Designing your Cloud Decision Framework

A consistent, structured approach to selecting cloud services

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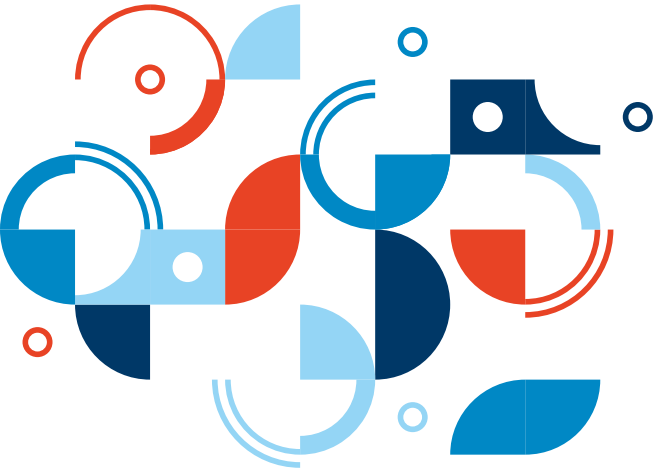


Introduction

The expansion of cloud computing is accelerating. Organizations embrace cloud to reduce IT costs, improve IT service quality, and support innovation by speeding up new product and service delivery. In fact, the cloud percentage of total IT systems and software spending is expected to grow from 7 percent in 2013 to 46 percent by 2020.[1]

Yet cloud computing is not a new technology. It is not an IT architecture. Cloud computing is essentially a new model for delivering IT services, with an impact that is more economical and organizational than technical. In this new model, business departments have a stronger influence on the way IT is purchased and consumed. For example, solutions like customer relationship management (CRM) and analytics were typically procured by IT. But today, business departments can directly contract with external cloud service providers (CSPs) to provide these as cloud services. To that point, one study predicts that by 2017, the chief marketing officer (CMO) will spend more on IT than the chief information officer (CIO).[2] Research indicates that over the next three years, cloud's strategic importance to business users is expected to more than double from 34 percent to 72 percent, even surpassing their IT counterparts at 58 percent.[3] With this new business emphasis, established technology governance and decision processes can be too IT-department centric and technology focused. Fulfilling business stakeholder requirements and priorities can lead to an ***expanded range*** of cloud services, depending on service type, hosting type and CSP selection.

Increasingly, adopting cloud computing is not about choosing a single technology model, but about optimizing the combination of cloud services to best fit business requirements. This combination of cloud service types is called a "hybrid cloud." More than 65 percent of enterprise IT organizations will commit to hybrid cloud technologies before 2016, vastly driving the rate and pace of change in IT organizations.[4]

This paper introduces a structured, consistent Cloud Decision Framework that can guide your organization toward the successful identification and implementation of a cloud solution. This framework can help you determine which cloud services best fit your needs, taking into consideration requirements from both business and IT. The result: cloud-related decisions that are made systematically and objectively.

Note that this paper describes a Cloud Decision Framework. However, many scenarios include both cloud and noncloud solutions. The framework is designed to guide the selection of the optimal IT service (solution), no matter what the delivery model. It extends established, best practice decision making techniques to include cloud concepts and related criteria based upon IBM's experience with thousands of clients worldwide.

The Cloud Decision Framework: An overview

Cloud service selection is not without risk. When you decide to contract for a specific cloud service, your organization becomes operationally dependent upon the CSP. You will want to exercise caution, especially for critical, sensitive operations. Additionally, service purchasers are often not the actual service users, and users are not usually responsible for integrating and managing the service. This further complicates the process. The Cloud Decision Framework can address these issues by providing an objective structure for evaluating diverse decision criteria that impact the spectrum of stakeholder requirements. The framework can:

- Identify benefits and drawbacks of a cloud solution by relying on a holistic set of decision criteria
- Analyze interdependent decision criteria to strike a balance between cost, reliability and performance
- Outline the extent to which the considered solution candidates fulfill a project request's objectives
- Present each solution candidate's benefits and drawbacks in a clear, accessible format
- Provide structured, consistent outcomes using measurable, objective metrics
- Create a faster, easier-to-use process resulting in the selection of the "best fit" cloud service

Defining requirements and decision criteria

In this paper, we refer to requirements as performance objectives or specific outcomes that the selected solution candidate should deliver. Requirements can be mandatory or optional. Requirements are often classified into three major categories:

- Functional requirements—criteria that define the desired behavior or what the solution should provide
- Nonfunctional requirements—criteria that define how the system should perform
- Guiding principles—criteria that guide an organization throughout its existence

Decision criteria are factors to consider when determining requirements. They provide objective (testable) criteria to be used in the decision making process.

Preparatory phase: Establishing a strong governance model

IBM has learned through experience with many clients that good decision making relies on a strong overarching governance model, as depicted in Figure 1.

To create an effective governance model, you will need to:

- **Solidify overall business direction and goals.**
- **Define your guiding principles,** which will outline the preferences, improvements and foundation of the decision process. The principles should describe preferred operational and architecture practices as well as ideal skills, culture and IT directions.
- **Clearly define your project request objectives.**
- **Identify key stakeholders** who will contribute to any cloud-related decisions. These should encompass leaders on both business and IT sides, including procurement, legal, IT operations and IT security.
- **Based on this proposed governance model, determine requirements and identify appropriate decision criteria and weighting that will be foundational to the decision framework.** Examples include specific levels of CSP accountability, fulfillment of data security standards, and geographic location of data stored and processed by the CSP. See sidebar below.
- **Perform your decision checkpoints,** which vet solution candidates and hone in on the selected solution.

Assigning weights to decision criteria

Deciding how to weight the various decision criteria can be a key challenge in implementing the Cloud Decision Framework. While we do not do a deep dive on this topic, you can utilize methods such as Thomas L. Saaty's "Analytic Hierarchy Process"[5] and the conjoint analysis. Ask your Cloud Advisory Services consultant for more details.

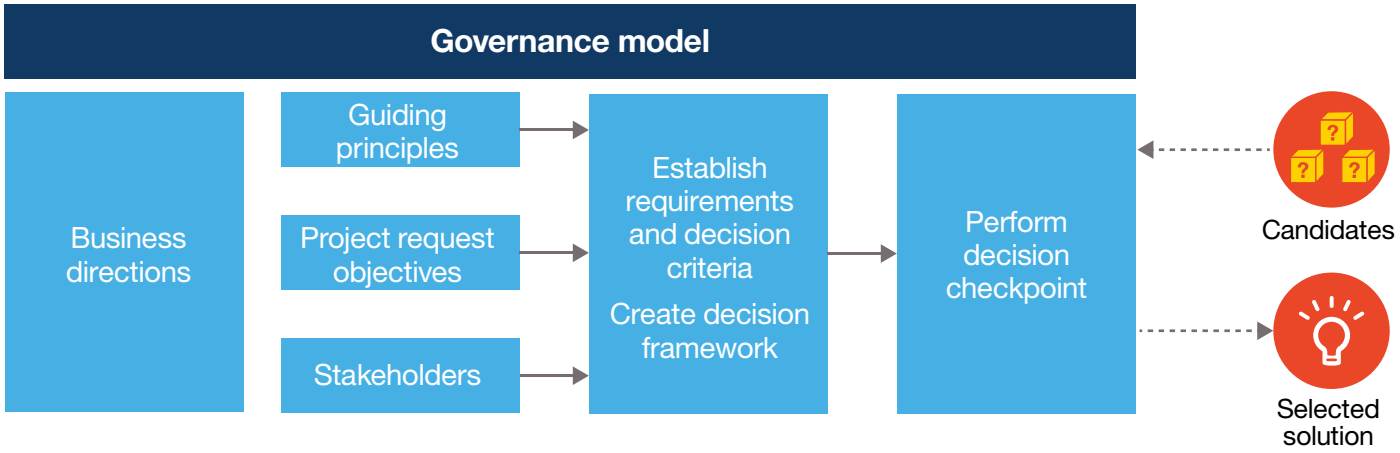


Figure 1. A solid governance model is the foundation of an effective Cloud Decision Framework.

Creating a Cloud Decision Framework

The Cloud Decision Framework quickly identifies and evaluates appropriate solution candidates and CSPs, determining the viability of various cloud options. To that end, our framework is designed around four decision checkpoints, as shown in Figure 2.

Step One: Is cloud a good fit for this request?

The first step of the decision framework evaluates the relevance of cloud technology to the request objective. Are potential benefits of cloud technology, such as increased scalability and elasticity, applicable to this request? For instance, a request for a project with a consistent workload will benefit less from cloud computing than a request for a project with fluctuating workloads (such as accounting applications used for quarterly reports). Are there strong inhibitors for contracting external cloud services, such as the processing of sensitive personal data or the complexity of the integration with other legacy systems?

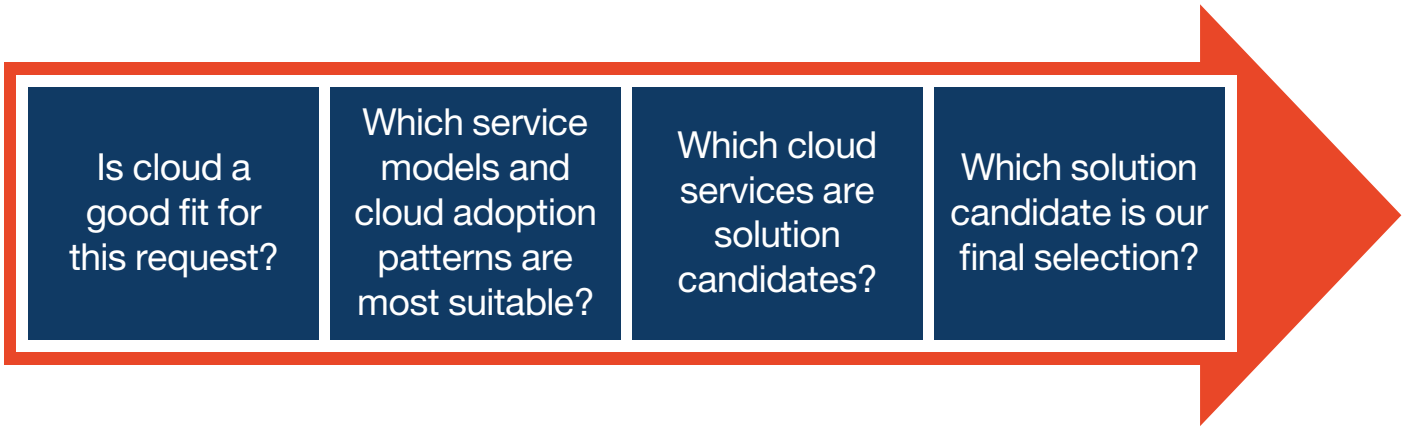


Figure 2. The Cloud Decision Framework is composed of four decision checkpoints.

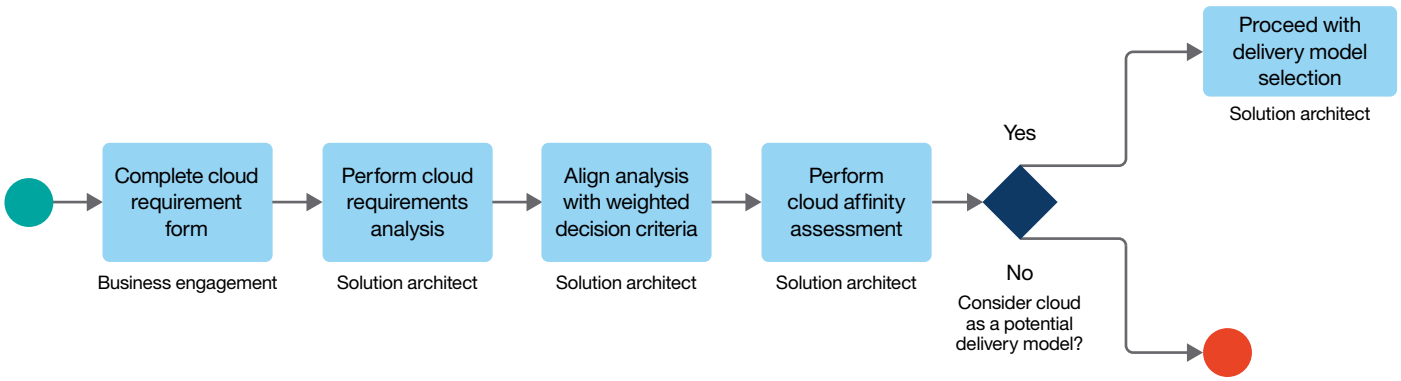


Figure 3. These are effective steps toward evaluating the relevance of cloud technology to your request objective.

Figure 3 and the section below outline this evaluation process.

1. First, business users complete a cloud requirements questionnaire. This activity identifies the functional and nonfunctional requirements and answers cloud-related questions in the context of the specific request objective. At IBM, we utilize a cloud requirement form that also assesses cloud impact and identifies decision criteria, supporting rationale and implications.
2. Next, a person knowledgeable of both business requirements and IT solutions (i.e. a solution architect) facilitates a cloud requirements analysis.
3. The solution architect then aligns this analysis with the weighted decision criteria defined in the preparatory phase.
4. Finally, the solution architect performs a cloud affinity assessment. This involves evaluating the information collected in the cloud requirement form against the drivers and inhibitors of cloud adoption and determining the viability of a cloud service. As shown in Figure 4, this information is evaluated on a seven-point scale ranging from -3 (strong inhibitor) to +3 (strong driver). If inhibitor weighting scores higher than driver weighting, then the solution architect should consider avoiding certain cloud adoption patterns. For instance, sensitive data might be better safeguarded on a private cloud. If the opposite is true and the driver weighting scores higher, then the cloud decision process should proceed with a broader range of potential adoption patterns. The inhibitors and drivers are defined based on IBM's experience with a wide range of clients.

	Cloud adoption inhibitors				Cloud adoption drivers		
	-3	-2	-1	0	1	2	3
Scalability	Load will remain fairly constant over time.				Load will vary significantly.		
Elasticity	Project load will vary at a low pace.				Project load will vary at a fast pace.		
Adaptability	Once deployed, the solution candidate is not modified.				The solution candidate will undergo multiple changes over time, and deployments can benefit from cloud automation.		
Financial strategy	We have the financial capital to host the solution candidate in our own data center.				Our organization aims at shifting capital expenditures to operational expenditure.		
Skills	We have internal capabilities (such as skills, infrastructure, space) to operate this solution candidate.				We do not have internal capabilities (such as skills, infrastructure, space) to operate this solution candidate.		
Security	The solution candidate processes and requires storage of sensitive data.				The solution candidate does not process any sensitive data.		
Integration effort	The solution candidate must connect to several other applications (e.g. active directory and so forth).				The solution candidate does not require connection to existing systems.		
Exit strategy	This solution candidate leads to a high level of dependency on CSP, and it is difficult to switch CSPs if necessary.				It is easier to switch CSPs if necessary.		
Urgency	Request is not urgent.				Request must be completed very quickly.		
Project duration	The solution candidate will be used for a long time.				The solution candidate will be used for a short time.		

Figure 4. Performing a cloud affinity assessment involves evaluating the information collected in the cloud requirement form against drivers and inhibitors of cloud adoption and determining the viability of a cloud service. Note: This table contains *examples* of cloud adoption drivers and inhibitors and is not a comprehensive list.

Step Two: Which service models and cloud adoption patterns are the most suitable?

Once you determine that cloud technology is relevant to your request's objective, the next activity identifies suitable cloud adoption patterns for your cloud services.

Either the IT or business side of your company can request cloud services. Some requests are more business focused with less technical detail, while others are more IT focused with, for example, requirements for specific storage or computing resources. Typically, requests center around four different cloud service models:

- Infrastructure as a Service
- Platform as a Service
- Software as a Service
- Business Process as a Service[6]

A request can be fulfilled by traditional IT solutions or by a combination of cloud services and some noncloud traditional components. Generally speaking, there are four types of cloud adoption patterns that are differentiated based on applications, data, and infrastructure-sharing characteristics:

- Applications are hosted in on-premise cloud (private cloud); data hosting infrastructure is not shared.
- Applications are hosted in the public cloud; data hosting infrastructure can be shared.
- A combination of both private and public (hybrid cloud) for applications; data hosting infrastructure is selectively shared.
- A community cloud, designed for specific community capabilities, to allow community users to collaborate among themselves.[7]

Once you have determined your cloud service model and the available cloud adoption patterns, you will then need to verify pattern compliance with your mandatory requirements and guiding principles, especially security requirements. As well, you will need to validate feasibility and existence of solution candidates based on this cloud adoption pattern.

A good technique to visualize the cloud service models and cloud adoption patterns is to use the Cloud Adoption Framework described in the paper "Defining a framework for cloud adoption." This technique identifies the intersection of delivery models and service levels, and it focuses on a discussion of the roles and competencies required to deliver the solution candidate.

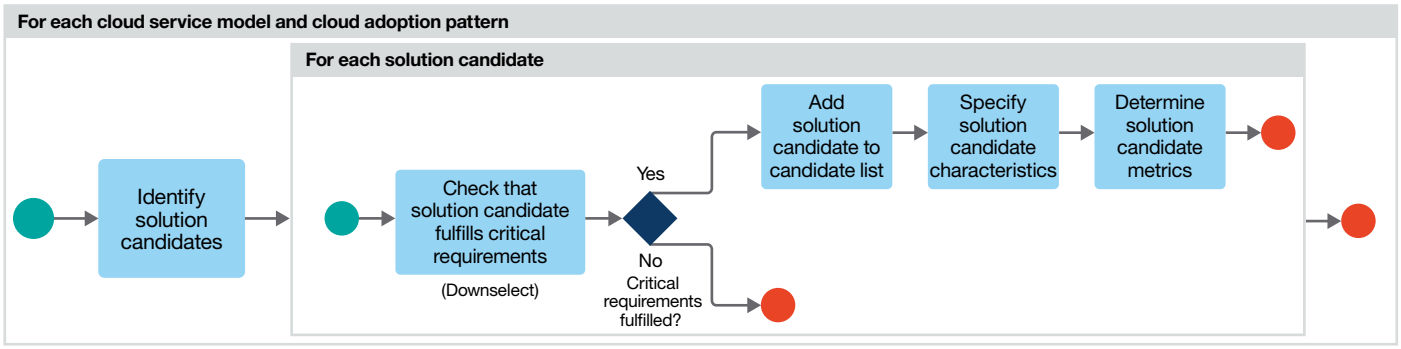


Figure 5. This process determines which cloud services are viable solution candidates.

Step Three: Which cloud services are solution candidates?

The next checkpoint involves identifying and specifying actual solution candidates. As depicted in Figure 5, you develop a list of alternatives for each cloud service model and cloud adoption pattern. For instance, you could determine a list of viable Software as a Service options, as well as a list of software that can install on traditional IT or as an Infrastructure as a Service.

Then, you perform a downselect, which means you exclude all identified solution candidates that violate guiding principles or do not meet mandatory requirements. You can then vet the remaining alternatives as potential solution candidates.

These remaining solution candidates are characterized and assessed according to a set of characteristics inspired by the Cloud Service Measurement Index[8] as shown in Figure 6. At this stage, you perform an absolute assessment (analyzing the overall qualities and performance of a solution candidate). For now, you do not analyze the solution candidate relative to fit with the project request.

Figure 6. The Cloud Service Measurement Index is one method for characterizing solution candidates.

The Cloud Service Measurement Index

The Cloud Service Measurement Index is a set of business-relevant Key Performance Indicators (KPIs) that provides a standardized method for measuring and comparing a business service, regardless of whether that service is provided internally or from an external vendor. It was designed by the Cloud Services Measurement Initiative Consortium (CSMIC), which includes Carnegie Mellon University as the sponsoring organization. The Cloud Service Measurement Index (CSMI) is one example of a leading practice reference model for decision making regarding cloud services. It is composed of 51 characteristics grouped into seven categories, as indicated in Figure 6. The CSMI primarily covers nonfunctional requirements as well as some functional requirements, considers multiple stakeholders involved in cloud-related decisions, and includes characteristics of both the service itself and the CSP. Visit the Cloud Service Measurement Index Consortium at http://csmic.org/ for further details.

Step Four: Which solution candidate is our final selection?

The final step of this process leads to a fact-based recommendation for the solution candidate that will best fulfill the considered request. All downselected solution candidates are evaluated against the request objective. You can clearly understand implications and trade-offs of choosing one solution candidate over another.

As well, you can identify solution candidates that exceed requirements, in particular when this results in additional costs. For instance, a CSP may offer high scalability for its services. But if the project request only requires moderate scalability, this characteristic is not beneficial and you should avoid paying for the extra feature.

To perform this final evaluation, you will use the solution candidate characteristics determined in Step Three's *absolute assessment* (analyzing the overall qualities and performance of a solution candidate). In Step Four, you evaluate these solution candidate characteristics against the specific requirements of the request—*a relative assessment*. In other words, you take the characteristics of the solution candidate (for example, *possible levels* of scalability and availability) and evaluate against the functional and nonfunctional requirements generated with the cloud requirement analysis (*required levels* of scalability and availability).

This leads to a scoring of the solution candidate characteristics in terms of requirement fulfillment and potential trade-offs, as described in Figure 7. Note that *each characteristic* needs to be evaluated against the measurements below.

Metric score	0 = Unacceptable	1 = Tolerable	2 = Satisfactory	3 = Overachieving
Fulfillment of the requirements	Requirements not fulfilled at all	Requirements partially fulfilled	Requirements completely fulfilled	Requirements overachieved
Trade-off	Selecting this solution candidate leads to a major compromise regarding this characteristic.*	Selecting this solution candidate leads to a trade-off regarding this characteristic.*	There is no trade-off with selecting this solution candidate regarding this characteristic.*	There is no trade-off with selecting this solution candidate regarding this characteristic.*

Figure 7. These metrics can be used to score the solution candidate characteristics in terms of requirement fulfillment and potential trade-off. *Characteristics can include factors such as accountability, agility, assurance, financial, performance, security and privacy, and usability.

Ultimately, the final decision remains in the hands of the key stakeholders. But the Cloud Decision Framework provides *support* for making that decision. It creates transparency regarding trade-offs (such as cost vs. performance) and establishes a consistent process for how decisions are made. This framework also documents how and why a CSP was chosen, creating traceability and accountability around key cloud service initiatives.

The Cloud Decision Framework in action: Selecting a CRM solution

To bring the Cloud Decision Framework to life, consider a hypothetical organization, one that is looking for a CRM solution. Line of business and IT representatives have begun discussing requirements at a high level, including the organization's preference for packaged solutions.

The organization has an established governance model and has successfully chosen software-based IT services in the past. However, this is the first time that it has considered cloud-based along with traditional in-house solutions. It has little experience in selecting a third-party CSP. After surveying the CRM marketplace, it has determined that a number of potential solutions might be viable, including both traditional and cloud-based solutions.

This organization will use the Cloud Decision Framework's four steps to arrive at an effective selection:

1. Is cloud a good fit for this request?
2. Which service models and cloud adoption patterns are most suitable?
3. Which cloud services are solution candidates?
4. Which solution candidate is our final selection?

Step One: Is cloud a good fit for this request?

Since cloud solutions are in scope, the organization's next step is to determine if cloud is a good fit for the project. This step includes completing the cloud requirement form, which identifies the requirements necessary to support the business objectives of the organization. This request requires:

- Support for the sales business process
- Multiple sales channel support (face-to-face, web and contact center)
- Multi-language and currency support for major markets
- Capability to interface with an in-house order fulfillment system
- Product configurator (this organization sells and supports complex industrial and laboratory equipment)
- Capability to address data residency laws and regulations for North America and Europe
- Support for 200 concurrent and 4,000 total users
- Flexibility to expand with the organization, which is acquiring several companies.
  - Support for 200 percent growth (concurrent/total users) within one year and 400 percent growth within three years
  - Provide a direct relationship between number of users and operational cost of the solution
- Business case analysis that supports a payback in 18 months or less

Note that while most of the requirements are considered "mandatory," or "must haves," some of the requirements identified represent "desired" or "like-to-have" capabilities. Those are listed here:

- Support for the organization's customer service business process
- Continuous availability—sales orders can be entered around the clock and will not be impacted by scheduled outages or maintenance

In addition, the organization has maintained a set of **guiding principles** over time, including one that could be relevant to the upcoming decision: *Standard application packages will be used wherever possible, with little modification and in-house code*.

As discussed earlier, the first step is to determine the viability of the cloud solutions under consideration. This step serves as a screening technique for the potential cloud solutions. Noncloud solutions will not be subject to this evaluation step. To answer the question, a solution architect performs a cloud affinity assessment. Figure 8 displays the results for this scenario.

	Cloud adoption inhibitors				Cloud adoption drivers		
	-3	-2	-1	0	1	2	3
Scalability	Load will remain fairly constant over time.				**(2)** Load will vary significantly.		
Elasticity	Project load will vary at a low pace.				**(2)** Project load will vary at a fast pace.		
Adaptability	Once deployed, the solution candidate is not modified.				**(1)** There will be multiple changes on solution candidate over time, and deployments can benefit from cloud automation.		
Financial strategy	We have the financial capital to host the solution candidate in our own data center.				**(2)** Our organization aims at shifting capital expenditures to operational expenditure.		
Skills	We have internal capabilities (such as skills, infrastructure, space) to operate this solution candidate.			**(0)**	We do not have internal capabilities (such as skills, infrastructure, space) to operate this solution candidate.		
Security	**(-1)** The solution candidate processes and requires storage of sensitive data.				The solution candidate does not process any sensitive data.		
Integration effort	**(-2)** The solution candidate must connect to several other applications (e.g. active directory and so forth).				The solution candidate does not require connection to existing systems.		
Exit strategy	This solution candidate leads to a high level of dependency on CSP, and it is difficult to switch CSPs if necessary.				**(1)** It is easier to switch to a different CSP if necessary.		
Urgency	Request is not urgent.			**(0)**	Request must be completed very quickly.		
Project duration	The solution candidate will be used for a long time.			**(0)**	The solution candidate will be used for a short time.		

Figure 8. Performing a cloud affinity assessment involves evaluating the information collected in the cloud requirement form against the drivers and inhibitors of cloud adoption and determining the viability of a cloud service. Note: This table contains *examples* of cloud adoption drivers and inhibitors and is not a comprehensive list.

Note that the attributes depicted in this assessment are not the list of requirements identified by the organization, but rather a list of characteristics based upon IBM's experience with many clients considering cloud solutions. These characteristics have repeatedly been either inhibitors to successful cloud deployment, or conversely positive drivers for subsequent cloud deployment.

IBM has a variety of cloud workload evaluation techniques that can be applied, ranging from short, qualitative assessments, to more rigorous, quantitative techniques. In this case, we are early in the decision process, so the short qualitative assessment we are using here is appropriate as a screening technique.

The cloud service approach was evaluated against cloud drivers and inhibitors according to the color-coded seven-point scale. This approach allows the organization to quickly identify whether cloud solutions should be eliminated from further consideration, or considered a potential fit for the project.

Cloud drivers outweigh the inhibitors, indicating the organization should include cloud-based solutions in the decision process.

Step Two: Which service models and cloud patterns are the most suitable?

Now that it has been determined that cloud solution candidates are viable, the next step is to identify suitable cloud adoption patterns. This is accomplished by answering two questions:

Which cloud service model fits the business request? The four cloud service models include Infrastructure as a Service, Platform as a Service, Software as a Service and Business Process as a Service. In our scenario, the organization is seeking a "packaged" CRM solution, so the simple answer is **we are looking for a solution to deploy at the Software as a Service layer**. This also aligns with the organization's previously referenced guiding principle that indicates a preference for standard application packages.

The organization's initial survey of solution candidates included five potentially viable solutions, as shown in Figure 9:

Candidate	Description	Cloud adoption patterns
CSP-1	CSP SaaS solution	Public cloud
CSP-2	CSP SaaS solution	Public cloud
Hybrid-3	CSP SaaS solution + custom, in-house product configurator	Hybrid (public cloud + traditional IT)
Priv-4	Software package	Private cloud
Trad-5	Software package	Traditional IT

Figure 9. The initial survey of solution candidates and deployment models included five solutions for consideration.

Which cloud adoption patterns are available to fulfill the appropriate service model?

These cloud adoption patterns are all potentially viable approaches. The key reason for performing this step in the decision process is to understand the ***rationale*** and ***implications*** associated with those choices:

- Public cloud—available externally and offering the widest range of cloud benefits, which must be balanced against key considerations such as security, compliance, latency and the requirement for a rigorous governance process, as IT management processes will be split between the organization and the CSP.
- Hybrid cloud—combining services from multiple delivery models to deliver critical business functionality in a timely fashion. This must be balanced against the challenges of service integration. For example, how do I integrate disparate models or recover from an outage? Governance and service management need considering as well. Concerns could include how to operationally manage a hybrid environment.
- Private cloud—which could be deployed through traditional IT, or provided by a CSP externally, offering efficiency and agility advantages but also requiring a critical "integrator" role in the case of external providers.
- Traditional IT combined with a packaged software solution—a historically well understood service delivery approach in which the supported IT organization takes full responsibility for key IT functions such as infrastructure, security, integration, resiliency and management processes (such as capacity management) with a contractual (licensing) relationship with the software provider. This model is being challenged by cloud service delivery alternatives that offer significant potential for improved efficiency and agility.

Step Three: Which cloud services are solution candidates?

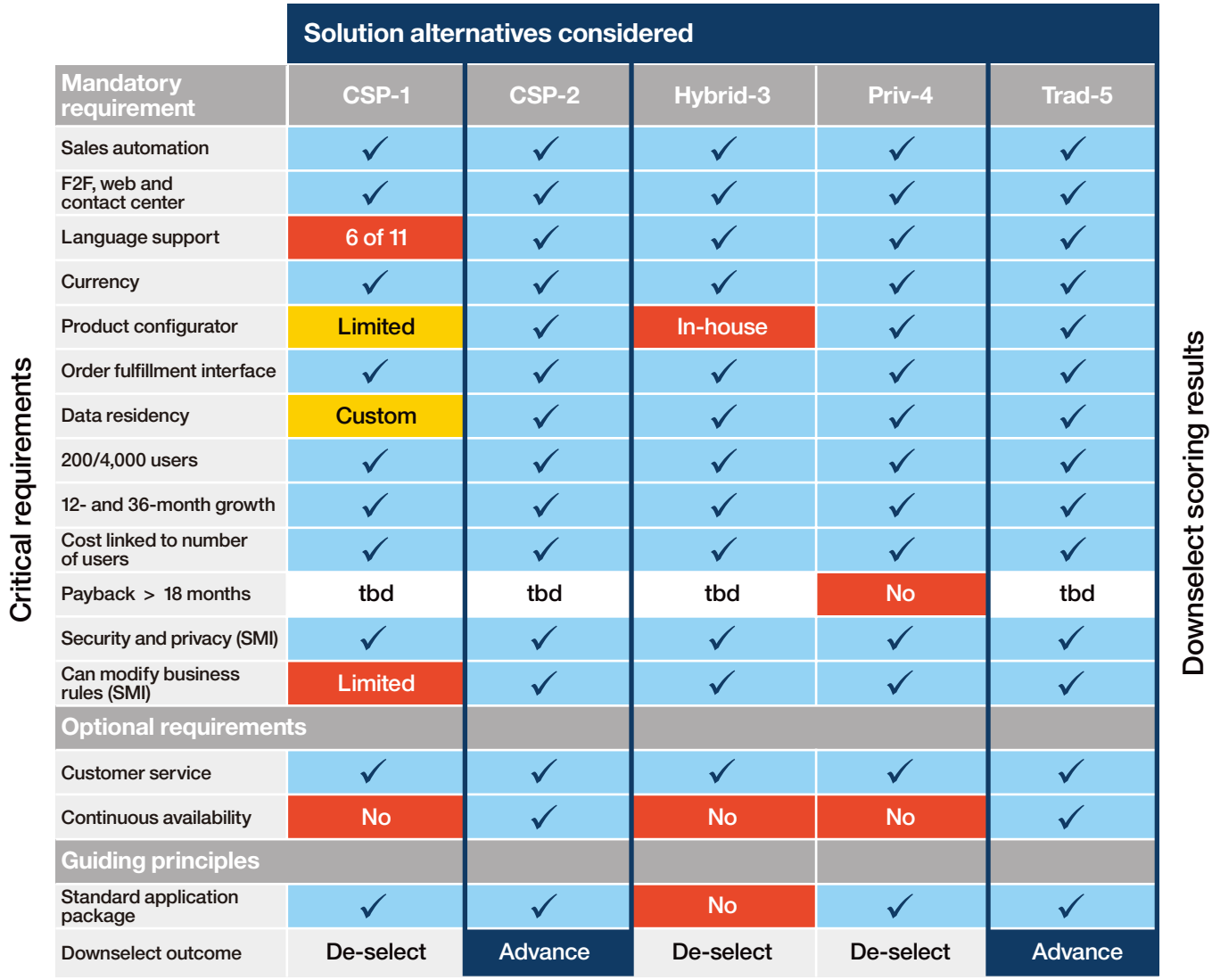
The organization is now ready to evaluate solution candidates against requirements and decision criteria. But first, recall that the organization has identified five potential solutions. Researching each solution against the requirements and decision criteria could prove time-consuming and expensive: for example, vendor site visits, demonstrations, requests for information (RFIs) and more.

An efficient approach at this stage in the decision process is to do a downselect—reducing the number of solution candidates to a manageable number of alternatives by applying the decision criteria associated with **mandatory** requirements and guiding principles. Downselection reduces the number of solution candidates to two or three alternatives, as shown in Figure 10. At this step in the decision framework, the collection of requirements and guiding principles must be:

- Objective and testable
- Inclusive of business goals and objectives
- Reflective of relative priorities using either weighted or mandatory/optional categorization

Our organization, being new to cloud decision making, compared their requirements to the CSMI described on page 10. Using this **industry-developed best practice criteria**, our organization identified two key nonfunctional requirements that had not originally been considered:

- Security and privacy protections when contracting with an external CSP
- Flexibility to modify business rules when consuming an external provided software solution



Critical requirements

Downselect scoring results

Mandatory requirement	Solution alternatives considered: CSP-1	CSP-2	Hybrid-3	Priv-4	Trad-5
Sales automation	✓	✓	✓	✓	✓
F2F, web and contact center	✓	✓	✓	✓	✓
Language support	6 of 11	✓	✓	✓	✓
Currency	✓	✓	✓	✓	✓
Product configurator	Limited	✓	In-house	✓	✓
Order fulfillment interface	✓	✓	✓	✓	✓
Data residency	Custom	✓	✓	✓	✓
200/4,000 users	✓	✓	✓	✓	✓
12- and 36-month growth	✓	✓	✓	✓	✓
Cost linked to number of users	✓	✓	✓	✓	✓
Payback > 18 months	tbd	tbd	tbd	No	tbd
Security and privacy (SMI)	✓	✓	✓	✓	✓
Can modify business rules (SMI)	Limited	✓	✓	✓	✓
Optional requirements					
Customer service	✓	✓	✓	✓	✓
Continuous availability	No	✓	No	No	✓
Guiding principles					
Standard application package	✓	✓	No	✓	✓
Downselect outcome	De-select	Advance	De-select	De-select	Advance

Comments

- Solutions CSP-2 and Trad-5 are down selected
- Scoring was performed by an evaluation team comprised of business and IT representatives
- Scores were determined on a pass (checkmark) or fail basis
- Detailed payback analysis was not performed

Figure 10. The downselect process involves evaluating the five solution candidates against mandatory requirements.

Because only CSP-2 and Trad-5 meet all mandatory requirements, these two solution candidates are downselected for further consideration.

Step Four: Which solution candidate is our final selection?

The final step is to determine the recommended solution candidate from the downselected list of chosen alternatives. This involves scoring all criteria against the project request and weighting them utilizing a methodology agreed to by stakeholders. In our case study, the following "scoring" approach is applied: evaluate all decision criteria on a scale of zero ("unacceptable") to three ("overachieving") as depicted in Figure 11. As well, stakeholders choose to weight each requirement equally at 5 percent with one requirement—Payback—weighted at 10 percent.

Metric score	0 = Unacceptable	1 = Tolerable	2 = Satisfactory	3 = Overachieving
Fulfillment of the requirements	Requirements not fulfilled at all	Requirements partially fulfilled	Requirements completely fulfilled	Requirements overachieved
Trade-off	Selecting this solution candidate leads to a major compromise regarding this characteristic.*	Selecting this solution candidate leads to a trade-off regarding this characteristic.*	There is no trade-off with selecting this solution candidate regarding this characteristic.*	There is no trade-off with selecting this solution candidate regarding this characteristic.*

Figure 11. These metrics can be used to score the solution candidate characteristics in terms of requirement fulfillment and potential trade-off. *Characteristics can include factors such as accountability, agility, assurance, financial, performance, security and privacy, and usability.

The results of the final decision checkpoint in our four-step process are depicted in Figure 12. **Ultimately, the CSP-2 alternative scored highest and is therefore recommended as the best candidate for fulfilling the project request**.

Note that in this white paper, we have suggested several industry-established best practices to enable you to assess the coverage and specificity of your criteria. Yet there is no "magic" list of evaluation criteria. Ultimately, the right approach is a list of criteria that represents value to your organization and that your evaluation team can reasonably assess.

Final evaluation criteria		Solution candidates	
Mandatory requirement	**Weight**	**CSP-2**	**Trad-5**
Sales automation	5%	Overachieving	Satisfactory
F2F, web and contact center	5%	Satisfactory	Satisfactory
Language support	5%	Satisfactory	Satisfactory
Currency	5%	Satisfactory	Satisfactory
Product configurator	5%	Satisfactory	Satisfactory
Order fulfillment interface	5%	Satisfactory	Overachieving
Data residency	5%	Satisfactory	Satisfactory
200/4,000 users	5%	Overachieving	Satisfactory
12- and 36-month growth	5%	Overachieving	Tolerable
Cost linked to number of users	5%	Overachieving	Tolerable
Payback > 18 months	10%	Overachieving	Tolerable
Security and privacy (SMI)	5%	Satisfactory	Satisfactory
Can modify business rules (SMI)	5%	Satisfactory	Overachieving
Optional requirements			
Customer service	5%	Satisfactory	Overachieving
Continuous availability	5%	Satisfactory	Satisfactory
CSP stability	5%	Satisfactory	Overachieving
Usability	5%	Overachieving	Satisfactory
Accountability	5%	Satisfactory	Overachieving
Performance	5%	Overachieving	Satisfactory
Weighted score		48	41

Scoring metric: 0-Unacceptable 1-Tolerable 2-Satisfactory 3-Overachieving

Figure 12. The results of our case study's final decision checkpoint clearly show that **CSP-2 is the best solution candidate.**

Conclusion

Adoption of cloud services is ever more prevalent, but many companies still struggle with identifying cloud services that best serve their needs. The Cloud Decision Framework can help you define a consistent, systematic and holistic decision making process for your future cloud-related investments that is customized to the specifics of your organization and operational model.

This framework covers both business and IT requirements for cloud services by using IBM's extensive intellectual capital gained from a wide range of engagements, as well as leading industry research. It is based on four main decision checkpoints that will provide a fast selection of solution and provider candidates. Utilizing the framework, you can determine:

1. Is cloud a good fit for this request?
2. Which service models and cloud adoption patterns are most suitable?
3. Which cloud services are solution candidates?
4. Which solution candidate is our final selection?

The framework helps you evaluate any tradeoffs related to the final selection in an objective, consistent and documented manner.

Once an organization adopts cloud services, it is easy to overlook the impact of cloud sourcing decisions on the IT department itself, as well as on roles and responsibilities. The IBM white paper, "The Future of the IT Department," discusses the far-reaching impact of sourcing decisions on the organization, staffing and skills requirements.

Finally, if you wish to gain further insight into CSP evaluation criteria, refer to the IBM white paper, "Establishing a relationship with your Cloud Service Provider."

Why IBM?

A solid strategy for cloud computing is critical to helping you deliver innovative IT services that can create new business value, and IBM Cloud Advisory Services can help. In fact, overall IBM was positioned as a leader in the IDC Marketscape: Worldwide Cloud Professional Services, 2014 Vendor Analysis. According to IDC's 2014 *Global Cloud Professional Services Buyer Perception Survey*, clients highlighted IBM as strongest in providing industry insights and competence, and using resources globally.[9] And Synergy Research has ranked IBM as the number one hybrid cloud provider for the enterprise.[10]

At IBM Cloud Advisory Services, we take a collaborative approach. We weave together business insight, advanced research and technology to help give you a distinct advantage in today's rapidly changing environment. Our integrated perspective on cloud consulting, design and implementation can turn strategies into action. With expertise in 17 industries and global capabilities that span 170 countries, we help clients around the world benefit from new opportunities available on the cloud.

For more information

To learn more about IBM Cloud Advisory Services, please contact your IBM representative or visit the following website: **ibm.com**/cloud computing

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Produced in the United States of America
May 2015

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