The SaaS vs. On-Premise Decision

Kenneth Price, Senior Business Analyst
CIPPlanner Corporation
Published: October 26, 2022 6:15PM EST
Revised: April 6, 2023

Table of Contents

CIPPLANNER

INTRODUCTION

We are witnessing, in both the United States and globally, a significant movement from on-premise to some form of cloud solutions, particularly as it relates to the three primary models: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS). As noted in **Exhibit 1**, each type of cloud computing transitions some degree of management to provider-based remote (and often distributed) resources. In the case of SaaS, complete transference of computing resources and capabilities goes to a third-party provider or provider syndicate.

Exhibit 1: On-Premise vs Three Primary Cloud Computing

On-Premise	LaaS	PaaS	SaaS
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

While organizations and economies have suffered in recent period from a global coronavirus pandemic, inflation, and geo-instabilities (e.g., Russian invasion of Ukraine), the cloud-based management of computing resources continues a sharp upward trend. Gartner recent tracking and projections shows a 53.6% growth in the total market for worldwide cloud services between 2020 and 2022. **See Exhibit 2**.

The SaaS vs. On-Premise Decision
Published October 26, 2022 (Rev. April 6, 2023)

CIPPLANNER

At greater than one-third of cloud services, SaaS is a major driver in the overall trend with an expected growth of 42.5% over the 2020-2022 period.

Exhibit 2: Gartner Tracking of the Worldwide Total Market for Cloud Services

Table 1. Worldwide Public Cloud Services End-User Spending Forecast (Millions of U.S. Dollars)

	2020	2021	2022
Cloud Business Process Services (BPaaS)	46,066	51,027	55,538
Cloud Application Infrastructure Services (PaaS)	58,917	80,002	100,636
Cloud Application Services (SaaS)	120,686	145,509	171,915
Cloud Management and Security Services	22,664	25,987	29,736
Cloud System Infrastructure Services (IaaS)	64,286	91,543	121,620
Desktop as a Service (DaaS)	1,235	2,079	2,710
Total Market	**313,853**	**396,147**	**482,155**

BPaaS = business process as a service; IaaS = infrastructure as a service; PaaS = platform as a service; SaaS = software as a service
Note: Totals may not add up due to rounding.

Source: Gartner (August 2021)

FinancesOnline estimates that 89% of businesses are using SaaS as a computing model. The SaaS/Business to Business (B2B) software directory provider and researcher reports that

The SaaS vs. On-Premise Decision
Published October 26, 2022 (Rev. April 6, 2023)

CIPPLANNER

companies running purely on SaaS will have grown from 51% in 2018 to 86% by the end of 2023. **[1]**

GOVERNMENT ADOPTION OF SAAS

When considering the four major segments in our economy – Consumers, Business/ Organization, Institutions, and Government – the former three capture the lion's share of attention when discussing cloud-based solutions. The reasons vary. For instance:

- Consumers are most numerous, provide the largest user base, and rely on cloud solutions as to replace desktop applications and in some cases no local solution at-all. Here, Facebook, YouTube, Google Drive, and a host of other remote platform serve billions of users worldwide.
- Business/Organization segment accounts for significant I/O, processing, and bandwidth on public cloud providers such as AWS.
- Institutions are leveraging SaaS for innovative delivery of content and services. Academic institutions such as Massachusetts Institute of Technology served as pioneers for digital distance learning. While healthcare providers such as Kaiser Permanente are moving to Microsoft and other cloud environments for healthcare-everywhere solutions.

And yet, the public sector is increasingly adopting cloud computing to deliver of a range of vital services. In 2017, The State of Florida and the Florida Department of Highway Safety and Motor Vehicles (FLHSMV) launched a virtual reimagining service for its citizens to process local driver license and motor vehicle registrations. Named MyFlorida, this SaaS-based service allows citizens to search for their vehicles or vessels and renew up to five registrations at once.

In 2018, Cabarrus, County, North Carolina, launched myCabCo. This SaaS-based service allows 206,000 residents to: 1) Pay real estate and personal property taxes; 2) Set up scheduled and partial payments; 3) Store digital receipts and document copies; 4) Use one profile to interact with county and state government; and 5) Monitor account status. **See Exhibit 3**.

---

[1] See *"11 SaaS Trends for 2022/2023: New Forecasts You Should Know"* at https://financesonline.com/saas-software-trends/. Retrieved October 26, 2022.
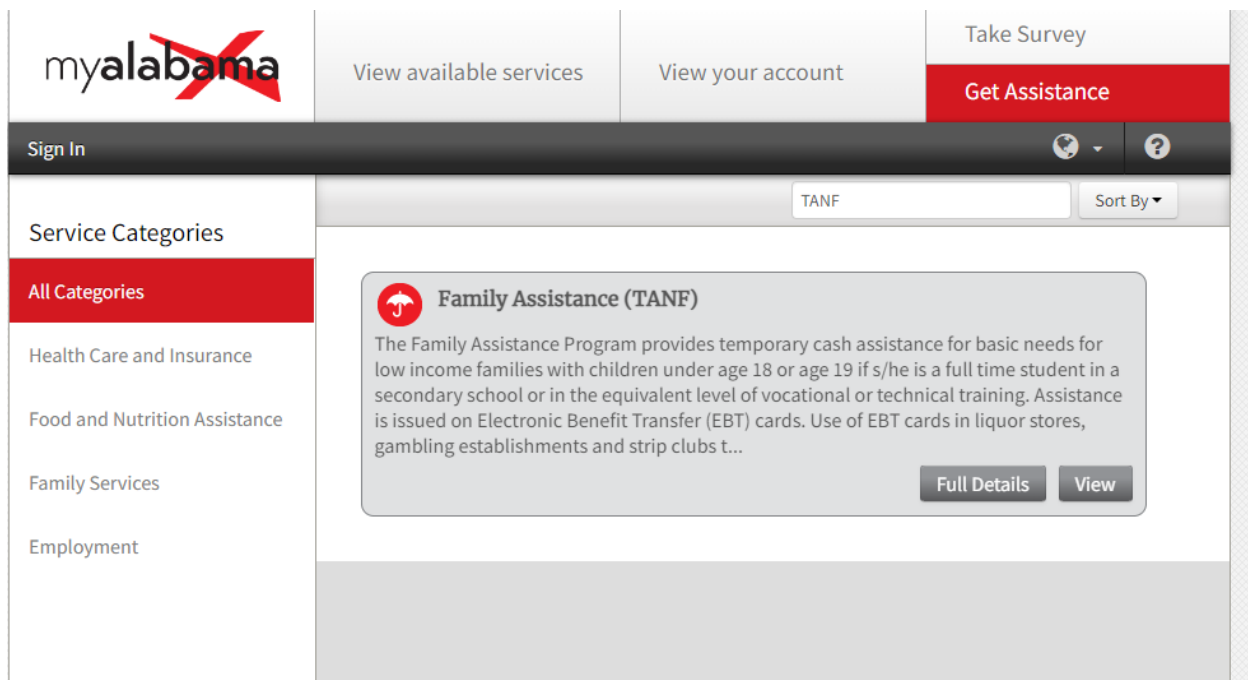
Exhibit3: Cabarrus County, NC Use of Google Play to Distribute the myCabCo App
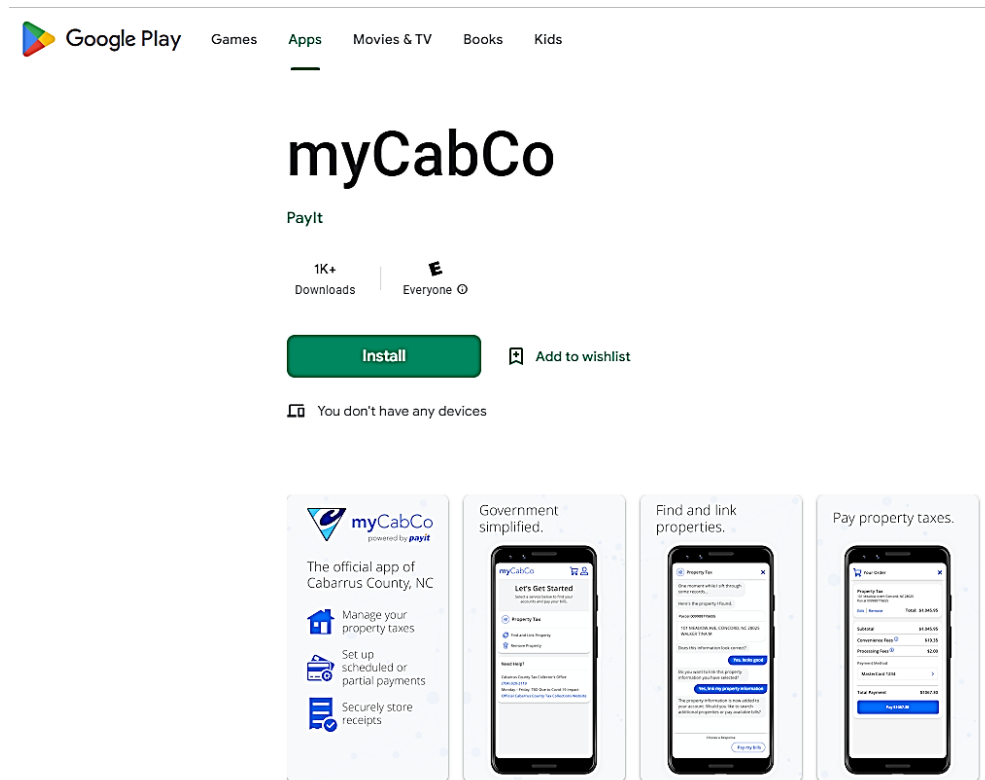
In 2020, the Alabama Department of Human Resources (DHR) launched a SaaS-based solution to provide Temporary Assistance for Needy Families (TANF) payments to its low-income families with children.**²** See Exhibit 4.

---

² See *Government as a Service Why the public sector is turning to SaaS to solve their IT and citizen experience challenges*". Retrieved on October 26, 2022 at https://media.erepublic.com/document/PayIt_-_Government_as_a_Service.pdf.

The SaaS vs. On-Premise Decision
Published October 26, 2022 (Rev. April 6, 2023)

CIPPLANNER

Exhibit4: Alabama DHR Online Management of TANF Payments

Cloud computing is increasingly a strategic conduit for Smart City development and management of public infrastructure. An ecosystem of emerging and maturing technologies -- such as Internet of Things (IoT), artificial intelligence, big data processing, and geographic information systems (GIS) -- affords agencies an opportunity to deploy faster, higher quality, and more dynamic solutions in a complex scenarios. Situations that balance environment sustainability, population shifts, fiscal challenge, land use constraints, consumption patterns, regional growth plans and multidimensional objectives, and a maze of multilayered regulatory frameworks.

Other examples illustrate how cloud computing improves infrastructure lifecycle management and enhances the quality of life for public consumers/stakeholders:

- The Louisville Water Company (LWC) has roughly 320,000 endpoints that served nearly one million customers in Greater Louisville, Ohio area. The utility set out to replace

280,000 meters with new Neptune meters and other technology by Itron and Cisco. In 2019, LWC began work on a $62 million Cisco AMI project; the largest non-engineering efforts in the then 159-year history of Louisville Water.[3]

- The City of Houston, TX partnered with Microsoft to modernize its infrastructure. A central part of the effort involving installing smart water meters to 500,000 water customers. These meters gather information on a 15-minute interval, which will allow the City to someday provide customers real-time leak alerts and conservation advice.[4]

- For the 165,000 residents of Cary, NC, challenges related to traffic and parking management exact myriad tolls on economic growth and quality of life. The installation of intelligent devices that connect to cloud servers helps Cary to minimize the number of vehicles on the road, reduce congestion, and save fuel.[5]

SAAS: PROS AND CONS

First, A Bit of SaaS "Realism"

SaaS deployment enables an organization's user base to seamlessly access an enterprise platform solution from a desktop, laptop, or mobile device, without regard for the physical architecture and its location(s). But what are the upside benefits and downside challenges? Is on-premise delivery completely a bust in light of today's technological capabilities and is SaaS a sort of nirvana computing model.

As it turns out, in both cases, the answer is no. And this is the honest perspective from anyone that touts technological integrity. However, what we can conclude are the following:

1) The benefits from on-premise (or or-site) computing are waning and waning significantly;

---

[3] Phil Goldstein, *Smart Water Technology: How IoT Helps Cities Save Money and Conserve Water*, July 20, 2020. Retrieved at https://statetechmagazine.com/article/2020/07/smart-water-technology-how-iot-helps-cities-save-money-and-conserve-water-perfcon on, October 26, 2022.

[4] Sue Wilkinson, Business Strategy Lead for Smart Cities, *How smart cities are putting people first in the urban world*, July 23, 2019. Retrieved on October 26, 2022 at https://cloudblogs.microsoft.com/industry-blog/government/2019/07/23/how-smart-cities-are-putting-people-first-in-the-urban-world/.

[5] Hilary Bird, *The City of the Future Is Being Built in Cary, NC*, OPENSpace (NRPA), February 22, 2019. Retrieved at https://www.nrpa.org/blog/the-city-of-the-future-is-being-built-in-cary-nc/ on October 26, 2022.

The SaaS vs. On-Premise Decision
Published October 26, 2022 (Rev. April 6, 2023)

CIPPLANNER

2) The benefits of SaaS, for delivering CIPAce™ are distinct and substantial; and

3) The challenges of cloud-based CIPAce™ delivery are greatly mitigated by CIPPlanner's computing infrastructure, adherence to best practices, considerable policy regime, regular independent assessments, technology expertise, and over two decades of engineering lifecycle infrastructure management solutions.

Put simply, cost/benefit is fiscally sound and the risk/return quotient is highly favorable. Below, we will first look at pros and cons of SaaS computing, generally. Likewise, we will examine why in light of general considerations why it is a prudent organization choice that CIPPlanner Customers are making to move to its cloud-based delivery of CIPAce™.

General Pros of SaaS

Generally, our SaaS delivery offers a number of benefits that CIPPlanner Customer enjoy as a result of our approach to cloud computing. The benefits include:

LOWER SYSTEM LIFECYCLE COSTS
Arguably, the catalyst for trends to cloud computing and SaaS, specifically, is cost savings derived from a shared environment. Here, environment means all aspects of computing assets, including but not limited to: facilities, computer servers, storage, networking, security devices, and more. Spreading the investment across a wider user base is a more affordable option in terms of capital/acquisition cost, operating expenses (e.g., licensing), maintenance outlays. Further, expanding the cost function to include people that install, configure, operate and monitor system resources, human capital costs are also lowered as well.

For Government Agencies, CIPPlanner's SaaS approach targets system lifecycle cost reduction standards and best practice as an excellent "good governance" strategy for demonstrate to local taxpayer. For Corporation owners, SaaS has shareholder return on investment implications.

LIFECYCLE DEPLOYMENT TIME REDUCTION
CIPPlanner maintains an active product development program to address the emerging needs of its Customers, exploit new technology capacities, and leverage new norms in best practices. We see this is such areas as GIS, collaborative workflow automation, data analytics, and more. Consequently, we promote system management, not simply from a version-specific perspective, but also from a lifecycle management responsibility.

For new CIPPlanner Customers, an established computing environment accelerates first-time deployment. However, Customers that are moving from on-premise to SaaS delivery can accelerate their timetables on version updates given the environment that is already engineered for the particular needs of CIPAce^{TM}. Software changes do not require organizations to conduct physical environment assessments, procurement of hardware or networking devices, installation, and complex configurations.

SaaS, in-essence, is CIPPlanner's strategy to manage more efficient deployments of the entire lifecycle of CIPAce^{TM}.

ECONOMIES OF SCALE

The growth in infrastructure investment translates into corresponding growth in the need for lifecycle infrastructure enterprise software solutions. Unlike on-premise installations, SaaS offers CIPPlanner an opportunity to scale Customer instances of CIPAce^{TM} up and down as the demand for computing resources expand and contract. As opposed to a Customer being forced to make, what could be urgent capacity planning decisions that require fast purchases, CIPPlanner hosted solutions enable more dynamic scaling, thereby offering Customers economies.

CIPPlanner is committed to closely aligning your computing resource needs to real-time CIPAce^{TM} resource allocations.

RAPID RESPONSE INTEGRATION

Customers of CIPAce^{TM} enjoy the benefits of a highly configurable platform that leverages myriad integrations. With these, CIPPlanner must respond to a range of external technology changes in a timely way across our Customer landscape. Where these changes impact on-premise installations of CIPAce^{TM}, Customers of software solutions are vulnerable to changes such as Microsoft's directive for MS Server 2012r2 that is scheduled for end-of-life on October 10, 2023. Similar observations can be made regarding changes to applications with which CIPAce^{TM} interacts through Webhooks, APIs, and other data transfer/gateway solutions.

We are committed to shielding organizations that invest in CIPAce^{TM} from the complexities of reacting to external changes that, would otherwise, require on-premise environment changes. SaaS enables a more disciplined way for Customers to manage CIPAce^{TM} over a lifecycle that will surely witness of number of critical changes that pose integration requirements.

The SaaS vs. On-Premise Decision
Published October 26, 2022 (Rev. April 6, 2023)

CIPPLANNER

SaaS provides Customers the benefits of integrations, while transferring the burden of this benefit to CIPPlanner.

STOUT SECURITY

The placement of CIPAce^{TM} in a cloud environment enables CIPPlanner to deploy and manage robust security mechanisms with the greatest level of autonomy. CIPPlanner can enforce certain standards from the highest-to-lowest of components. That is, from data center level down to each storage device.

This also enables CIPPlanner to address more reliable enforce isolation requirements through Virtual Private Networks (VPC) and other approaches. SaaS offloads increasingly complex security concerns that impact CIPAce^{TM} by assuring compliance with the most rigorous standards and guidelines. Likewise, this enables a more consistent approach to security risk assessments, monitoring, preemptive safeguards, and other stout security measures.

SaaS provides Customers the benefits of integrations, while transferring the burden of this benefit to CIPPlanner.

HIGH-END ACCESSIBILITY

CIPPlanner sets a high bar on the issue of *accessibility*. A more conventional definition looks at the ability of end-users to request system services, irrespective of location/region, device, day and time, or personal impairments (visual, auditory, tactile). Likewise, we are increasingly exploring ways to mitigate other considerations that compromise accessibility such as: software errors, distributed denial of service (DDoS) attacks, and malware. Our Customer satisfaction model is designed to address as many factors as possible that stymie or prevent a user's access to a quality experience and accurate computations.

Moving a Customer to SaaS offers our greatest opportunity to consistently meet exceptional levels of accessibility. On-premise delivery is an antiquated approach to high-end accessibility in that physical site-by-physical site responses are cumbersome and time-consuming, remote environments under the control of CIPPlanner provide a nimbler response.

Consequently, SaaS has direct bearing on not only meeting the requirements of Service Level Agreements (SLAs), but exceeding them – across the landscape of CIPAce^{TM}.

The SaaS vs. On-Premise Decision
Published October 26, 2022 (Rev. April 6, 2023)

CIPPLANNER

General Cons of SaaS

Previously, we noted that, whether on-premise or some form of cloud computing, there are not perfect computing scenarios for Customers of CIPPlanner solutions or other solutions. But let's take a look at commonly discussed disadvantages of SaaS delivery. We do this with a sense of professionalism, and we inspect each in light of CIPPlanner's market position and internal capabilities. So here they are:

PROVIDER CONTROL OF THE INFRASTRUCTURE
Going back to Exhibit I, SaaS entails the greatest degree of management transference of the three primary forms of cloud computing. Again, this is a general concern. And for certain operators that lack formal protocols, standards, SLAs, and physical resources, this places users in a vulnerable situation.

For ill-prepared/ill-equipped SaaS providers, the following are some of the many scenarios that could result in an uncertain downtime position and users' inability to continue their business:

- Catastrophic power outage.
- Natural disaster that destroys a facility or connectivity to remote servers.
- Man-made disaster (e.g., malfeasance, malice, terrorism) disrupts services.

CIPPlanner Readiness to withstand these and other threats includes, but is not limited to:

- A multiplicity of policies and procedures such as Business Continuity Plan, Disaster Recovery Plan, Independent Assessments (e.g., CREST certified agencies), Data Center Audit, Incident Response Plan, and more.
- Fail-safe physical environment such as power generation, backup and recovery protocols and procedures, security monitoring (e.g., cameras), automated system monitoring and alerts (e.g., processor overheating).
- Service Level Agreements (SLAs) that ensures CIPPlanner is penalized for failing to meet a 99.9% uptime standard (beyond stated exceptions such as planned maintenance).

COMPATIBILITY ISSUES
SaaS solutions generally run the risk of incompatibility with third-party tools, software, etc. An ill-prepared provider places Customers and their respective users in a compromised posture of "breaks" in the chain of business and/or computing processes.

CIPPlanner avoids risks associated with incompatibility by, as a standard, adhering to best practices in system implementation projects. This includes rigorous requirements/gap analysis, detailed development of specifications, thorough system construction, exhaustive testing. Projects do not proceed to subsequent stages without formal Customer signoffs.

INABILITY FOR CUSTOMER TO CUSTOMIZE THEIR SOLUTION

A typical rejection of cloud-based solutions centers around the idea that Customers are handcuffed by out-of-the-box designs that offer no or very limited customizations.

For over two decades, CIPPlanner has committed itself to offering both out-of-box and highly configurable solutions. As organizations move to CIPAce^{TM} provided by cloud-based resources, we continue to maintain that standard. Indeed, if anything, CIPPlanner constantly presses its product development team to reach deeper into new areas of potential customizations.

A FINAL WHY...

Having looked at market trends, SaaS advantages and disadvantages, and CIPPlanner's specific posture in cloud-based computing, there is one final consideration that we hope our Customers recognize during the process of making a decision to adopt a software-as-a-service approach to CIPAce^{TM}.

It is, perhaps, our strongest case. Namely, that since being a pioneer in the enterprise software arena for infrastructure lifecycle management, CIPPlanner has made its single investment in CIPAce^{TM}. We have worked and continue to work diligently to exceed Customer expectations, operate with integrity and professionalism, and engineer computing solutions that have to-date managed over $250 billion in infrastructure projects. The future of CIPPlanner rests in its ability to evolve CIPAce^{TM} in a way meets the demands of a very dynamic marketplace

Ultimately, CIPPlanner believes in SaaS as a vital aspect of the future of CIPPlanner.

With that, on behalf of CIPPlanner, I want to thank you for reading this white paper and hope to see you in the cloud.

THE END