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Business Case

# Selecting a Cloud Service Provider Based on Technical Documentation

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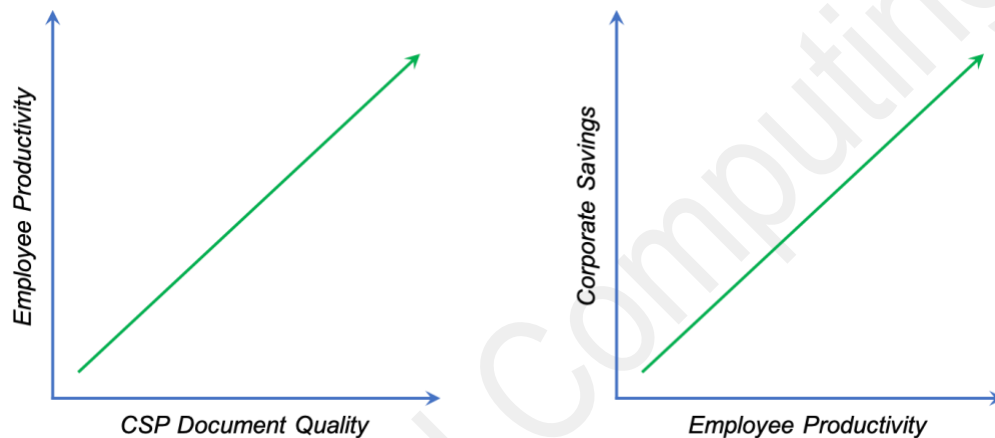
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## Executive Summary

This proposal shows that choosing a cloud service provider (CSP) based on the quality of that provider's technical documentation will reduce costs. Technical documents determine CSP transparency; without *information transparency*, productivity suffers, and without *cost transparency*, financial planning can't be done.

As illustrated below, a CSP that offers high-quality documents will improve employee productivity at Fictional Corporation ("Fictional"), and improved productivity will yield significant savings.



A CSP must therefore have technical documents that are clear, accurate, and complete. Transparency is further enhanced when a CSP provides technical accessibility via well-known technologies. A selection strategy that ranks CSPs based on documentation is essential to Fictional's future.

A Fictional pilot study developed just such a document-based strategy and ranked four candidate CSP systems: CSP 1, CSP 2, CSP 3, and CSP 4. CSP 4 is the unequivocal winner; it offers high information transparency and high cost transparency. Adopting a CSP like CSP 4 will significantly reduce costs for Fictional in the future, with a conservative estimate suggesting over \$150,000 in annual savings.

Fictional should select a CSP that offers clear, accurate, complete technical documents for cloud-based technologies. Fictional should formalize the document-based CSP selection strategy developed in the aforementioned study and consider CSP 4 as a potential CSP.

# 1. Current Methods for Handling IT Infrastructure

Fictional management has decided to migrate the bulk of its existing IT infrastructure to the cloud. Moving to the cloud is the right thing to do, but we now face a new problem: the challenge of finding the best cloud service provider (CSP). Fictional thus needs to establish an effective basis for selecting a CSP.

## 1.1 Fictional needs a CSP

Fictional is growing quickly. We have doubled our customer base within the last 6 months, and revenues have tripled over the past year. Fictional's success means we must expand our IT infrastructure, but we must do so without letting expenses get out of hand.

So we need a CSP. But *which* CSP do we choose, and *how* do we choose? Fictional needs a cloud service (CS) that is scalable and cost-effective. Fictional also needs a CSP that *enables* Fictional's employees—a CSP that minimizes the time and effort required to do work.

Behind the scenes, all major CSs are basically the same. No CSP offers a “secret sauce” that will somehow lead to computing gains beyond what other CSPs provide. The only real difference lies with *transparency* made available through high-quality technical documents.

## 1.2 A CSP must provide document-based transparency

A CSP must provide *information transparency* via documents that show how its CS components work. Without information transparency, Fictional's IT staff will be unable to do the following:

- Migrate Fictional's existing systems to the cloud
- Manage cloud-based technologies
- Troubleshoot cloud-based technologies
- Scale cloud resources to meet demand
- Downsize cloud resources when necessary
- Provide Fictional management with a clear view of a CS

Without *cost transparency*, our Finance and Accounting (FA) Department will be unable to accurately forecast expenses. A clearly documented billing structure is essential to financial planning, tax preparation, and fund allocation. A CSP must

therefore provide documentation that (1) is unencumbered by opaque terminology and (2) clearly describes customer costs and contractual obligations.

### 1.3 Fictional is spending too much money on IT

As shown in section 3, Fictional spent more than \$1,000,000 in 2019 and more than \$319,000 in the last quarter of 2019 alone. These costs can and should be reduced as soon as possible by migrating to a CSP—but only if that CSP offers information transparency and cost transparency.

### 1.4 Performance will suffer without the right CSP

Failing to select the right CSP means that Fictional will miss opportunities to do the following:

**Meet customer demands.** Without a best-in-class CS, Fictional will be unable to fill orders on time, unable to maintain a user-friendly web presence, and unable to provide support when needed. Customers will be frustrated and will likely turn to one of Fictional's many competitors.

**Meet employee needs.** A non-optimal CS means employees will struggle with their daily work. Simply put, a non-optimal CS (which, by definition, is non-transparent) will prevent employees from producing high-quality work on time.

**Scale IT services.** Fictional's current IT infrastructure has worked so far, but it is not designed to handle the growth that Fictional anticipates. Without an optimal CSP that offers information transparency and cost transparency, Fictional will be unable to expand its computing resources trouble-free.

**Avoid high costs.** Scaling will become increasingly expensive without the right CSP. If Fictional's IT resources continue to expand at their current rate, costs will become unmanageable. The only realistic alternative is to choose the right CSP. The sooner we choose the right CSP, the sooner we can reduce costs.

## 2. Selecting a CSP Based on Technical Documentation

Many factors need to be considered when choosing a CSP: information transparency and cost transparency are among the most important. Without well-written documents, time and money will be wasted. Fictional should therefore select a CSP that complements computing resources with clear, accurate, complete documents.

### 2.1 Fictional needs a document-based strategy to select the best CSP

Fictional should select a CSP only if the following three criteria are satisfied:

1. Clear, accurate, complete technical documents are readily available for all of the CSP's technologies.
2. Clear, accurate, complete technical documents are readily available for the CSP's billing structure.
3. The CSP offers technical accessibility—well-known, off-the-shelf technologies for which clear, accurate, complete technical documents are already available.

A small team of professionals from the Fictional Human Resources (HR) Department has implemented a strategy for technical-documentation-based cloud service selection (TDB-CSS). Using their TDB-CSS strategy, the HR team examined four CSPs and their associated CSSs: CSP 1, CSP 2, CSP 3, and CSP 4. The team identified CSP 4 as the best candidate CSP—it satisfies all of the above three criteria.

To leverage the preliminary TDB-CSS strategy that the HR team has developed, Fictional should do the following:

- Formalize a version of the strategy as Fictional's primary means of selecting a CSP
- Designate the HR team members as key contributors to the CSP-selection process
- Use the formalized TDB-CSS strategy to find the best-in-class CSP
- Further examine CSP 4 and alternative CSPs

In short, Fictional should use a TDB-CSS strategy as the basis for selecting a CSP.

## 2.2 A TDB-CSS strategy will improve efficiency at Fictional

A TDB-CSS strategy focuses on information transparency and cost transparency. This focus will enable Fictional to select a CSP with clear, accurate, complete documentation. Such documentation will enable Fictional's IT staff to fully understand and effectively use CSP services.

A TDB-CSS strategy will similarly give Fictional's FA employees the ability to predict costs. Having clear, accurate, and complete information about billing will allow Fictional to effectively plan and allocate funds as necessary.

Leveraging the expertise of the existing HR team will speed up the refinement and implementation of a TDB-CSS strategy. The HR team can help Fictional select a CSP and realize savings more quickly than would otherwise be possible.

## 2.3 A TDB-CSS strategy will eliminate waste at Fictional

Using a TDB-CSS strategy will reduce hours worked, equipment required, and facilities and resources used. As section 3 reveals, Fictional would save more than \$150,000 annually by choosing CSP 4—and this estimate is conservative.

Expenses for CSPs that fail to satisfy the three criteria listed above (designated as *TDB-CSS-noncompliant* CSPs) are difficult to estimate because such CSPs offer neither cost transparency nor information transparency. Section 3 shows that noncompliant CSPs will likely force Fictional employees to work more hours than a *TDB-CSS-compliant* CSP such as CSP 4.

## 2.4 A TDB-CSS strategy will open opportunities for Fictional

A TDB-CSS-compliant CS will allow Fictional to do the following:

**Increase customer satisfaction.** A CSP chosen using a TDB-CSS strategy will enable Fictional to give its customers the best possible service. Our CS will be maintainable, scalable, and responsive. Fictional's customers will benefit through both the improved services we offer and the cost-savings we pass on.

**Increase employee productivity.** Fictional employees will also benefit from a TDB-CSS-compliant CSP. Computing performance will improve, and our IT staff will deliver—no delays, no downtime, no frustration. Satisfied workers are productive workers.



**Scale IT services.** To continue growing, Fictional must expand its IT resources quickly and efficiently. A TDB-CSS-compliant CSP will enable us to do just that, and without unexpected technical hurdles. Furthermore, such a CSP will allow just-in-time resource allocation—expansion, reduction, and reallocation on demand.

**Reduce costs.** Using a TDB-CSS strategy to select a CS will significantly reduce the cost of IT equipment and facilities, and the selected CS will incur only predictable costs for which Fictional can plan.

### 3. Data Supporting a TDB-CSS Strategy

This section summarizes the results of an in-house study that can serve as the basis for a TDB-CSS strategy. Three main conclusions may be drawn from the study:

1. Fictional can save money by using a CSP that offers high information transparency and high cost transparency.
2. A CS that offers technical accessibility is preferable to a CS that does not.
3. The preliminary TDB-CSS strategy developed in the study ranks CSP 4 as the best of four candidate CSPs.

Please see the appendix for a detailed description of the study. To ensure impartiality, the Fictional HR department was tasked with designing and carrying out the study (the author of this business case is a member of the Fictional Technical Communications Department).

#### 3.1 IT costs at Fictional are high

Fictional knows IT. Our employees are knowledgeable and efficient, and our equipment is outstanding. But our IT infrastructure is expensive. See, for instance, the IT expenditures in Table 1.

Fictional spent over \$1,000,000 on IT in 2019. Fictional has rightly decided to seek out a CSP to save money; however, the differences in document quality and the transparency those documents provide differ substantially among CSPs.

**Table 1. Fictional IT expenses for 2019<sup>1</sup>**

Quarter	Personnel <sup>2</sup>	Software and Equipment <sup>3</sup>	Facilities and Resources	Total
Q1	\$180,000	\$20,000	\$25,000	\$225,000
Q2	\$210,000	\$16,000	\$28,000	\$254,000
Q3	\$220,000	\$30,000	\$36,000	\$286,000
Q4	\$260,000	\$25,000	\$34,000	\$319,000
			<b>Cost:</b>	<b>\$1,084,000</b>

<sup>1</sup> Rounded to the nearest \$1,000  
<sup>2</sup> Not fully loaded (i.e., excluding benefits)  
<sup>3</sup> Excluding depreciation

### 3.2 CSP 4 is the only candidate CSP that offers high information transparency and high cost transparency

While academic papers may reveal general trends in cloud computing, such papers can't help Fictional predict how its employees will interact with a specific CS. To obtain the most relevant data, HR asked six IT employees to use and rank four candidate CSs according to information transparency. HR then asked six FA employees to review CS billing documentation and rank each CS according to cost transparency. Table 2 shows the average ranking given to each CS.

As the data in Table 2 reveal, CSP 4 is the unequivocal leader in information transparency and cost transparency. When asked about their impressions of each CS, Fictional employees agreed: *the quality of CS technical documents determined how much the employees understood and how well they could work with a given CS.*

Fictional IT employees attributed their productivity when using CSP 4 to CSP 4's documentation and technical accessibility (see Table A3 for technical-accessibility rankings). By contrast, IT employees were consistently negative about the other CSs and pointed to poor documentation as a major hindrance.

**Table 2. Average CS transparency rankings on a scale of 1 (worst) to 5 (best)**

Transparency Ranking	CSP 1	CSP 2	CSP 3	CSP 4
<b>Information:</b>	2	1.5	2.5	4
<b>Cost:</b>	1.2	1	1.8	5

Fictional FA employees were similarly positive about CSP 4's billing and financial documents. FA employees said that CSP 4's documents made financial calculations and projections *trivial*. By contrast, FA employees were negative about the cost transparency of the other CSPs, with the consensus being that the lack of transparency made financial projections and planning unworkable.

### 3.3 Using a TDB-CSS-compliant CSP will reduce the time and cost to complete IT tasks

How might the four CSs influence employee productivity? To answer this question, HR observed six IT employees while they performed a common IT task—installing and running a web server. As shown in Table 3, the results are striking (see Table A1 in the appendix for details). Relative to CSP 4, the other CSs required Fictional employees to spend drastically more time on task completion.

**Table 3: CS task-completion percent increases over CSP 4**

Task Completion	CSP 1	CSP 2	CSP 3
<b>Time:</b>	418%	409%	355%
<b>Cost:</b>	494%	475%	401%

Fictional IT employees spent over 350% more time when working with the next-best CSP (CSP 3) and spent over 400% more time when working with the other two CSPs. Of critical importance is the fact that CSP 4 was the *only* CS for which *all* six Fictional employees were able to finish installing the server.

Of course, lower productivity means higher costs. On an hourly basis, CSP 3 cost over 400% more than CSP 4, CSP 2 cost 475% more than CSP 4, and CSP 1 cost

almost 500% more than CSP 4. CSP 4 thus promises both higher productivity and lower costs.

### 3.4 Moving Fictional's IT infrastructure to a TDB-CSS-compliant CSP will reduce expenses

Adopting a TDB-CSS-compliant CSP like CSP 4 will put Fictional in the financial driver's seat. Table 4 shows a conservative estimate of what the savings on asset expenditures will be: the first row (red) shows projected costs without a CSP and the second row (blue) shows projected costs with CSP 4. Estimates are for the 3<sup>rd</sup> quarter of 2020 (the earliest implementation period for a selected CS).

**Table 4. Projected Q3, 2020 IT cost comparison for the non-CSP scenario and the CSP-4 scenario**

Quarter	Personnel	Software and Equipment	Facilities and Resources	CSP 4	Total
Q3	\$260,000	\$25,000	\$34,000	\$0	\$319,000
Q3	\$260,000	\$5,000	\$9,000	\$6,000	\$280,000
				<b>Projected Savings:</b>	<b>\$39,000</b>
				<b>Projected Annual Savings:</b>	<b>\$156,000</b>

Non-CSP scenario: Q3 estimates correspond to the Q4, 2019 costs in Table 1.

CSP-4 scenario: current costs to replace Fictional IT infrastructure with CSP 4 components

Fictional will save more than \$150,000 annually using CSP 4—and will likely save a similar amount with any other CSP selected using a TDB-CSS strategy.

Long-term growth prospects are as important as short-term gains. By using CSP 4 or another TDB-CSS-compliant CSP, Fictional will be able to meet the demands of its customers, expand IT resources as required, and eliminate spending on resources that rapidly depreciate. A TDB-CSS strategy wins here as well.

## 4. Conclusion

Document quality is the key to selecting a CSP. High quality documents translate into information transparency and cost transparency. Information transparency, especially when combined with technical accessibility, makes Fictional employees highly productive.

Cost transparency means that Fictional will be able to make financial predictions and cost adjustments. A TDB-CSS-compliant CSP will also eliminate spending on unnecessary software, hardware, and facilities.

Without a TDB-CSS strategy in place, Fictional risks adopting a CSP that will undercut employee productivity. A TDB-CSS-noncompliant CSP will likely lead to employee frustration and customer complaints.

Fictional should select a CSP using a formalized version of the TDB-CSS criteria that identified CSP 4 as a promising candidate. Fictional should also leverage the existing expertise of the HR team that designed and implemented the study detailed in the appendix.

## Appendix: A Fictional Study on CSP Usability and Transparency

### Overview

This appendix describes a Fictional study that embodies a TDB-CSS strategy. The study focused on four CSs: CSP 1, CSP 2, CSP 3, and CSP 4. The next section summarizes the methods used in the study, and the final section summarizes the results of the study. The Fictional HR department was asked to design and carry out the study because HR is impartial to the goals of this proposal.

### Methods

In the first part of the study, HR selected six IT employees who were representative of Fictional's IT staff: two entry-level employees, two mid-level employees, and two senior employees. HR asked each IT employee to install the Apache Tomcat® web server and create a simple web page that displayed "Hello, World!" using the four different CSs.

HR randomized the order in which the IT employees installed the web server. For example, one employee installed the server using CSP 1 first, and another employee installed the server on CSP 3 first. Employees were allowed a maximum of 8 hours to complete each installation.

HR observed and recorded the time each IT employee needed to complete the server-installation task on each CS. HR then asked the IT employees to rank each CS by information transparency and technical accessibility. HR asked each IT employee to share his or her views on how information transparency and technical accessibility affected that employee's productivity.

In the second part of the study, HR selected six FA employees who were representative of Fictional's FA staff. HR asked the employees to review the billing documentation for each of the four CSs and rank each CS based on cost transparency. HR also asked each FA employee to share his or her views on how cost transparency would affect that employee's ability to predict CSP costs.

## Results

Tables A1–A4 show the results for the Fictional CSP study. Each table appears on a separate page.

Table A1 shows the total hours required for, and the resulting cost associated with, each Apache Tomcat® installation. HR calculated each cost using the associated IT employee’s base salary. CSP 4 was the only CS for which all six Fictional employees were able to complete the installation. CSP 4 performed best in terms of both time and money.

**Table A1. CS Apache Tomcat® installations: hours and costs<sup>1</sup>**

Employee <sup>2</sup>	CSP 1		CSP 2		CSP 3		CSP 4	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
EL-T1	8	\$200	8	\$200	7	\$175	2	\$50
EL-T2	8	\$200	8	\$200	8	\$200	4	\$100
ML-T1	8	\$400	8	\$400	8	\$400	2	\$100
ML-T2	7	\$350	8	\$400	6	\$300	1	\$50
HL-T1	7	\$455	7	\$455	5	\$325	1	\$65
HL-T2	8	\$520	6	\$390	5	\$325	1	\$65
<b>Totals:</b>	<b>46</b>	<b>\$2,125</b>	<b>45</b>	<b>\$2,045</b>	<b>39</b>	<b>\$1725</b>	<b>11</b>	<b>\$430</b>

<sup>1</sup> Red indicates an incomplete server installation.

<sup>2</sup> Employee codes: IT = information technology, E = entry level, M = mid-level, S = senior level

Table A2 shows the CS information-transparency rankings. Average rankings appear at the bottom of the table. CSP 4 had the best rankings.

**Table A2. CS information-transparency rankings on a scale of 1 (worst) to 5 (best)**

Employee <sup>1</sup>	CSP 1	CSP 2	CSP 3	CSP 4
IT-E1	2	1	3	5
IT-E2	1	1	1	4
IT-M1	2	1	2	3
IT-M2	3	1	3	5
IT-S1	3	2	3	3
IT-S2	1	3	3	4
<b>Average:</b>	2	1.5	2.5	4

<sup>1</sup> Employee codes: IT = information technology, E = entry level, M = mid-level, S = senior level



Table A3 shows the CS technical-accessibility rankings. Average rankings appear at the bottom of the table. CSP 4 again had the best rankings.

**Table A3. CS technical-accessibility rankings on a scale of 1 (worst) to 5 (best)**

Employee <sup>1</sup>	CSP 1	CSP 2	CSP 3	CSP 4
IT-E1	1	1	2	5
IT-E2	2	1	1	5
IT-M1	2	1	3	4
IT-M2	3	1	4	5
IT-S1	4	1	1	5
IT-S2	1	2	3	5
<b>Average:</b>	2.2	1.2	2.3	4.8

<sup>1</sup> Employee codes: IT = information technology, E = entry level, M = mid-level, S = senior level

Table A4 shows the CS cost-transparency rankings from the second part of the study. Average rankings appear at the bottom of the table. CSP 4 ranked as the best CS by far.

**Table A4. CS cost-transparency rankings on a scale of 1 (worst) to 5 (best)**

Employee <sup>1</sup>	CSP 1	CSP 2	CSP 3	CSP 4
FA-E1	1	1	2	5
FA-E2	1	1	1	5
FA-M1	1	1	1	5
FA-M2	1	1	2	5
FA-S1	2	1	3	5
FA-S2	1	1	2	5
<b>Average:</b>	1.2	1	1.8	5

<sup>1</sup> Employee codes: FA = financial and accounting, E = entry level, M = mid-level, S = senior level