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Perspective

The A-to-Z of SaaS purchasing

April 2022

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1. Executive summary

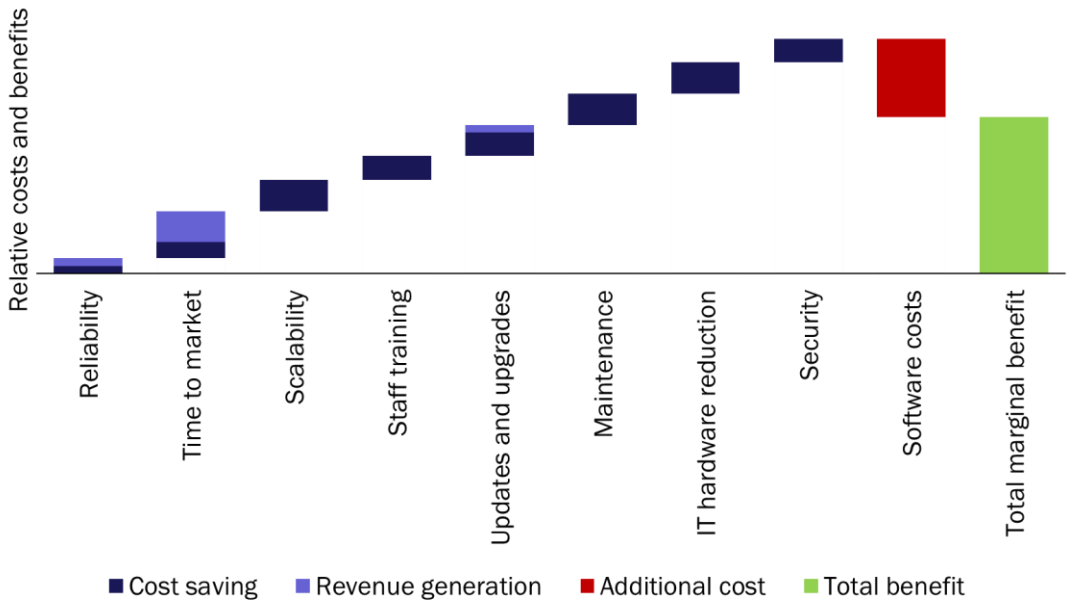
Vendors of software-as-a-service (SaaS) solutions take complete responsibility for the software and cloud-based infrastructure, and their customer, such as communications service providers (CSPs), pay a regular fee for access. This makes SaaS drastically different from the traditional on-premises model of software delivery and consumption that involves CSPs managing infrastructure and dealing with inflexible hardware or software configurations. It is not just a new deployment option; it is also a new business model.

CSPs must weigh up the various costs and benefits of SaaS when considering how to deploy their business applications in support of their services. They must consider whether the various benefits of SaaS deployment outweigh the benefits of alternative deployments once all costs over time have been factored in.

CSPs have traditionally viewed SaaS as being advantageous than alternatives during the initial set-up period because the costs tend to be significantly smaller than that for either on-premises or hosted-cloud deployments. However, SaaS is typically perceived as being more expensive over the lifetime of the deployment due to the high recurring costs compared to the costs of on-premises and hosted-cloud deployments. This view may not necessarily reflect all the benefits of SaaS and may over-emphasise the lower software licensing costs of non-SaaS deployments and not take operational and hardware costs into consideration. Care should therefore be taken to compare not just the licensing costs for various deployments, but also the costs associated with end-of-life upgrades, staffing and maintenance in order to understand the full range of cost savings that can be achieved by using a SaaS-based deployment. It is important for CSPs to consider the suitability of SaaS for the specific service they are planning. In many scenarios, the long-term software costs associated with SaaS may become far less significant when CSPs take into account the significant savings that are possible in other areas.

We have produced a broad estimate of the relative importance of each category in a CSP's ROI consideration (Figure 1.1). We consider the cost-saving benefits related to reliability, time-to-market, scalability, staff training, updates and upgrades, maintenance, IT hardware reduction and security. We also consider the improved potential for revenue generation due to reliability, time-to-market and updates and upgrades. We expect that, in general, the overall benefits of SaaS will outweigh the additional cost, even in the long term.

Figure 1.1: Estimated relative costs and benefits of SaaS deployments



Source: Analysys Mason, 2022

2. Recommendations

- **CSPs should consider the conditions under which they are launching the new service.** CSPs should consider what the demand for the new service will be. A SaaS deployment may be suitable for a service that is being used to demonstrate a new use case due to the minimum upfront expenditure and the potential to allow the use case to 'fail fast'. On the other hand, SaaS is unlikely to be mature enough at its current stage to support core network functions.

- **CSPs should consider the requirements for scalability and deployment timescale.** CSPs should consider whether the demand for the service is likely to change quickly and therefore whether rapid scalability is required. SaaS is likely to be a good option if such scalability is needed. Services that require new functionality to be added quickly will also benefit greatly from a SaaS-based deployment.

- **CSPs should consider using SaaS-based deployments for non-mission-critical functions to accelerate their cloud-native transformations.** CSPs that are aiming to become cloud-native or wish to move more aspects of their network to the cloud may benefit from using SaaS-based deployments for BSS functions and non-mission-critical network functions.

- **CSPs should not disregard the benefits of SaaS deployments that are not directly related to costs.** CSPs may benefit from SaaS deployments in areas beyond cost, such as faster deployment times and seamless upgrades.

- **CSPs should consider how to optimise their use of resources.** CSPs may gain more benefit by outsourcing the responsibility of a deployment's maintenance to a vendor, thereby enabling internal staff to focus on improving revenue generation. This also means that resources that would have otherwise been spent on hardware can be spent elsewhere.

3. What is SaaS?

Vendors of SaaS solutions take complete responsibility for the software and cloud-based infrastructure, and CSPs pay a regular fee for access. This makes SaaS drastically different from the traditional on-premises model of software delivery and consumption that involves the CSP purchasing and managing their infrastructure and dealing with inflexible software, hardware or hosted services configurations. Analysys Mason defines SaaS deployments as having the following characteristics.

- The system is hosted.
- The hosting is managed by the SaaS vendor.
- The SaaS provider maintains the hosting and the business application software.
- The software is used by the CSP's staff, not the vendor's staff.
- Modern SaaS implementations use CI/CD-based microservices approaches that enable vendors to efficiently create and deliver new application functions.

Analysys Mason views SaaS as being different to a managed services offering, which requires dedicated vendor staff to run the business functions on behalf of the CSP. Furthermore, we do not consider multi-tenancy to be a requirement for SaaS, though we acknowledge that many SaaS services are multi-tenant.

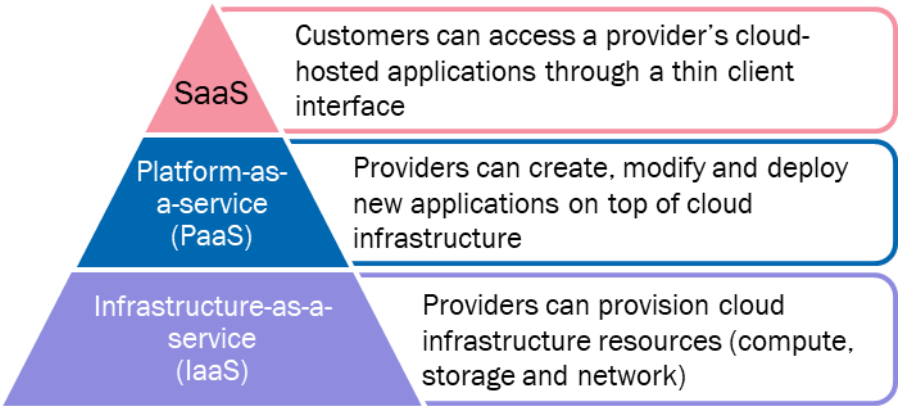
CSPs' spending on SaaS has increased in recent years. Indeed, it accounted for 5% of CSPs' spending in 2019 and we expect that this figure will rise to 11% by 2023.[1] This number is likely to continue to accelerate rapidly in the coming years as CSPs execute transformation projects based on the adoption of larger platforms such as those from Salesforce, ServiceNow and Snowflake.

3.1 SaaS is a new delivery mechanism

SaaS is a relatively new delivery mechanism in which the software vendor is solely responsible for IT and software maintenance, updates and security. SaaS deployments require the two stacks beneath the software known as the platform and infrastructure (see Figure 3.1). This means that software is hosted on the vendor's own platforms and applications are hosted in the public cloud. CSPs typically access the software through a thin client (such as a web browser); an internet connection is the only prerequisite. Access to the software is paid for via a recurring fee. SaaS can also be consumed via exposed APIs.

1 For more information, see Analysys Mason's SaaS: worldwide forecast 2019–2023.

Figure 3.1: The position of SaaS in the cloud delivery value chain



Source: Analysys Mason, 2022

3.2 SaaS uses a new pricing model based on usage

The SaaS pricing model is based on usage, so CSPs only pay for what they use (or in some cases, they may pay for pre-defined buckets of usage). CSPs can increase the scale of their operations with minimal disruption because the hardware component is provided and maintained by the vendor. SaaS is heavily productised, which means that services can be modified through simple changes to the subscription. This allows CSPs to effortlessly add additional functionality from the vendor's such as additional applications or features. However, the level of customisation may be affected in some scenarios because it may not be possible to add all of the desired features to a particular SaaS deployment.

3.3 SaaS is an alternative to on-premises and hosted-cloud deployments

The key differentiator between SaaS deployments, on-premises deployments and hosted-cloud deployments is the CSP's level of responsibility. CSPs are responsible for everything in an on-premises deployment, while in a hosted-cloud deployment, CSPs are only responsible for the software. Both of these options result in higher levels of maintenance and require greater in-house expertise than SaaS deployments. However, these deployments are more customisable than SaaS-based solutions because CSPs can simply add whichever applications they desire to the software purchased. Figure 3.2 gives a summary of the roles played by CSPs and vendors in each of these deployment models.

Figure 3.2: Responsibilities of vendors and CSPs in the three main software deployment models

Model	Vendor		CSP	
	IT	Software	IT	Software
SaaS	Yes	Yes	No	No
On-premises	No	No	Yes	Yes
Hosted-cloud	Yes	No	No	Yes

Source: Analysys Mason, 2022

4. Initial costs and benefits

We define initial costs as the set-up costs required to deploy an application. One of the main advantages of SaaS is the potential for cost savings when first deploying a service. Indeed, the adoption of cloud-based SaaS models allows CSPs to limit the costs related to testing and selecting solutions in the initial stages of deploying IT infrastructure and business applications software.

4.1 SaaS: initial costs and benefits

IT infrastructure

The initial IT set-up cost for CSPs using a SaaS model is low-to-none. The vendor is responsible for all IT hardware components; software is run on the vendor's platform and is delivered to the CSP via the cloud. As such, CSPs can benefit from competitive vendor prices due to economies of scale. CSPs can then use these cost savings to achieve strategic business goals and rapid scalability with limited investment.

CSPs also do not need to set up any hardware because it immediately available to use. This can significantly reduce the time to market for new services from months to days. For example, Amazon Web Services has cited that SaaS deployments reduce its time to market by 69–77%.[2]

Business applications software

SaaS is billed on a recurring basis, either monthly or annually. This excludes any initial customisation fee that may be charged as well as the one-off fee to initiate the subscription. Access is provided to the CSP customer via a thin client such as a web browser as soon as the subscription has started, and a catalogue of integrations and use cases is available.

CSPs may need to migrate existing data onto the new software. SaaS vendors will typically provide extract, transform and load (ETL) tools that can be used to support this process at no additional cost. The same is not true for on-premises and hosted solutions; in these cases, CSPs would need to use or purchase separate tools for the data migration.

4.2 On-premises and hosted-cloud: initial costs and benefits

IT infrastructure

On-premises deployments require CSPs to purchase or utilise their own hardware (mainly servers and network infrastructure). This is undesirable for new services for which the demand is unclear or for those services that come with a high level of risk. On-premises deployments come with high up-front costs, which may be a further barrier to CSPs that have limited funds for trials of new services. In-house expertise is required for hardware maintenance; this adds a significant cost because staff must be trained or hired immediately to support the new deployment. CSPs are also fully responsible for the implementation and maintenance of back-ups, disaster recovery and security, as well as ensuring compliance with a variety of industry standards. For example, if CSPs prefer to store all their data in-house, they will have to ensure that sufficient security measures are in place.

2 Amazon Web Services, *Software-as-a-service (SaaS) on AWS*. Available at: https://aws.amazon.com/solutions/saas/.

CSPs may provide security, back-up and disaster recovery as part of the hosted-cloud service, but this may be outside of the scope of the deployment, thereby incurring additional costs and responsibilities for the CSP.

All of these points also apply to hosted-cloud deployments, apart from those related to the purchasing or installation of hardware because this is provided as part of the hosting subscription.

Business applications software

A software licence must be purchased and installed for both on-premises and hosted-cloud deployments. These licences can sometimes be complicated and CSPs may require licence management tools to avoid incurring further costs from the software vendor. For example, CSPs may require an independent third-party licensing expert to gauge how many licences are required to comply with a vendor's software licence policy and to minimise the risk of non-compliance when installing such software on third-party cloud environments. Applications must also be configured, and data migrated, to the new hardware. This incurs further costs for CSPs and increases the time to market for new services. However, no software costs will need to be paid after the initial licence fee until further licences or upgrades are required.

CSPs can also choose to rent software from a vendor. This will decrease the initial cost but comes with no additional benefits and will add operational costs.

4.3 Comparison of the initial costs and benefits for SaaS deployments and on-premises and hosted-cloud deployments

Many of the key benefits of the SaaS model are realised during the initial phases of the deployment. There is either no upfront cost (other than the initial subscription fee) or a one-off additional cost that is typically far lower than the costs associated with on-premises or hosted-cloud deployments. SaaS-based solutions also have a rapid deployment timeframe; CSPs gain access to the software instantly and the migration of data to the vendor's platform is the main set-up step required. In comparison, CSPs that choose a hosted-cloud deployment have to migrate their data and configure the vendor's software to run on the cloud environment. On-premises deployments require even more in the way of set-up because the hardware itself must also be installed. As such, CSPs that need to deploy a new service in response to a rapidly changing market and emerging use cases are likely to benefit from a SaaS deployment.

5. Operational costs and benefits

We define operational costs as the day-to-day and recurring costs that are required to run a business application. There is no ongoing software cost for on-premises and hosted-cloud deployments, but CSPs that use SaaS-based solutions must pay a recurring subscription fee. However, a number of other operational costs exist, and SaaS provides significant benefits in these areas.

5.1 SaaS: operational costs and benefits

IT infrastructure

The service-level agreements (SLAs) associated with SaaS deployments tend to be stringent and include high levels of guaranteed up-time. This can result in a high quality of service (QoS) for the end CSP due to infrequent disruptions to the service. As such, SaaS vendors tend to have a low level of customer churn.

SaaS vendors are likely to perform regular hardware upgrades to maintain the high QoS; they also maintain the integrations they provide, regardless of any changes in hardware. This results in a continued, reduced operational spend for CSPs, the avoidance of service disruption and a reduction in labour costs (or the freeing up of internal staff to work on other parts of the business). SaaS vendors accumulate knowledge by maintaining business applications for many customers, so CSPs can benefit from the seamless implementation of monitoring and best operational practices.

Business applications software

A SaaS deployment entails an ongoing, predictable subscription fee that is paid monthly or annually and is based on usage. This may be the preferred payment model for some CSPs because a predictable subscription fee avoids unexpected costs. This model also offers CSPs the flexibility to scale or reduce services without having to budget for unknown future capacity requirements. Indeed, CSPs that use SaaS solutions can scale-up their deployments with relative ease if there is an unanticipated consumer-side demand increase; the vendor simply provisions more hardware to the CSP and increases the subscription fee.

SaaS vendors include the cost of software updates in their subscriptions and carry out such updates without disrupting existing services. This includes upgrades of templates and use cases.

SaaS is associated with a low cost of failure due to the small initial upfront cost. As such, SaaS deployments allow CSPs to be more innovative. A CSP can simply cancel its SaaS subscription if it deems a service to have failed or to be not worth pursuing. CSPs are thus able to pursue a fail-fast strategy when trialling new services, which can be vital in some markets. For example, this approach may allow a CSP to be the first to offer a new use case for 5G and capture a first-mover advantage.

Another benefit of the SaaS model to CSPs is that the vendor deals with the security layer. SaaS vendors can use economies of scale to offer competitive prices while still adhering to data protection standards. CSPs can therefore making savings in terms of the expertise required and time spent on data security. SaaS vendors also provide back-ups and disaster recovery as part of their offerings, which gives an additional layer of reliability while reducing management complexity.

5.2 On-premises and hosted-cloud: operational costs and benefits

IT infrastructure

On-premises deployments have continuous operational costs for hardware. For example, a data centre requires maintenance and electricity on top of the physical storage space. This requires resources in terms of time, money and people. These additional costs are taken on by the vendor in a hosted-cloud deployment.

It is difficult to scale down an on-premises deployment if the service demand is lower than anticipated without hardware becoming underutilised. On-premises and hosted-cloud deployments also tend to have a relatively high risk of outages because they use multi-vendor (rather than single vendor) environments. Hosted-cloud

deployments also tend to have less stringent SLAs for uptime than their SaaS counterparts, and this can result in a lower QoS.

However, some CSPs prefer to be responsible for guaranteeing SLAs themselves in order to ensure compliance with regulations. This is especially true for network-facing functions, for which CSPs are subject to both end-user and regulatory requirements. Some CSPs may also be concerned about their ability to troubleshoot these functions if they were outsourced.

CSPs that use on-premises or hosted-cloud deployments must also maintain their own back-ups and disaster recovery plans (though this responsibility is shared in hosted-cloud deployments). These can be expensive and have costs that grow with the scale of the service. Back-ups that are not maintained correctly can result in additional costs such as loss of revenue and reputational damage. In addition, these factors require dedicated IT staff who must be trained on the appropriate systems, which may be costly when working in highly proprietary, multi-vendor environments.

Business applications software

Applications and integrations must be maintained and updated by CSPs in on-premises and hosted-cloud deployments. This requires operational expenditure as well as a certain level of in-house expertise, both of which could be barriers to CSPs that want to trial a new service. Additionally, CSPs that use hosted-cloud deployments must pay a subscription fee to access the cloud, storage or interactions. The vendor is responsible for the IT portion of the deployment, but CSPs must maintain the applications that are deployed in the cloud platform, and this comes with ongoing maintenance costs. Alternatively, CSPs can pay an additional fee to the software vendor for software maintenance; this is typically 10–20% of the licensing cost per year. Inefficient applications may incur a higher fee for cloud usage due to increased storage requirements because cloud usage is often billed in terms of the number of interactions or CPU usage. This can lead to unforeseen costs. Similarly, more capacity is required as an on-premises service scales up. This will require additional planning, which creates further complexity and results in an increase in the time to deploy.

Other costs

CSPs must factor in human capital costs alongside ongoing hardware and software costs. CSPs that take on the responsibility of running and maintaining their own applications must also maintain a skilled set of employees that are able to monitor, service and upgrade the software as needed. There is a cost associated with paying, retaining and hiring the staff. Skilled employees tend to be in high demand, so new hires may require extensive training. This can lead to a situation where a system is highly complex and only a small number of staff are able to understand it.

5.3 Comparison of the operational costs and benefits for SaaS deployments and on-premises and hosted-cloud deployments

The software costs for a SaaS-based deployment may appear to exceed those of a hosted-cloud or on-premises deployment in the medium term. However, the fees paid to the SaaS vendor include all IT and operational costs and enable the rapid launch of new services and a closer alignment of costs to business benefits. This in turn enables greater experimentation and agility within the CSP's business. CSPs may prefer to outsource the other maintenance services provided by the vendor, and this benefit may be greater than the higher ongoing cost when compared with an on-premises or hosted-cloud deployment.

Security, back-ups and disaster recovery are all provided by the vendor as part of the subscription fee in a SaaS deployment. This may be of significant benefit to CSPs that prefer to outsource this responsibility. SaaS vendors

can take advantage of considerable economies of scale to offer these services at a competitive price (as part of the subscription fee). This outsourcing also means that CSPs with SaaS-based deployments can benefit from a lower spend on internal IT or can increase scale without additional hires. Conversely, CSPs with on-premises and hosted-cloud deployments must take on the risks associated with maintaining back-ups and disaster recovery, including the potential loss of revenue and reputational damage.

The 'pay-as-you-grow' model that comes with SaaS deployments may also be beneficial for CSPs because it removes the need to plan for future capacity or demand for a service. CSPs that are planning to deploy new services, specifically new use cases, are likely to incur far fewer losses if the service fails when using a SaaS deployment compared to an on-premises or hosted-cloud deployment due to the lower sunk cost. CSPs that use SaaS models are also able to scale their services up more quickly because they do not have to purchase or install further hardware themselves, and can add additional functionality to their SaaS subscription as needed to support new services.

SaaS-based deployments have costless, invisible software upgrade cycles, in contrast to the potentially disruptive upgrade cycles associated with hosted-cloud and on-premises deployments. These disruptions reduce the potential for revenue generation and may bring other additional costs. A standardised, single-vendor deployment is inherently more reliable than a highly customised multi-vendor environment. Furthermore, the stringent SLAs associated with SaaS deployments are likely to result in a higher QoS.

6. Long-term costs and benefits

We define costs and benefits as being long-term when they go beyond the standard running costs of the software. An example of a long-term benefit is the ability to free-up internal resources for other tasks. Costs and benefits that exist beyond the lifecycle of a business application are also deemed to be long-term.

SaaS deployments provide seamless upgrades and no disruption, while on-premises and hosted-cloud deployments may need reconfiguration and new software licences. The subscription fee for a SaaS deployment is likely to run in excess of the initial fee paid for software in an on-premises or hosted-cloud deployment, but CSPs are likely to make large savings overall once the benefits included with a SaaS subscription are taken into account.

6.1 SaaS: long-term costs and benefits

IT infrastructure

There are no additional costs for changes in hardware in a SaaS deployment, nor are there any service interruptions. SaaS solutions are also relatively easy to scale up or down because the vendor can simply allocate more or less hardware to the CSP.

Business applications software

SaaS deployments are largely standardised. As a result, SaaS systems are less-customisable than on-premises and hosted-cloud deployments, and CSPs are able to save in the long term due to the lower requirement for employee training and the lower maintenance cost. CSPs' employees can receive training directly from many software vendors at relatively low costs; for example, Salesforce offers certified training for USD200–600 per

person. Furthermore, SaaS vendors provide ongoing maintenance support, which allows CSPs to focus their internal staff resources elsewhere.

Functionality can still be increased despite the lower complexity of a SaaS deployment because platform ecosystems are highly productised. CSPs can therefore easily purchase additional products from the SaaS vendor and integrate these into their existing package.

Major software updates are delivered by the SaaS vendor as part of the service. This ensures a continued reliability of services over time, with positive revenue implications for the CSP. CSPs using SaaS solutions have ongoing access to evergreen software (software formed of components that are always up-to-date) at no additional cost; this means that they may gain functionality over time as vendors improve their software offerings. This can lead to 'bonus' revenue growth for the CSP if improved or increased functionality leads to improvements in QoS.

6.2 On-premises and hosted-cloud: long-term costs and benefits

IT infrastructure

CSPs that use on-premises deployments will need to upgrade their hardware every 5–6 years due to degradation or an increase in demand. This will require planning, purchasing and installation of new IT hardware, which imposes further costs on the CSP as well as potential disruptions to the service.

Hosted-cloud vendors provide hardware upgrades with their offerings, but these upgrades may require CSPs to reconfigure their applications. In addition, hosted-cloud hardware depreciates over a short timeframe and CSPs are likely to need to replace smaller parts of the hardware sooner than every 5–6 years.

Business applications software

CSPs that use on-premises or hosted-cloud deployments are required to pay for software updates, and these updates may require new licences. This may result in the continued use of outdated software if the cost per upgrade is too high, which in turn could lead to service disruption. Major upgrades are also likely to require CSPs to reconfigure the underlying on-premises hardware and ensure that any highly customised applications are compatible for integration with the software. This can cause disruption to a CSP's service and will lower the QoS. Additionally, major upgrades can result in increased software complexity, thereby leading to higher training costs and a potential decrease in the QoS. Heavily customised systems are also likely to be cumbersome to maintain and may result in a decrease in reliability, which again will decrease the QoS. Any decrease in the QoS is likely to increase a customer's propensity to churn and therefore decrease the revenue generated by the CSP.

CSPs that wish to purchase new products from a software vendor may be required to repeat the initial set-up process, which would involve additional costs. In both on-premises and hosted-cloud deployments, a repeat of the initial set-up process means that the hardware must be reconfigured and reintegrated with the existing systems, which slows down the time to market for new services.

CSPs are required to maintain up-to-date security measures to protect their services. The cost of vulnerabilities due to outdated software or a lack of advanced threat detection and resolution is significant. Failure to maintain such measures can result in a loss of customers, lasting reputational damage and high levels of service disruption.

6.3 Comparison of the long-term costs and benefits for SaaS deployments and on-premises and hosted-cloud deployments

The hardware used in SaaS-based and hosted-cloud deployments will be continuously upgraded by the vendor. A hosted-cloud provider is more likely to pass on efficiency-related savings to the CSP than a SaaS provider. In contrast, CSPs with on-premises deployments will have to upgrade their own hardware in a timely fashion in order to maintain efficient systems. This requires planning, installation and implementation as well as software configuration, which is likely to be costly and may result in service disruption.

It is much simpler for a CSP to add extra applications to a SaaS-based deployment than an on-premises or hosted-cloud deployment. CSPs with SaaS solutions can simply purchase additional products from a vendor on the same platform. This may result in a 'lock-in' effect with a single vendor, but the lower sunk cost associated with SaaS deployments allows CSPs to move between vendors and only pay for data migration and the initial one-off fee.

CSPs that use SaaS-based deployments will make significant savings in the long-term, even though the cost for software licensing is higher than that for alternative models. They have no additional expenditure requirements beyond the subscription fee, unlike CSPs that use hosted-cloud or on-premises models. For example, CSPs with on-premises and hosted-cloud deployments have to hire and train IT staff to maintain their systems (which are more complex than those associated with SaaS offerings). Furthermore, high-quality security provisions and superior uptime guarantees may result in higher revenue generation for a SaaS-based service than an on-premises or hosted-cloud-based service.

7. ROI implications of SaaS for CSPs

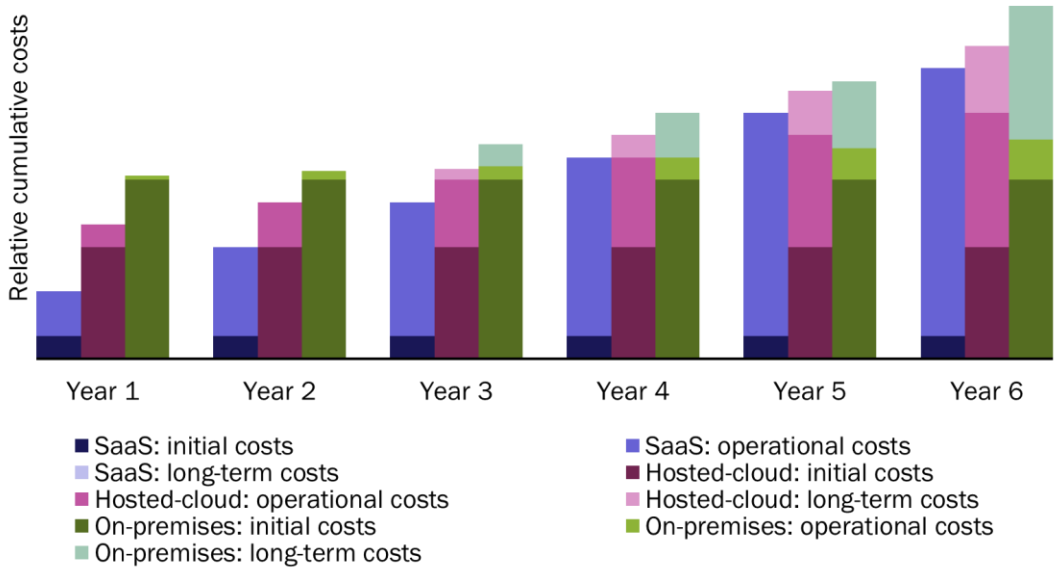
CSPs must weigh up the various costs and benefits of SaaS, as discussed in the previous sections, when considering how to deploy their services. In simple terms, they must consider whether the benefits of SaaS solutions outweigh the additional costs over the lifecycle of the deployment.

CSPs have traditionally viewed SaaS as being less expensive than alternatives during the initial set-up period because the initial cost is significantly smaller than that for either on-premises or hosted-cloud deployments. However, SaaS is typically perceived as being more expensive over the lifetime of the deployment due to the high recurring costs compared to the software costs of on-premises and hosted-cloud deployments. This view may not necessarily reflect all the benefits of SaaS and may over-emphasise the lower operational costs of non-SaaS deployments.

7.1 ROI over time

Figure 7.1 compares the costs of all three deployment scenarios while considering the relative benefits during the initial deployment phase, the ongoing costs of an application and the long-term costs associated with the deployment. The initial cost for a SaaS-based deployment is significantly lower than that for either of the other two deployment scenarios, but cost grows over time due to the recurring subscription fee. However, CSPs can stand to make significant savings in other areas. The relative size of these gains will depend on the CSP and the application being deployed, so CSPs must weigh up the importance of these factors in their own deployments. In a generalised scenario, we expect that the overall benefits of SaaS deployments will outweigh the additional costs, even in the long term.

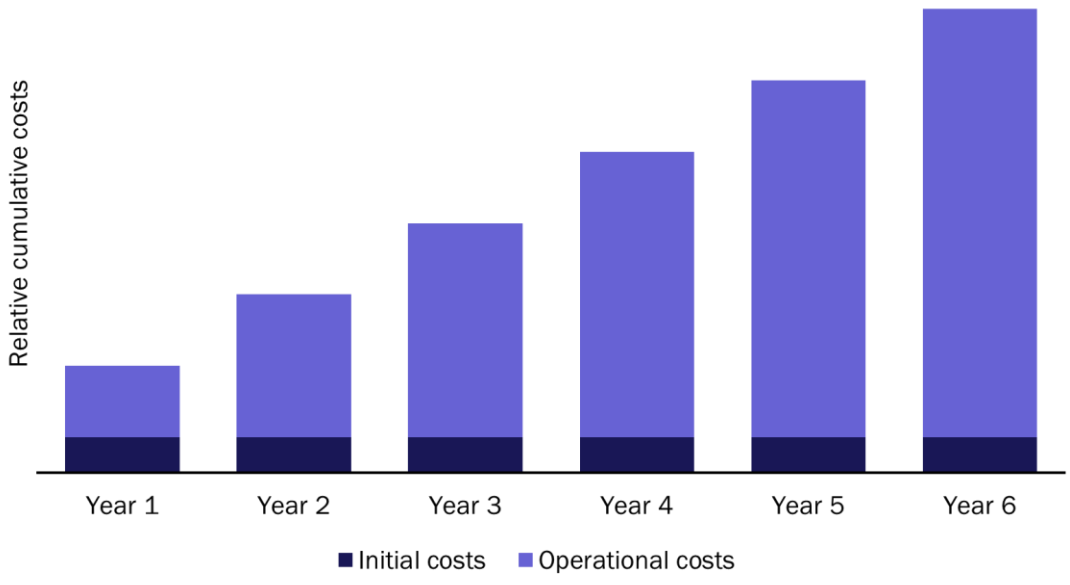
Figure 7.1: Relative cumulative costs of SaaS, on-premises and hosted-cloud deployments across a 6-year period



Source: Analysys Mason, 2022

We have also broken down Figure 7.1 to show the generalised costs for each deployment scenario more clearly in Figure 7.2, Figure 7.3 and Figure 7.4.

Figure 7.2: Relative cumulative costs of a SaaS deployment across a 6-year period



Source: Analysys Mason, 2022

The first year of a SaaS deployment includes a one-off initial purchase fee, a customisation fee (though this is not required for all software) and the purchase of tools to support the migration of data to the new software.

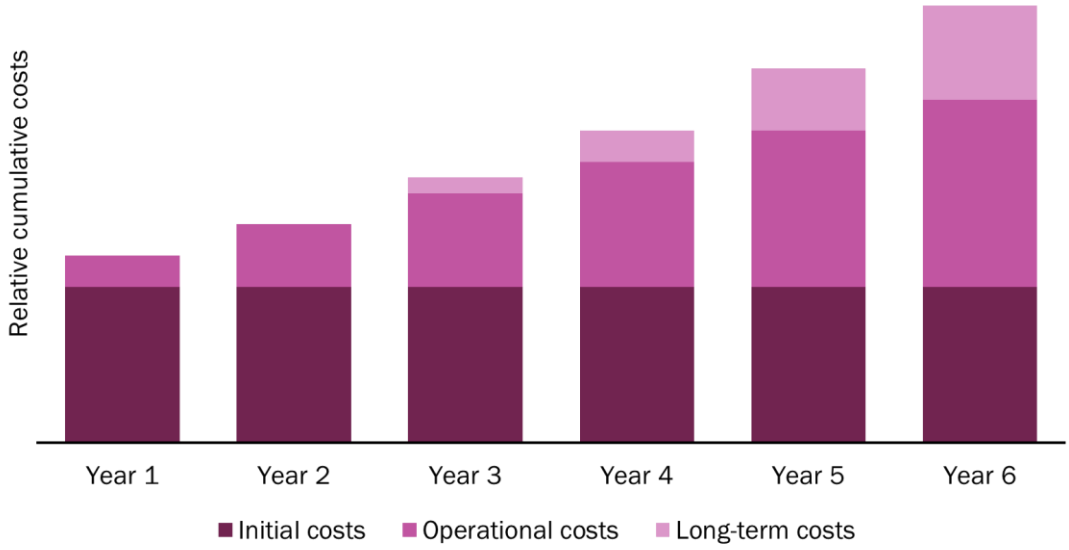
SaaS vendors provide regular software updates for the whole deployment lifecycle as part of the SaaS subscription. This subscription typically incurs a recurring monthly fee. SaaS products are largely standardised, so the costs associated with maintenance and staff training are low.

At no point is a CSP required to pay for a software licence; this is an overall cost benefit when compared to on-premises and hosted-cloud deployments. In addition, CSPs have free access to evergreen software with no disruption to existing services. SaaS vendors also provide security, back-ups and disaster recovery as part of their service offerings.

There are no initial, operational or long-term IT hardware costs in a SaaS deployment because the vendor is responsible for all associated components.

The main factor that affects the cost of a SaaS deployment is the scale of the service. CSPs that use SaaS solutions pay for what is used, so the cost increases linearly with scale.

Figure 7.3: Relative cumulative costs of a hosted-cloud deployment across a 6-year period



Source: Analysys Mason, 2022

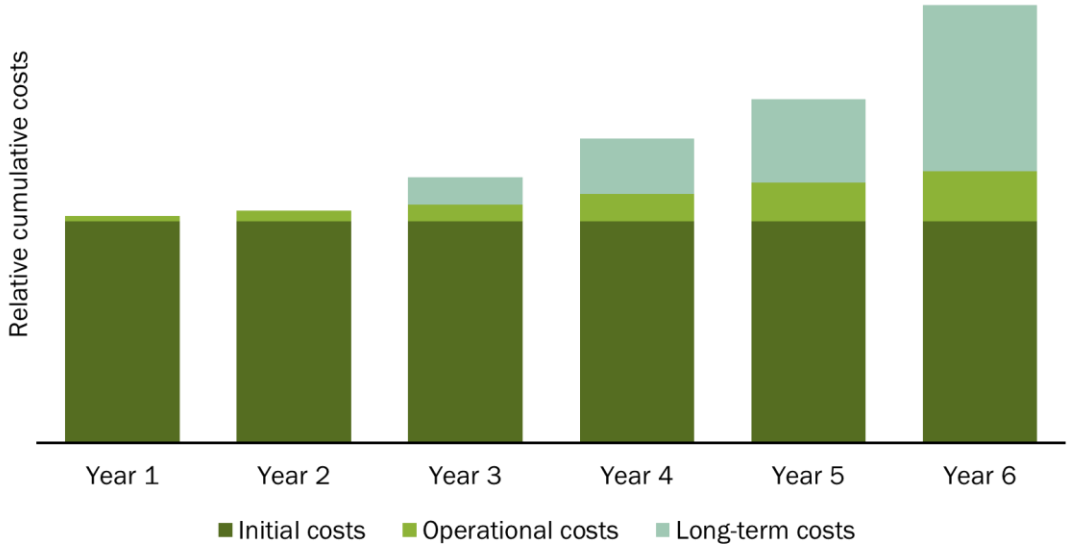
The first year of a hosted-cloud deployment includes the purchase of a software licence. CSPs must also configure their applications and migrate their data, both of which come at a cost.

CSPs may incur an additional fee for software maintenance during years 1–6; this is typically no more than 20% of the initial cost incurred when purchasing the licence. CSPs will also incur further software costs if and when additional licences or upgrades are required. CSPs with hosted-cloud deployments must maintain their own back-ups and disaster recovery solutions, which requires dedicated IT staff and appropriate systems. Cloud access, storage and integrations are provided via a subscription fee, and the CSP is responsible for maintaining the applications on the cloud, which incurs further costs.

No purchase or installation of IT hardware is required because this is provided as part of the hosted-cloud subscription, but there may be a reconfiguration cost in response to vendor-side hardware upgrades.

One additional factor to consider is the increase in the complexity of hosted-cloud deployments as the scale increases. For example, the cost of managing licences can increase as the deployment grows. Similarly, the cost of maintaining back-ups and disaster recovery will rise as the deployment scale increases.

Figure 7.4: Relative cumulative costs of an on-premises deployment across a 6-year period



Source: Analysys Mason, 2022

The first year of an on-premises deployment includes the purchase of IT hardware and a software licence. In-house expertise is required to maintain both.

CSPs are responsible for the maintenance of IT hardware (which includes storage) and dedicated IT staff during the whole lifecycle of the deployment. Further software costs will be incurred when a new licence or upgrade is required. CSPs are also solely responsible for the immediate and ongoing maintenance of security, back-ups and disaster recovery, as well as software applications and integrations. Small and medium-sized CSPs may therefore prefer to opt for a SaaS-based deployment because they may be unable to provide the same level of security as a SaaS vendor or larger CSP.

CSPs will normally need to upgrade their hardware after 5 or 6 years due to degradation (new hardware will need to be installed for the last 2 years of its expected life). These long-term costs are likely to be barriers for small and medium-sized CSPs because the cost of hardware renewal may be large relative to the resources available. However, CSPs may be able to reduce costs by reusing IT hardware for other applications.

7.2 Relative importance of various costs and benefits

It is important for CSPs to consider whether a SaaS deployment is suitable for the services that they are planning. In many scenarios, the long-term software costs may become acceptable when the savings made in other areas are taken into account.

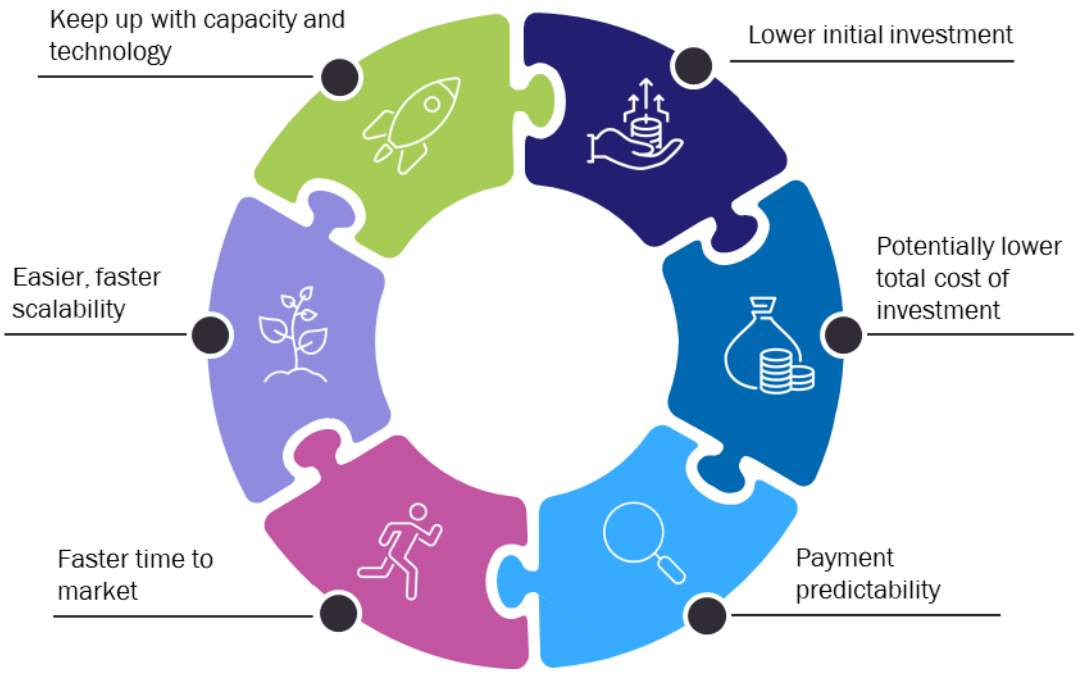
For example, some estimates place software maintenance costs at roughly 16–25% of the software licensing costs each year (if carried out by vendors). This cost is included in the higher software costs associated with SaaS deployments (compared to those incurred in other deployment scenarios), and this quickly reduces the

long-term premium associated with SaaS. The operational costs of on-premises deployments can quickly add up, largely due to the costs of software patches, which involve both integration costs and service disruption. CSPs should calculate the expected costs of these services before deciding between SaaS, hosted-cloud or on-premises deployments.

The software scale-up costs should also be considered. They exist for all three scenarios, but SaaS deployments do not need to be reconfigured after scaling up, unlike on-premises deployments.

Figure 7.5 provides a summary of the key benefits of SaaS deployments, though the importance of each benefit depends entirely on the specific CSP's set of circumstances. CSPs should consider the resources that are available to them as well as the relative importance of the factors contained in Figure 7.5 for each specific application that they are planning to deploy.

Figure 7.5: Key benefits of SaaS deployments



Source: Analysys Mason, 2022

8. About the authors

Justin van der Lande (Research Director) leads the Applications practice, which is part of Analysys Mason's Telecoms Software and Networks research stream. He specialises in business intelligence and analytics tools, which are used in all telecoms business processes and systems. In addition, Justin provides technical expertise for Analysys Mason in consultancy and bespoke large-scale custom research projects. He has more than 20 years' experience in the communications industry in software development, marketing and research. He has held senior positions at NCR/AT&T, Micromuse (IBM), Granite Systems (Telcordia) and at the TM Forum. Justin holds a BSc in Management Science and Computer Studies from the University of Wales.

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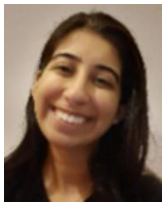

Aisha Iqbal (Associate Consultant) has extensive experience in developing and applying robust methodologies for data collection and benchmarking. She has worked on strategic advisory projects in a number of different areas, including enterprise software, fixed broadband, 5G and IoT, and has worked with both telecoms operators and technology vendors. Prior to joining Analysys Mason, Aisha was an Analyst at the UK Civil Service and at a local authority. Aisha holds a MA in history from the University of Exeter and a BA in history from the University of Oxford.