

HOTEL OPERATIONS IN THE CLOUD

A DECISION-MAKING CHECKLIST FOR
HOSPITALITY EXECUTIVES TO EVALUATE
**MOVING HOTEL MANAGEMENT
SYSTEMS TO THE CLOUD**



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INTRODUCTION

Information technology has become highly complex with the growth of emerging technologies like cloud computing that offers hospitality executives tremendous opportunities to achieve their business objectives focused on revenue growth, cost reduction, and increased productivity. However, the 'cloud' is a rapidly evolving platform with a myriad of service and deployment models, and an exploding number of technology vendors to choose from. The purpose of this whitepaper is to provide hospitality executives a decision making tool to evaluate migrating hotel operations to the cloud for core applications like property management, centralized reservations, distribution management, and revenue management.

SkyTouch Technology, having led over 8,000 properties to the cloud, delivers cloud-based application services, to more than 5,600 hotels and 50,000 end-users around the world. The SkyTouch Hotel OS™ platform, natively built in the cloud over a decade ago, provides property management, rate management and distribution management services on any device, connecting seamlessly with other systems used by major hotel chains and independent hotels. As an early pioneer of cloud-based solutions for the hospitality industry, SkyTouch Technology provides insights from our extensive research and experience working in the cloud. This white paper provides basic cloud computing definitions and characteristics, outlines benefits and challenges, and offers a decision-making checklist for hospitality executives to evaluate migrating their hotel management applications to the cloud.

CLOUD STRATEGY QUESTIONS

- ▶ *What are the real benefits of the cloud for my business?*
- ▶ *How do I delineate between real versus advertised cloud technology capabilities?*
- ▶ *What are some of the challenges associated with migrating to a cloud environment?*
- ▶ *What business criteria should be used to evaluate a cloud versus on-premise hotel management solution?*
- ▶ *What changes are required for my organization to manage its application in the cloud?*



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CLOUD DEFINITION, CHARACTERISTICS, SERVICE MODELS & DEPLOYMENT MODELS

Before entering into a decision on a cloud strategy, it is important to understand the basics on cloud computing characteristics, service models, and deployment models. The National Institute of Standards and Technology (NIST) defines cloud computing as *"a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interactions"*¹. In essence, cloud computing is similar to a utility service in that computing resources are shared and readily available to minimize costs or improve agility. NIST provides five characteristics of cloud computing:

- **ON-DEMAND SELF-SERVICE** – the ability to provision computing resources as needed, automatically
- **BROAD NETWORK ACCESS** – capabilities are available over the network and accessed through various devices (e.g., mobile phones, tablets, laptops)
- **RESOURCE POOLING** – computing resources are pooled to serve multiple consumers
- **RAPID ELASTICITY** – computing resources are provisioned and released to scale rapidly with demand
- **MEASURED SERVICE** – cloud systems automatically control and optimize computer resource use by leveraging a metering capability typically done on a pay-per-use or charge-per-use basis



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CLOUD SERVICE MODELS

There are three main cloud service models, each with their own characteristics to consider.

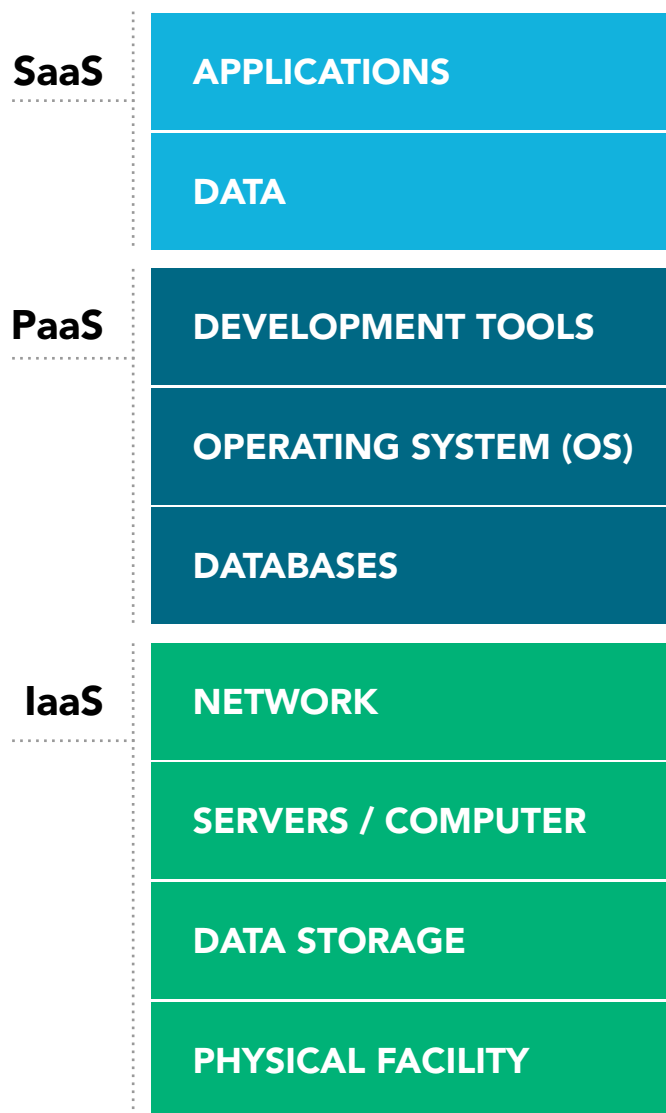
INFRASTRUCTURE AS A SERVICE (IAAS)

enables customers to provision infrastructure resources like storage, compute, and network from an external provider. In an IaaS model, consumers maintain control of the applications and the provider manages and controls the underlying infrastructure resources (e.g. storage, servers, network, facilities).

PLATFORM AS A SERVICE (PAAS) enables consumers to build and deploy applications created using programming languages, libraries, and tools from an external service provider. In a PaaS model, the consumer has control over the applications and some configuration settings of the hosting environment. The service provider manages and controls the platform resources (e.g. operating systems), in addition to infrastructure resources.

SOFTWARE AS A SERVICE (SAAS) enables customers to use external service providers' applications running on a cloud infrastructure. In a SaaS model, the service provider manages the application, platform, and infrastructure components on behalf of the customer with exception of some user-specific application configuration settings.

LAYERS OF THE CLOUD STACK



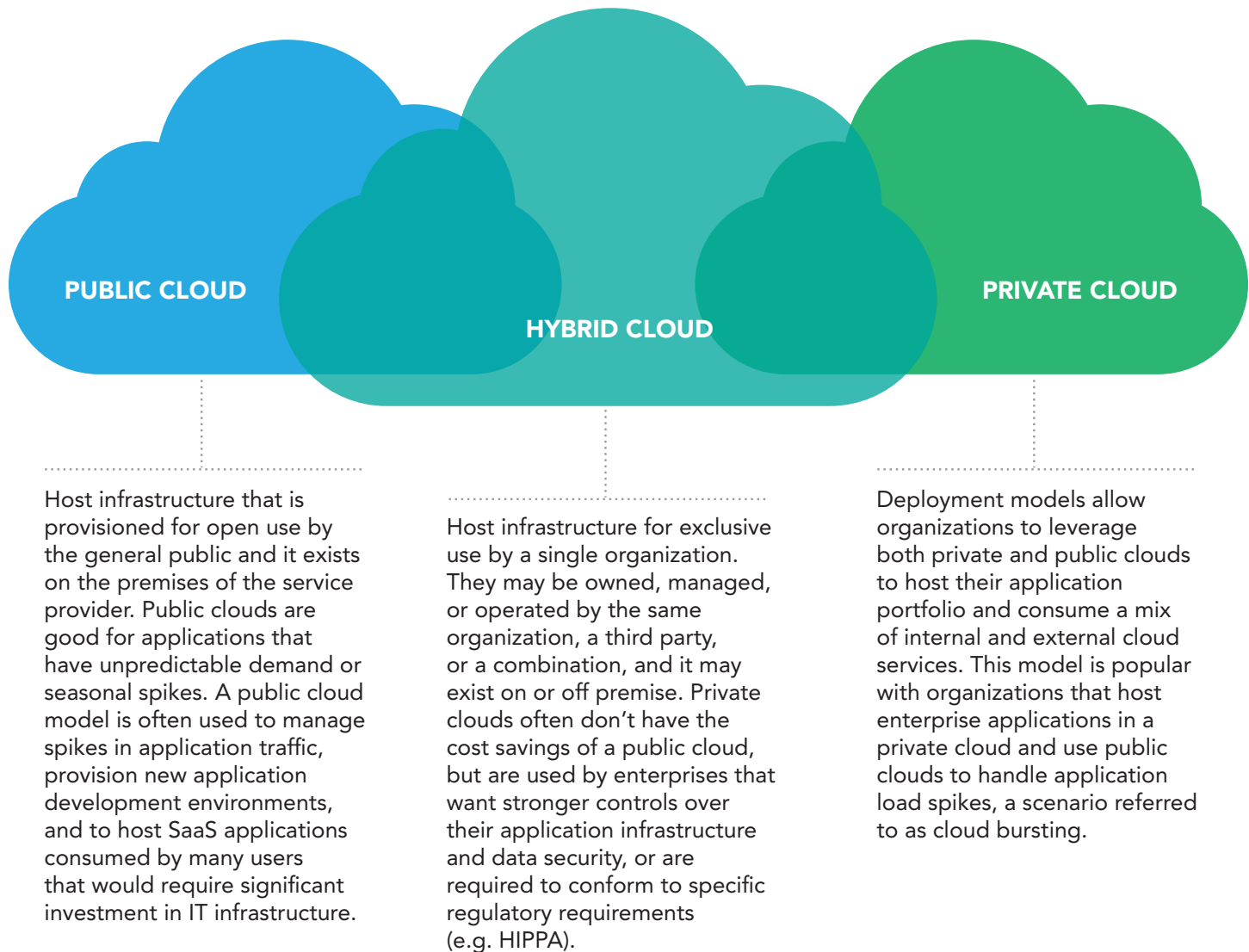
The primary difference between cloud service models is the level of control over the cloud stack between the consumer and service provider. Service providers have increasing control of the cloud infrastructure as you move from IaaS to PaaS to SaaS. Of the three different service models, SaaS is currently the most popular public cloud service model utilized in the market today, according to most surveys. However, cloud service models are gradually converging as technology providers look to expand and differentiate their service offerings.

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CLOUD DEPLOYMENT MODELS

Public cloud, private cloud, and hybrid cloud are the primary deployment options used in the business market today.



The SkyTouch Hotel OS is an example of a SaaS cloud service that utilizes infrastructure services in a private cloud deployment model. SkyTouch Hotel OS continuously evaluates different service and deployment models that provide the greatest benefits to our customers with minimized risk. Based on our experience and research, we believe the use of hybrid clouds will grow and become the norm as cloud technology matures, particularly with larger enterprise hotel chains with a diverse application portfolio and infrastructure. Recent research performed by cloud technology vendors EMC and VMWare indicate that while all cloud deployment models offer substantial savings over traditional on-premise infrastructure, hybrid cloud yields the highest savings of 20-30 percent.

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MOVING HOTEL MANAGEMENT SYSTEMS TO THE CLOUD

CLOUD BUSINESS DRIVERS AND BENEFITS

The benefits to cloud computing are well advertised, but does the reality meet the hype? According to a survey of senior finance executives conducted by CFO research and Google, the answer is a resounding yes. Looking at the research it is clear C-Level executives including CFO's and CIO's are looking to the cloud for both strategic and tactical benefits. Among the main business drivers for cloud adoption include:

FINANCIAL drivers including a reduction in capital expenditures (CAPEX), operating expenses (OPEX), and total cost of ownership (TCO) associated with IT spend (hardware, software, maintenance, labor) from maintaining on-premise environments. Financial drivers are often the top reason for businesses to move their IT infrastructure to the cloud. According to a 2012 CFO Research survey, a vast majority of finance executives met or exceeded cost-saving expectations from their company's biggest cloud project: 71% saw a reduction in hardware costs, 59% saw a reduction in IT labor costs, 66% a reduction in data/back-up costs, and 66% a reduction in software related costs. In addition, a majority of executives anticipate at least a 20% reduction in operational costs and IT maintenance costs by making a total transition to the cloud. The cloud also provides the opportunity for increased cost transparency where business consumers are charged based on usage.

BUSINESS AGILITY AND GROWTH drivers. Market demand and forces are changing at an accelerated rate. Today's business climate is increasingly uncertain, requiring companies to become highly agile and cost efficient to compete and grow. More and more corporate executives are citing business agility as the leading driver for cloud adoption. Cloud computing provides businesses increased flexibility by scaling IT capacity and capabilities up or down based on market changes. In addition, cloud computing often reduces the time to market for new products and services as a result of reduced provisioning and deployment cycle times of supporting IT applications and infrastructure. Cloud adopters also note the productivity gains received from improved enterprise mobility, information discovery, and employee collaboration.

BUSINESS CONTINUITY or disaster recovery (D/R) drivers, is another benefit of cloud computing, particularly for small and medium sized business that may not have the capital, resources, or capabilities to maintain an internal D/R capability. Cloud-based D/R provides businesses a cost feasible solution for maintaining productivity during times of natural disasters or inclement weather. For medium or large businesses looking to bring D/R back in-house, they can anticipate significant challenges in resources, funding, and preparedness according to a recent Forrester report.

HOTEL OPERATIONS IN THE CLOUD

A DECISION-MAKING CHECKLIST FOR HOSPITALITY EXECUTIVES TO EVALUATE
MOVING HOTEL MANAGEMENT SYSTEMS TO THE CLOUD

SkyTouch Hotel OS offers hospitality customers numerous benefits. Smaller and medium sized hotel chains can obtain an enterprise-grade hotel management platform with minimal upfront investment and help eliminate recurring costs associated with software upgrades, labor, hardware, and facilities. Other customers may lack the in-house technical resources and capabilities to build and maintain highly functional on-premise hotel management systems that require heavy integration. The time dedicated to developing, testing, and deploying on-premise applications can be quite lengthy, so customers get the additional benefit of improved application deployment times. Enterprise clients get improved decision support and accessibility by consolidating data to a common cloud-based platform versus traditional premise-based solutions where data is isolated, siloed, or possibly redundant.

CLOUD BARRIERS AND CHALLENGES

The benefits of cloud computing are well documented, however transitioning your application portfolio and IT infrastructure to the cloud does present challenges and in some cases may not be the most feasible option relative to existing premise-based solutions. Among the major barriers and risks identified by C-level executives and IT professionals include:

SECURITY concerns remain the top barrier in almost every major cloud survey. Surveys conducted with senior financial, IT, security, and audit professionals expressed concerns with cyber-security attacks, data privacy, and regulatory compliance. In most instances however, public cloud providers have invested heavily in securing their infrastructure and are often more secure than most internal IT infrastructure environments. From a PMS perspective, the Payment Card Industry (PCI) Data Security Standard (DSS) is the most relevant concern. Independent security analysts we spoke with believe up to 70% of companies believe they are PCI compliant but are not. SkyTouch itself has spent considerable time and resources evaluating various security solutions to remain PCI compliant in a shared infrastructure environment. While our platform is highly secure and compliant, we continuously evaluate cost/benefit scenarios associated with maintaining PCI compliance to keep costs contained for our customers.

MIGRATION AND INTEGRATION challenges with applications and data have been experienced by many organizations that jumped into a cloud decision without performing adequate planning and due diligence associated with application interfaces and data complexity. For large enterprise applications that have complex data and interfaces, it is important to evaluate integration feasibility, data complexity, level of effort, and cost associated with migrating or integrating applications and data to the cloud.

VENDOR PERFORMANCE, SLA'S, LOCK-IN, AND CONTROL is often mentioned in surveys as barriers to cloud adoption by many business and IT stakeholders. While major cloud players like Amazon, CenturyLink, Google, and Microsoft (Azure) have experienced well publicized outages in the past year, on the whole public cloud environments availability is equal to or better than most internal IT environments. From a service level perspective, there may be potential limitations or inability to customize SLA's to meet your specific business needs around infrastructure uptime, latency, and service request response. Many larger enterprises often want stronger management control of its application infrastructure that can't or won't be supported by some service providers without substantial fees.

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CLOUD DECISION CHECKLIST

As hospitality executives consider the use of cloud computing to improve hotel operational performance and achieve higher revenue growth, a clear set of business criteria is needed to help decision makers evaluate the right cloud strategy for their enterprise. While the cloud presents many opportunities, the technology is still evolving and can be quite disruptive if the organization hasn't invested enough time defining a cloud strategy that is flexible and scalable enough to meet both their current and future business requirements. The worksheet below provides a decision-making checklist comprised of different business factors hospitality executives should weigh as part of selecting cloud service models, deployment models, and service providers to operate your hotel management application portfolio and infrastructure.

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FACTORS	DECISION CRITERIA	CLOUD IMPLEMENTATION CONSIDERATIONS
BUSINESS STRATEGY	Cloud investments improve ability to execute the business strategy & support business processes. Enables the business to adapt rapidly & cost efficiently to changes in the business climate • Customer acquisition & retention • New geographic markets • New products & services • Business process improvement • Business agility	Verify cloud service / hosting provider's ability to support both domestic (U.S.) and international hotel operations. Select cloud service providers with deep industry experience to minimize time spent educating vendor on your core business. If selecting a SaaS provider to manage core hotel management systems, ensure adoption of software doesn't require radical change to hotel operational processes but rather improves / automates processes more effectively
ECONOMIC IMPACT	Cloud investments provide measurable financial benefits to the business in the form of new revenues or reduced costs. • CAPEX / OPEX / TCO reduction • New revenue streams • Performance improvement • Vendor viability • Billing transparency	Cloud adoption should either reduce expenses or provide new revenue opportunities for the business. IT and corporate finance should collaborate closely on cloud computing business cases and benefits monitoring to ensure CAPEX / OPEX / TCO are reduced OR benefits outweigh costs. Verify cloud service providers are solvent to minimize organizational risk and that their billing provides internal business customers with improved cost transparency on billed services over existing on-premise solutions
GOVERNANCE, SECURITY, & COMPLIANCE	The business has the appropriate structure, capabilities, and controls in place to securely manage cloud technologies and service providers and ensure compliance with regulatory or legal requirements. • Organizational readiness (structure & capabilities) • Legal and regulatory compliance • Data protection • Identify & access management • Customer training & support	Cloud technology can be disruptive without careful organizational planning and governance. Tighter collaboration between business & IT is required to evaluate organizational impact, ensure compliance, and maximize adoption of cloud computing. Private clouds are often preferred by businesses requiring highly regulated or secure environments but often costs outweigh the benefits. Public cloud providers (IaaS, PaaS, SaaS) are investing heavily in data security and in many cases offer higher levels of security than traditional in-house solutions. However, many providers are still struggling to provide cost-effective solutions for regulatory compliance like PCI (Payment Card Industry standard). Fully assess a providers' ability to comply with regulations and calculate the additional costs.
IT INFRASTRUCTURE & OPERATIONS (I&O)	Cloud investments improve IT infrastructure and operational performance that support the hotel management application portfolio • Business continuity (D/R) • SLA's, performance, & capacity • Servers, storage, and network • Facilities (space, power, cooling) • ITSM processes & capabilities	SaaS models reduce overall I&O spend and effort but require the business to relinquish more control to the service provider. IaaS and PaaS provide more flexibility and control but introduce more complexity into the IT operating environment because of conflicting IT service management processes. Regardless of deployment or service model, invest time to clearly define service levels and develop use cases during evaluation of and negotiation with vendors to minimize disruption to IT operations. For PaaS and IaaS service models, consider adoption of cross-functional teams (i.e. DevOps) to improve frequency and accuracy of deployments. Assess current vs. required technical skillsets of IT staff to operate effectively in a cloud environment.
APPLICATIONS	Cloud investments enable the business to rapidly deploy robust application features & functionality. Applications & data are easily migrated and integrated between cloud deployment models, service models, and service providers. • Application architecture • Features & functionality • Business intelligence & reporting • Configuration & personalization • Integration & migration • Mobile device support • SDLC processes, languages, & tools	A SaaS model is ideal for businesses with limited IT resources and capabilities that desire an enterprise grade hotel management platform. Select SaaS providers with strong industry experience that provide the ability to customize or configure software. PaaS is ideal for those businesses with mature IT capabilities that maintain robust custom built applications. Data migration and integration of systems in the cloud are among the highest barriers to adoption, so evaluate service providers on their ability to quickly migrate application data and to seamlessly integrate with other hotel management systems. Minimize vendor lock-in by avoiding 3rd-party proprietary platforms.

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MOVING HOTEL MANAGEMENT SYSTEMS TO THE CLOUD

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