

ZOHO: THE PROS AND CONS OF THE “FULL STACK” APPROACH

ARE CONTROL, INDEPENDENCE, DATA PRIVACY (AND MORE)
WORTH THE COST?

Zoho at a Glance

Founded in 1996, Zoho has now been around for 24 years. Self-funding, profitable and privately held, Zoho has never raised capital. Born in the cloud, the company owns all the servers on which its customers' data resides. With 8,000+ employees, it currently operates 10 data centers around the world, supporting over 50 million users in 180+ countries.

Zoho One is an integrated suite of applications, all built with a common data model, all on the same technology stack, serving the needs of marketing, sales, support (the front office), and finance, HR, and operations (the back office). Zoho also offers productivity apps, collaboration, communication, analytics, AI and more - all for \$1/day/employee.

Zoho also offers apps individually and combined as suites, including CRM Plus, Workplace, Finance Plus, Zoho People Plus, Zoho Commerce Plus Platform and Marketing Hub.

Zoho is serious about software. If you go out to its [website](#) to learn more about the company and its products, one of the first statements you encounter is, “Software is our craft and our passion. At Zoho, we create beautiful software to solve business problems.” While this type of mission statement is certainly not unique in the world of enterprise applications, the approach Zoho takes, along with the results it has achieved, are just that: quite unique. And impressive.

And its customers will attest to that differentiation. If you speak to some of its (more than 50 million) users, you are struck by some of the terms you hear – terms like peace of mind, seamless, simplicity, certainty, powerful, predictability, and “It just works.”

*The uninformed might assume this level of seamless simplicity comes from overly simplified, lightweight functionality. And they would be wrong. These descriptors are the direct result of Zoho taking a full stack approach. The Zoho philosophy: “**To provide this seamless, superior customer experience, we need to own all core aspects of the technology stack.**” That stack includes everything from the applications themselves, the services, and middleware software, to the hardware, infrastructure, network, and data centers.*

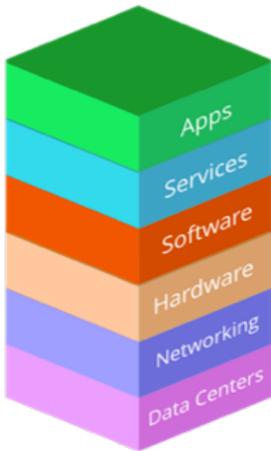
This full stack approach comes at a time when most other native Software as a Service (SaaS) solution providers are choosing to leverage tools and technology from public cloud providers like Microsoft (Azure), Amazon (AWS) and Google, in order to focus their efforts on their core competency, which is the application itself. Some do create their own development platforms, while others turn to giants in the industry like Salesforce and its Force.com platform. They do organically develop new features, functions and new products. But they also plug gaps in functionality and expand into new markets through acquisition and partnerships. And in doing so, they also sacrifice a level of independence, control and sometimes performance and data privacy.

Zoho is unwilling to sacrifice any of this, and is also committed to providing seamless integration and a single, unified data model. But that comes at a price. There are no shortcuts. Zoho must develop everything itself. While this might appear to be a serious constraint, its solution stretches well beyond the usual boundaries of enterprise applications to include

productivity tools like Mail (think Outlook), Sheet (think Excel), Show (think PowerPoint), Writer (think Word), Meeting Bridge (think Microsoft Teams or Zoom), and much more, totalling 47 apps today and growing. Plus it continually innovates its products, embedding new technologies like natural language processing (NLP) and artificial intelligence (AI). And it somehow manages to deliver an average of five new products a year.

Here we explore a bit of the why and how of this approach, along with the significant benefits, but we leave it to the reader to decide if the results are worth it.

Zoho's Full Stack



Source: Zoho

WHAT'S INCLUDED IN THE FULL STACK?

Zoho is best known for its applications, but any kind of application (consumer or enterprise) requires some “plumbing” or underlying architecture and infrastructure. And even when apps are accessed (by customers) through the cloud, they must sit on some hardware in someone’s data center, somewhere. And of course, that means they are accessed through some sort of network. A single weak link in this structure – poorly designed apps, a slow network, not enough computing power or storage – can (minimally) result in a poor customer experience or even total disaster. On the one hand, it would seem intuitively obvious that when the entire stack is managed and controlled by a single provider, it can be optimized for that purpose. On the other hand, can one company be “expert” in all of the different components of the stack? Probably not.

Zoho does want to exert control over the entire stack in order to optimize its customer’s experience. However, Zoho doesn’t need to be expert in everything. After all, it is not a hardware manufacturer. But if the hardware exists only to support Zoho apps, it can be tuned to do so in an optimal way. The same holds true for the network and the software and services layers that sit beneath the applications. And those layers are indeed created by Zoho. Most business users don’t look beyond that top app layer. They have neither the aptitude nor the interest in anything beneath it. But there are some important reasons why those lower levels matter, so let’s take a quick peek at each of them.

THE APPS

Zoho offers 47 different apps, some of which compete directly with other enterprise applications like finance and accounting, Customer Relationship Management (CRM), Human Capital Management (HCM), marketing and commerce apps. But it also offers another type used pervasively in most companies but are not typically supplied by these same enterprise application solution providers. These include productivity apps like Zoho Office Suite (an alternative to Microsoft Office and Zoho’s very first offering), Meeting Bridge (think Microsoft Teams or Zoom), Sign (as in Docusign) and Campaigns (like

Constant Contact or MailChimp). It also offers instant messaging (Cliq) and mobile application management. And the list goes on...

For companies that have already invested in Microsoft's full Office Suite, this might not seem to be of interest. If you count yourself among them, we would suggest you ask yourself three questions:

- ✓ How much time do your employees spend in these so-called productivity apps versus the enterprise apps like Enterprise Resource Planning (ERP), CRM and others?
- ✓ Wouldn't it be nice if the two types of apps were connected, like being able to add a contact to CRM right from your email or checking your calendar from your field service or customer support application?
- ✓ How much are you spending on both?

And before you answer those questions, here's another: Have you considered Zoho One? Zoho One is an integrated suite of applications, all built with a common data model, all on the same technology stack, serving the needs of marketing, sales, and support (the front office), and finance, human resources (HR), and operations (the back office). Zoho One also includes those productivity apps, collaboration, communication, analytics, artificial intelligence (AI) and more - all for \$1/day/employee. If you start with just a few apps (or even a single app) like most Zoho customers, you can easily add more. And if you go the Zoho One route, the only added cost is for new users, not new apps.

SERVICES

The use of this term can be confusing to some business users. These are not professional services for implementation and consulting, these are technical services consumed by the applications. Another way of looking at it: Think of it simply as a service the developers use instead of writing code from scratch every time, much like you would make use of the calculations included with TurboTax instead of doing all the manual calculations for your tax preparations each year.

Why are these important? Did you ever wonder why it has traditionally taken so long to develop software? It's because of all the little (and big) things you (the businessperson) don't see... things like securing records in a file so that two users aren't trying to update the same one, at the same time, causing changes to be lost. Or maybe it is indexing a file so that a program doesn't have to search the entire file sequentially to find the right data. Or something as simple as printing. You probably never even think about these components of programming, but your developers must.

A development platform can provide "application services" such as these and many, many more, so that developers don't have to worry about all these details, for each and every program. The platform handles them... and handles them consistently, the same way every time a program is written. Most

Zoho Services

- ✓ *Artificial Intelligence (including Machine Learning and Natural Language Processing)*
- ✓ *Search (within Zoho apps and across the Internet)*
- ✓ *Analytics (including predictive)*
- ✓ *Messaging*
- ✓ *Single sign on (SSO)*
- ✓ ...

developers of enterprise applications have developed services, but Zoho has gone beyond the usual file access and indexing kinds of services and has also added AI (including natural language processing), search, analytics, messaging and single sign on (SSO) for connecting different apps.

Some of these services, like AI, have become quite pervasive in consumer technology (think Siri and Alexa, or GPS that learns your favorite route). Now is the time to bring them into the enterprise, much like they were insinuated into our personal lives.

Customers are not demanding these technologies from their solution providers, or even expecting them. The 2019 Mint Jutras Enterprise Solution Study found only about 35% of participants perceive strong value from AI and ML, and even fewer (27%) see strong value in NLP. Another third (33%) are unsure of the value and the remainder see no value or admit they just don't know. Those unsure of the value are essentially saying "Show me." And that is exactly what Zoho is doing...much like when Apple first delivered Siri. Apple customers didn't demand the ability to converse with their mobile devices. Apple just delivered it. Other device manufacturers followed suit. Pretty soon virtual assistants became commonplace features. And people got hooked. It was only after the value was recognized that people willingly went out and bought stand-alone devices like the Amazon Echo Dot and Google Home.

Zoho has actually been working on a variety of use cases for AI for 10 years and it has indeed insinuated itself throughout the apps (Figure 1).

Figure 1: Breadth of AI Work at Zoho



Source: Zoho

All these services help software developers produce technology-enabled applications faster. But Zoho has not just enabled software developers, it has also put this kind of power directly in the hands of business users with [Zoho Creator](#). Zoho Creator is a low-code application development platform that guides even the nontechnical business person through the entire process of

“Our company turned into a digital army when they realized the possibilities with Zoho Creator and started creating applications themselves. I was so delighted when non-programmers from our HR and accounting team developed their web and mobile applications with minimal assistance from IT.”

Jojo Guingao, Vice President, Aboitiz. A Zoho customer

For its apps, Zoho strictly adheres to a single, unified data model, organized into (functional) pillars and files.

creating web and mobile-based applications with drag and drop simplicity. Business people with a specific need, who once needed to wait in line for an IT specialist to create functional and technical specifications, and then a software developer to code the new feature or function, can now drag in common program elements, including workflows, validation and security (access) criteria, triggers and conditions, and visualizations (including lists, charts and graphs).

Think that sounds too good to be true? Go out to the link provided above and see what Zoho customers have to say about it, or just see for yourself with a [15-day free trial](#).

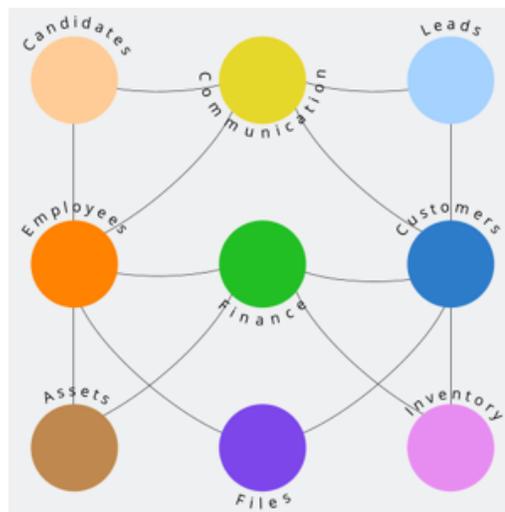
SOFTWARE INFRASTRUCTURE

Here is where we are really getting “under the hood”, but we promise not to get too technical. Zoho’s software infrastructure layer is actually a series of sublayers. The first layer is the database.

With the advent of in-memory databases, we hear a lot today about row versus column-based structures. Traditionally databases were row-based because that provided the ability to write transactions (data) very quickly. Column stores are great for highly analytical query models, aggregating large volumes of data. One of the benefits of a columnar database is speed. Zoho supports both and users can create their own tables, even without any special technical skills. Zoho Creator allows you to build one from scratch, or move an existing database to the Creator platform, and modify it.

For its apps, Zoho strictly adheres to a single, unified data model. The data itself is organized into pillars and files, which intuitively align to different aspects of your business, but they are all interconnected.

Figure 2: Seamlessly Integrated Unified Data Model



Source: Zoho

For the reader with a technical background, a microservice architecture is defined (by Wikipedia) as an architectural style that structures an application as a collection of [loosely coupled](#) services. For those nontechnical readers, think of it as constructing a solution from a set of Lego building blocks.

It is also in this layer where we find the underlying architecture that supports the apps. “Platform” has become an over-used and a catch-all term these days and can refer to a variety of different aspects of the technology. But hopefully, this is where you find a microservices architecture.

For the reader with a technical background, a microservice architecture is defined (by Wikipedia) as an architectural style that structures an application as a collection of [loosely coupled](#) services. For those nontechnical readers, think of it as constructing a solution from a set of Lego building blocks.

Think about how you build a structure from Legos. Each Lego block is made of the same kind of material and is attached (connected) to the other Lego blocks the same way. In many ways they are interchangeable. But by choosing different colors and sizes, and connecting them with a different design, you can make a structure that is very unique. And once constructed, if you want to change it, decoupling some of the blocks and replacing them doesn’t destroy the parts that are not affected. There is far less disruption introduced than if you had constructed it with a hammer and nails.

This is how Zoho is able to provide seamless integration, a unified experience, and also better performance.

There are additional sublayers included in the software infrastructure layer that are more technical, but one other worth mentioning here is the App Firewall(s) for added security.

HARDWARE – NETWORK – DATA CENTERS

Since this report is designed to be read and understood by a typical business user who might not have deep technical acumen, we won’t go into a lot of detail about these three elements of the stack. Suffice to say they are all related and if you are running any Zoho apps, you can be sure they are running on hardware owned and managed by Zoho, in one or more of Zoho’s data centers located around the world. The network is also controlled and managed by Zoho. Zoho doesn’t run on any public clouds, for one very important reason: Privacy.

Protecting user privacy is simply built into Zoho’s DNA. Its promise to its customers is simple:

- We don't own your data, you do
- We'll never sell your data
- We'll never do advertisements

Even with its free apps (and there is a free version of every one of its apps), the company never even considered selling ads. And now Zoho is taking another important stance on privacy. It is blocking **adjunct surveillance** to protect the privacy of all users. This might not be a term you have heard before, but you are most certainly a subject of this type of surveillance. Who

Zoho Data Centers

Zoho currently operates 10 data centers around the world, 2 each in the following locations:

- ✓ The United States
- ✓ Europe
- ✓ China
- ✓ India
- ✓ Australia

“We don’t run on any public clouds, so they can’t track our users’ behavior, data, etc.”

Raju Vagesna, Chief Evangelist, Zoho

Almost everyone, including Google, Facebook, Twitter and many enterprise application vendors offering SaaS solutions use products and services from surveillance companies in exchange for their users' data.

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does it? Almost everyone, including Google, Facebook, Twitter and many enterprise application vendors offering SaaS solutions. B2B companies use products and services from surveillance companies in exchange for their users' data. It is happening on mobile devices and websites. And surveillance companies are gathering information about users' data from adjunct properties, **without their permission.**

Zoho has taken a firm stance and declared it will not be part of this practice, however legally acceptable it is. Zoho feels it is morally unacceptable. But it is only capable of withdrawing from this practice by taking a full stack approach. Of course, there is a cost to doing this, but Zoho feels it is worth whatever the cost is now and in the future.

As a result, Zoho has:

- Removed Facebook: No like buttons or share options
- Removed Twitter: No tweet buttons
- Removed Google: No Analytics, No Tag Manager, etc.
- Removed trackers from all ad companies: This required Zoho to develop several tools internally

SUMMARY AND KEY TAKEAWAYS

Unlike the majority of other SaaS solution providers today Zoho has decided against riding on the coattails of public cloud companies like Microsoft, Amazon and Google. There is, of course, a price to be paid in doing this. It must develop all its own software and technology components and is unable to take advantage of “free” services from these and any other technology giants. It is not willing to “pay” for those seemingly free services by sacrificing the control and independence it enjoys by owning the “full stack.” And it never requires its customers to “pay” for those services with access to their data.

While this would appear to be a high price to pay, Zoho is more than well-equipped to pay it. Zoho spends a very healthy percentage of its revenue on research and development. The result is an incredibly diverse range of applications, including both your traditional enterprise apps, and also a full complement of productivity apps, as well as a growing list of technical tools. Unlike some other cloud-native solution providers that still rely on capital investment even after many years, even decades, Zoho is profitable and self-funded.

If you are stuck on legacy systems, if you are struggling with costs that are escalating unpredictably, if you are anxious to try out new technologies in the cloud but are concerned about your data privacy, Zoho is worth a look. No need to go “all in.” It is possible to just put your toe in the water, start small and get a feel for the company and its offerings. You can even try before you buy.

About the author: *Cindy Jutras is a widely recognized expert in analyzing the impact of enterprise applications on business performance. Utilizing over 45 years of corporate experience and specific expertise in manufacturing, supply chain, customer service and business performance management, Cindy has spent the past 14 years benchmarking the performance of software solutions in the context of the business benefits of technology. In 2011 Cindy founded Mint Jutras (www.mintjutras.com), specializing in analyzing and communicating the business value enterprise applications bring to the enterprise.*