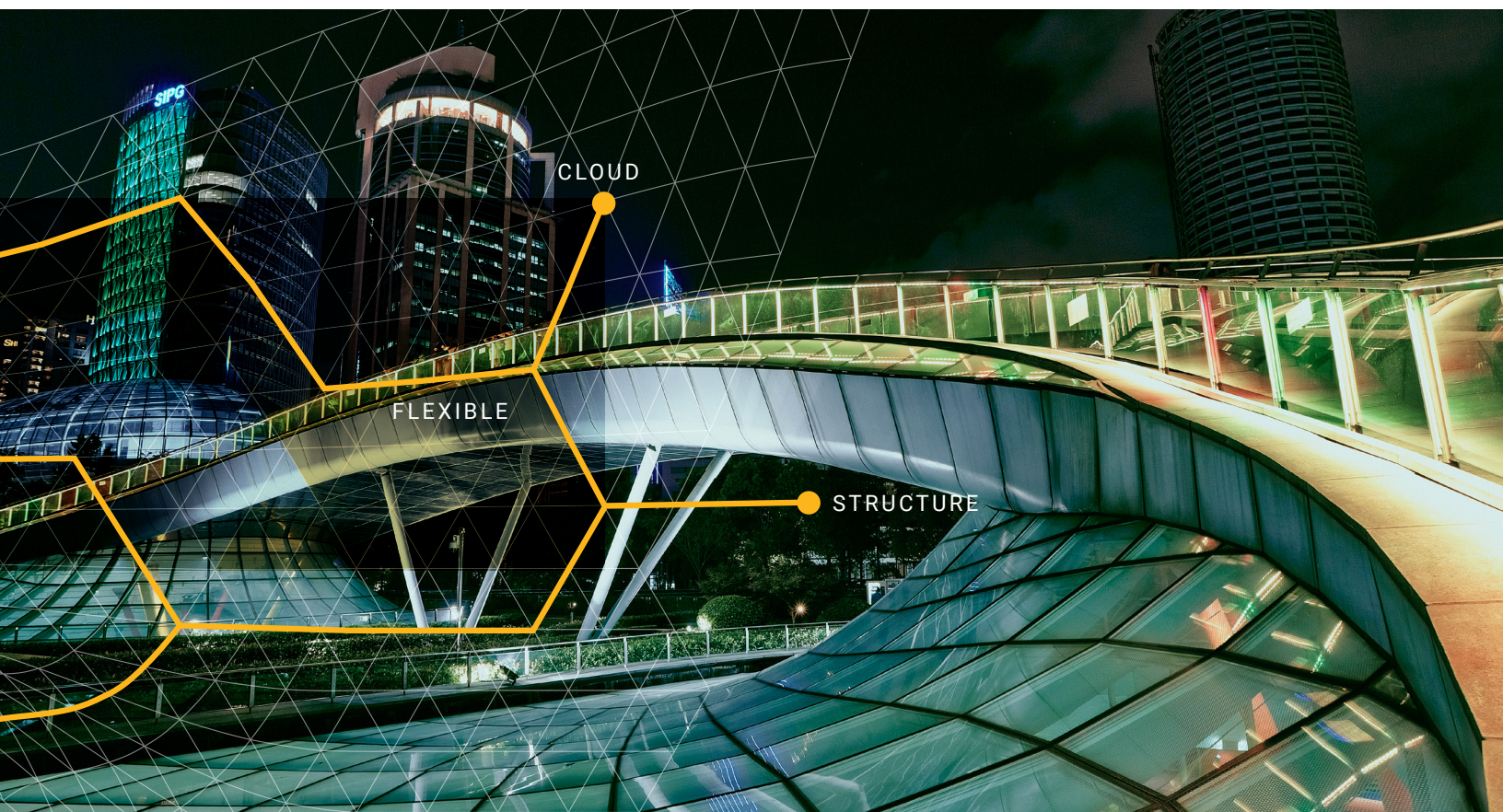
The top cloud providers available for general public use are Amazon Web Services (AWS), Google Drive, Microsoft OneDrive, and Windows Azure.¹¹

Private cloud offers similar benefits to public cloud, including scalability and self-service. The difference is that this method is provided through proprietary architecture on dedicated servers within a single organization. This method is ideal for larger organizations because it provides greater control over their data and does not require them to share space on servers with other tenants.

Private cloud providers include Microsoft Private Cloud, OpenStack Private Cloud, Platform9 OpenStack Private Cloud, and Apache CloudStack Private Cloud.¹²

Hybrid cloud uses a combination of public and private cloud services, allowing the platforms to work in synergy and sync to provide businesses with increased flexibility. This works in businesses and industries where physical space is an issue, yet the business needs to keep critical and sensitive data secure. Financial and healthcare industries, law firms, and other customer-facing industries often utilize this model.⁸

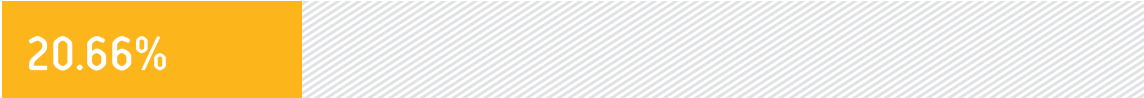
For example, if a healthcare provider needs to transmit a large amount of patient data to insurance companies while maintaining compliance with HIPAA (Health Insurance Portability and Accountability Act), hybrid cloud is the ideal solution. It also enables offsite data encryption to reduce the risk of data loss.⁸



Measurable benefits of cloud implementation.

81% of financial decision makers said the benefits of using the cloud were more than just technology based. They outlined the following benefits, with many businesses experiencing notable measurable benefits across several areas:

Average quantifiable increase in getting new products/ services to market faster



Average quantifiable increase in enabling fast growth



Average quantifiable increase in process efficiency



Average quantifiable increase in employee productivity



Average quantifiable reduction in M&A integration costs



Average quantifiable reduction in IT maintenance costs



Average quantifiable reduction in operational costs



Average quantifiable reduction in IT spending



The right people for the job. ^{9,14,15}

Cloud Engineer

Collaborate with Architecture/Solutions Engineers and other stakeholders to design, test, and assist with integration and implementation of cloud-based solutions. They test and implement standards and design patterns to ensure compatibility and integration in cloud environments. Serving as engineering resources on proofs of concept and projects that are leveraging cloud based technologies they help to support the development of a structured, standardized, and consolidated sets of services that optimally support business processes and applications.

MEDIAN SALARY: \$102,000

Information Security Architect

Conduct risk assessments and business impact analysis, evaluating alternative strategies, developing recommendations, and ensuring responsive communication with business representatives, security management, and third party vendors. By assisting in implementation of security policies, processes, tools and methodologies that support security architecture standards, they also ensure security solutions are being developed across organization are aligned to enterprise security standards and principles.

MEDIAN SALARY: \$112,000

Customer Support Cloud Engineer

Provide technical support for cloud technologies, applying analytical skills and technical knowledge to solve product and software problems of moderate to high complexity. These engineers also provide technology/product training and intellectual property material.

MEDIAN SALARY: \$102,000

Increase in demand for cloud-related jobs

The migration of jobs to the cloud has led to an increase in demand for several roles associated with cloud use. While this is a positive shift for workers in the field, it indicates an increase in competition for employers to secure the most qualified candidates. The Bureau of Labor Statistics indicates better than average job growth for computer-based jobs between 2014-2020, with many of these jobs shifting to the cloud.¹⁶

Job Title	Total Jobs Forecast by 2024	Predicted Job Growth, 2014-2024	% Job Forecast	Median Salary ⁸
Software Developer	1,300,600	186,600	17%	\$78,378
Computer Support Specialist	855,700	88,800	12%	\$60,758
Computer Systems Analyst	686,300	118,600	21%	\$64,710
Computer & Information Systems Manager	402,200	53,700	15%	\$112,299
Computer Support Specialist	855,700	88,800	12%	\$60,758

The advanced steps: data and analytics.¹⁷

Predictive analytics involves a variety of techniques, including data mining, statistics and modeling, to analyze current data and make predictions about future.

It has allowed companies like Utica National Insurance Group to reduce their effort while receiving higher than expected returns. Used for risk assessment purposes, it provides the company with a continuous flow of incoming credit reports that can assess risk appetite built on a range of existing data instead of just credit scores alone.

Predictive analytics has also aided CenterPoint Energy in measuring ongoing performance by monitoring usage and outages with greater ease. They can now capture and analyze automated data from their metering systems, and also advance in information sharing across departments and users.



LOOKING TO COMBINE IAAS AND PAAS FOR PREDICTIVE MODELING? THINGS TO CONSIDER:

- Impact to the business overall
- Correct configuration in test and production environments
- Performance and response times
- Complexity of architecture systems and application integration
- Cloud licensing models
- Support and service level agreements
- Sufficient security and protocol support in place
- Platforms, operating systems compatibility and support
- Data hosting and cloud center locations
- Organizational transition readiness²

Skilled it professionals needed for advanced steps. ^{9, 18, 15}

Predictive Modeling Analyst

Conduct logical analysis of problems and develop analysis, modeling and data mining. Use technology, modeling, other applications, software tools, and programming languages to conduct advanced statistical analyses and apply mathematical calculations to provide information used for future decisions.

MEDIAN SALARY: \$90,000

Business Analyst

Assist management in driving strategic and operational business decisions. Work with senior executives and functional leaders to help deliver solutions for enhanced strategic alignment between analytical capabilities and demands of the sales and operations. Combine advanced data management, business intelligence and statistical analysis/predictive modeling techniques.

MEDIAN SALARY: \$82,000

Data Analytics Engineer

Lead the delivery of highly complex Big Data platforms to make decisions while applying technology knowledge of data analytics and insights to provide best-fit architectural solutions for big data projects. Design and develop advanced analytics solutions to make/optimize business decisions and processes, and seek and integrate new tools to improve descriptive, predictive and prescriptive analytics.

MEDIAN SALARY: \$119,000

IT Data and Analytics Manager

Communicate complex data or algorithms into simple conclusions to empower others to action based on insights. Transform the business to enable better decision-making through the usage of advanced analytics. Evangelist for the power of predictive analysis, and develop business cases to illustrate changes in decision-making.

MEDIAN SALARY: \$96,000



Cloud computing and the future of it careers.

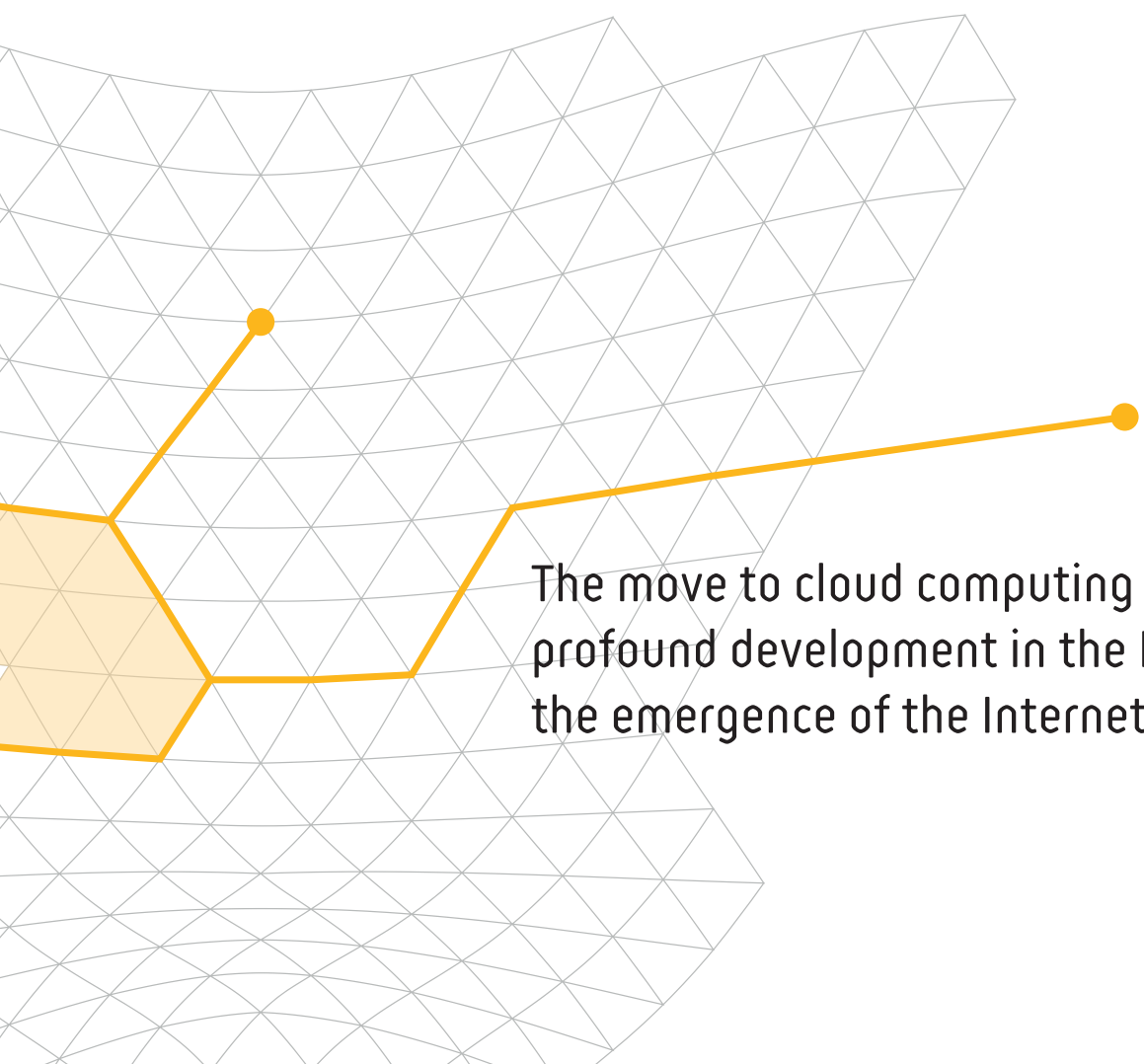
Automation in IaaS-related activities is increasing since the technology and operations involved are the most standardized. As such, the number of people needed to perform services in IaaS is shrinking.

Activities related to PaaS are also being automated and consolidated, but jobs in this category of services continue to grow because demand continues to increase. Many companies have unique needs for the way they store and manage their data.

The number of jobs and demand for SaaS services is steadily growing. In this category, the capabilities of IaaS and PaaS are combined with custom built or packaged software applications to deliver capabilities needed by companies to grow and run their businesses. Because of the unique nature of individual company needs, this work is difficult to automate and requires person-to-person contact, communication and collaboration. This is where most IT professionals will find jobs in the coming years as cloud services are incorporated in the operations of more and more companies.¹⁹

The cloud is impacting significant change to the ongoing mission of company IT groups. Traditionally, IT groups have been devoted to the installation and operation of computer and communications hardware and the operation of software hosted on that hardware. Increasingly, the adoption of cloud services in IaaS and PaaS is resulting in a shift away from traditional IT jobs as those jobs are outsourced to cloud service providers.²⁰

With this shift of traditional IT jobs to cloud service providers, company IT groups are redirecting their people and budgets to working with the business operating units in their companies. They are focusing on helping business units create competitive advantages in their industries and strengthen their bonds with customers. Just as software applications are more deeply integrated into the daily operations of many businesses, so too are IT professionals becoming more integrated into the organizational structures and operating units of those businesses.



The move to cloud computing is the most profound development in the IT world since the emergence of the Internet.

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