

In the early parts of 2020, when government-imposed lockdowns were being implemented to contain the spread of COVID-19, the retail industry took a heavy hit. The impact was felt even more by those retailers whose revenue depended primarily on foot traffic rather than online sales channels. One of the popular retail chains in Canada, had to face the embarrassment of their website being non-functional for more than a day due to the inability of their system to scale with increasing demand.

ENTER PUBLIC CLOUDS

Using the same infrastructure and network backbone used by heavyweight tech giants, public clouds like Azure, AWS and GCP (there are others too) offer a great solution to this scaling and reliability problem. Not only do they offer eye-popping uptime guarantees, but they are also economies of scale. As more and more organizations embrace the cloud, the cost of cloud services will become cheaper and cheaper. You could easily auto scale your infrastructure (memory, processing units, storage etc.), maintain geo redundant backups of crucial data, load balance workloads across the globe and do a lot more.

Cloud is also empowering! Unlike on-premises infrastructure, where business teams typically had to rely heavily on their IT teams, cloud infrastructure can be easily managed by the business teams themselves. While it is not a walk in the park, it's relatively easier to create infrastructure on the cloud and cloud portals offer clean and intuitive UIs to carry out most operations, from provisioning to monitoring.

However, *with great power comes great responsibility*. Unless you have a process, Cloud Deployments can easily get out of hand. Rather than cost savings, you could be hit by a ginormous invoice or worse, end up having a system that is extremely unstable and insecure. Cloud environments are inherently ephemeral. If proper care is not taken, someone could easily wipe out a database, or destroy a VM - resulting in loss of mission critical data and other irreparable consequences. One could also expose internal applications to the public Internet which could reveal confidential and restricted information to others. The latter actually happens more often than you'd think!

That's where **Infrastructure-as-Code** (I-a-C) comes into play. Frameworks like Terraform are one of the most sought-after skill sets in the industry for this very specific reason. It's a disciplined approach to deploying, scaling, and securing your cloud through Software Engineering best practices baked into it. With Infrastructure-as-Code, your Deployment Specs, Subscription Info, ACLs, Role Definitions/Assignments, policies (e.g., allow public access or not), are all written in scripts. The infrastructure code is managed using GitHub repositories and follows the standard processes akin to SDLC. Not only does it put some structure in place, but it also allows for easy re-deployment of infrastructure in a **Disaster Recovery** scenario. Having I-a-C or not could mean an outage of hours versus weeks.



At Mantrax, we have adopted Terraform for the past one year and have worked with some big companies here in Canada and in the US. If you'd like to learn more about I-a-C or Terraform, please reach out to us anytime.



Kalyan is a Partner at Mantrax Software Solutions and the Chief Solution Architect. Kalyan is an experienced and passionate software engineer with over 15 years of proven track record in developing a wide range of applications for retail, financial services, supply chain, automotive and start ups.

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Learning resources:

Terraform in 100 Seconds - <https://youtu.be/tomUWcQ0P3k>

Terraform for Azure Udemy Course (*Highly Recommended*) -

<https://www.udemy.com/share/104sv63@PSnjsfwKemDxoe5u8BnXkr2Qeo1peIO5Mr6gcw81cKOiZWP6nfqjd9vqh6ACfnrj/>