

A BPM Partners White Paper

True Cloud vs. Hosted Applications in Performance Management

The shift to cloud-based BPM has happened, but it's key to understand differences in vendor offerings, and in the technology and terminology they use.

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Executive Summary

The battle in enterprise applications between cloud-based and on-premises solutions is over. Organizations have moved to cloud applications for common reasons: fast time to value, lower total cost of ownership, and applications that can be run by line of business personnel.

In the business / corporate performance management (BPM or CPM) market, cloud-based solutions have caught up with their on-premises rivals in features and capabilities. In addition, many companies are IT resource-constrained and see cloud-based solutions as an ideal way to overcome that limitation. Organizations have also come to understand that their data is more secure with state-of-the-art technology than with unsecured spreadsheets or out-of-date or unpatched on-premises software.

We believe late adopters, already a minority, will make the move to cloud-based applications in performance management, as they are already doing with other functions.

Some confusion exists in the marketplace about cloud terminology, and the pros and cons of true cloud, hybrid cloud, partially web-enabled, hosted software, and the meaning of multi-tenant versus single-tenant.

Multi-tenant refers, in this context, to an instance of BPM software running for multiple or many customers. This single instance has multiple tenants; each tenant is a separate end-user customer of the software vendor. This architecture allows economies of scale and smooth scalability. Multi-tenant architecture means that all users share available hardware resources, which enables efficiency and cost savings. Other benefits are detailed later in this white paper.

The next battleground in performance management software is over the decision on what type of cloud solution that users will select. Some large vendors chose to cloud-enable minor modules from their on-premises suite. This lets them offer a “cloud solution” without abandoning their legacy application code.

Other vendors of on-premises solutions also offer hosted single-tenant software. It would take a major effort to re-architect and rewrite their client/server-based applications for the cloud. These solutions are hosted by a third-party.

This white paper explores into the differences, including pros and cons, between multi-tenant cloud and hosted single-tenant software in business performance management.

Introduction and Terminology

The battle in enterprise applications between cloud-based and on-premises solutions is over. Almost every software category has shifted to the cloud over the last 15 years. Cloud-based pioneer salesforce.com emerged as the leader in customer relationship management (CRM) software. Workday, a cloud-based human capital management (HCM) software provider, has built a \$15 billion market cap largely by landing large enterprise customers like DuPont and HP. NetSuite, in the enterprise resource planning (ERP) market, has over 16,000 customers.

Cloud-based software is clearly the future not just for mid-market companies but also for large enterprises. Organizations have moved to cloud applications for common reasons: fast time to value, lower total cost of ownership, and applications that can be run by line-of-business personnel.

The migration to cloud-based performance management

In large part, this shift has taken place, at least in the business performance management (BPM) market, because cloud-based solutions have caught up with their on-premises rivals in terms of features and capabilities. In addition, many companies are IT resource-constrained (in regards to both people and infrastructure) and see cloud-based solutions as an ideal way to overcome that limitation. Moreover, organizations have come to understand that their data is more secure with state-of-the-art technology than with unsecured spreadsheets or out of date or unpatched on-premises software.

We believe the late adopters, already a minority, will make the move to cloud-based applications in performance management, as they are already doing with other functions. That brings us to now, and the choice between true cloud and hosted single-tenant applications.

Hosted single-tenant software is not true cloud

The next battleground in BPM software is the decision over which type of cloud solution that users will select. Vendors of on-premises applications can read the writing on the wall and have not been sitting idle. Some mega-vendors have cloud-enabled specific modules from their on-premises BPM suite. This lets them compete in deals that call for a “cloud solution” without abandoning their legacy application code.

Most other vendors of on-premises software chose a different approach: hosted single-tenant software. Rather than completely re-architect and rewrite their client/server-based applications for the cloud, they offer a third-party hosted version of their solution. While this approach may seem very similar to native, or true cloud-based solutions, there are several important differences that should be recognized.

Most notably, true cloud applications are designed from the start for the cloud, running a single instance serving multiple users, called tenants. All tenants make use of the same software code, but each tenant has a discrete, secure, virtual workspace. Multi-tenant architecture means that all users share available hardware and software resources, which enables efficiency and cost savings.

Why IT likes true cloud

Many IT groups endorse true-cloud options to lighten their own work load, and encourage self-sufficiency for Finance and other users of performance management. Forward-thinking IT teams want to move away from maintenance and tedious report building tasks, often their lot when helping Finance with client-server applications, and shift their energies to more innovative and exciting projects.

Resolving the terminology fog around the cloud

There is lack of clarity about cloud terminology. With apologies for the play on words, it's worth getting the labels clear. Otherwise, it is difficult to sort out what different software vendors offer to users. We have noted that potential users of technology are at times thrown off by terms like 'private cloud' or 'hybrid cloud model' as well as 'hosted application.'

On-premises software

On-premises software is installed and run on computers in the building or facilities of the organization using the software, rather than at a remote facility, such as at a server farm or cloud somewhere on the Internet.

Multi-tenant versus single-tenant

In this context, multi-tenant refers to an instance of BPM software running for multiple or many customers. This single instance has multiple tenants; each tenant is a separate customer of the software vendor.

Single-tenant means that for X number of customers, X instances of the software are running. There is separate installation and a separate instance for every customer. This is the model for hosted applications, as each instance has one tenant, which is the customer company.

A potential source of confusion: The multi-tenant application runs one or few instances, used by all users. The single-tenant application runs multiple instances. Each instance of the single-tenant application has just one tenant.

Private cloud

Also called internal cloud or corporate cloud, “private cloud” is a marketing term for a proprietary computing architecture that provides hosted services to a limited number of people. Usually behind a firewall, the private cloud can also be off-site and involve no sharing of resources with others. The key aspect of a private cloud is not location nor ownership; it’s privacy. The private cloud can be the medium for delivering a hosted application to end users.

Hybrid cloud

A hybrid cloud is a cloud computing environment in which an organization provides and manages some resources in-house and has others provided externally. With this architecture, part of the BPM application is hosted by a third party, and part is hosted at the customer site.

Public cloud

A public cloud is a set of computers and computer network resources based on the standard cloud computing model, in which a service provider (such as Amazon Web Services) makes resources, such as applications and storage, available to the general public over the Internet.¹ Gartner defines public cloud computing as a style of computing where scalable and elastic IT-enabled capabilities are provided as a service to external customers using Internet technologies—i.e., public cloud computing uses cloud computing technologies to support customers that are external to the provider’s organization.²

¹ http://en.wikipedia.org/wiki/Public_cloud

² <http://www.gartner.com/it-glossary/public-cloud-computing>

Cloud versus On-Premises Applications

Lower cost, independence from IT, and enhanced security

BPM Partners focused on cloud in performance management in the 2013 BPM Pulse Survey.³ We found that lower total cost, followed by reduced reliance on IT are the leading reasons companies have accepted cloud-based performance management versus on-premises software.

On a year-to-year comparison basis, we saw a continued upward trend in companies that are considering a software-as-a-service (SaaS) solution for performance management. 62 percent of all respondents to the 2013 Pulse Survey would consider a SaaS solution.

Asked the most important reason to consider cloud, according to respondents:

- 1st: Cost
- 2nd: Reduced reliance on IT

2013 Pulse: The most notable objection to SaaS was due to perceived security concerns (73%), and this was mostly among large enterprises (>5,000 employees). The 2nd leading objection: company culture or policy, at 56%.

74% said their company already uses a cloud-based solution outside BPM.

Our observation is that the now-established acceptance of cloud-based BPM solutions is also due to this fact: they have caught up to, and in some cases surpassed on-premises solutions in functionality. In side-by-side feature comparisons, and in feedback from business and finance users, numerous cloud-based performance management applications hold their own against established on-premises BPM suites.

The financial model of cloud-based subscription pricing, where the primary cost is an operating expense, has won favor over license purchase, a capital expenditure. The holdouts against cloud adoption tend to be larger companies which already have a significant investment in IT resources and many existing on-premises solutions. Larger organizations tend to have greater hesitation about moving their financial data to servers outside of their direct control.

In reality, cloud solutions tend to provide a more secure overall solution than the systems they are replacing. Think of spreadsheets being emailed and sitting unprotected on local machines, even in the largest companies. With a cloud-based

³ BPM Partners Pulse Survey, 2013.

solution, everyone signs into a secure site and accesses the data based on their specific security profile.

Misconceptions about cloud-based solutions

Alongside the growing awareness of cloud-based applications and their advantages, a number of misperceptions have held on:

- True cloud-based BPM offerings do not yet match on-premises functionality. This is no longer true in most categories of performance management. Even consolidation is now roughly equal for some true cloud vendors.
- The legacy architecture is more secure because it is controlled in-house. We believe this is not the prevailing truth any longer. 70% of IT threats are internal. For cloud vendors, security is an overriding priority and comes before even availability and functionality.
- Cloud threatens job security for IT. On the contrary, cloud applications help liberate IT staff from report-building and support tasks that they often consider tedious and of low value.
- Vendors of on-premises BPM solutions are investing in next-generation functionality more than cloud vendors. In fact, there's a good possibility that the true cloud vendors are able to innovate more effectively – the code they are working with gives them a clearer road forward. One reason is that some on-premises applications began as separate products and their integration is an ongoing challenge with each functionality update.

Benefits: Cloud versus on-premises

As a support resource to those considering cloud-based solutions for BPM, following is a summary of benefits of cloud applications, relative to on-premises counterparts. This is not part of the comparison of true cloud to hosted single-tenant applications.

The cloud-based solution provides:

- Self-sufficiency – End users can often set up and modify their own models, budgets, and reports. This is especially attractive to those who in the past had to rely upon external consultants or wait for IT help.
- Wider adoption – Cloud-based BPM applications are increasingly extending beyond Finance and planning groups to line-of-business and

operations.

- Better security – the core business of the true cloud software provider depends 100% on maintaining impenetrable security.
- High availability – the true cloud application will have easily verified measures for high availability, such as duplicate data centers which are geographically dispersed to protect against single acts of nature.
- Immediate upgrades to all customers – Running a single instance means that any upgrade automatically and immediately applies to every tenant (subscriber) with no burden to the customer.
- Stronger pace of innovation: with more frequent upgrades, true cloud vendors usually provides new capabilities quarterly, versus approximately every 12 to 24 months for on-premises. This provides a more continuous approach to innovation that can give customers an edge over competitors that lag behind on utilizing new tools.
- Vendor visibility into customer usage – The software vendor can monitor usage, and will understand which pages are most popular, and which cause bottlenecks or support calls. The vendor can then modify the software to eliminate these issues, or capitalize on the wealthier areas it uncovers.
- Less infrastructure burden - The customer does not need a server, nor staff to maintain the application, report builders, etc.
- More responsiveness to tablets and other mobile devices -- Architecting for the cloud from the start of development strongly implies mobile access, and cloud application programmers should design screens with mobile devices in mind.

High-Level: True Cloud Compared to Other Options

Technology differences: True cloud versus hosted application

Within the cloud choice there are two primary options: “true cloud” and hosted. A true cloud solution is built from the ground up to take advantage of the cloud environment. It is also known as “multi-tenant” because multiple users share the same software (in their own discrete, virtual and secure data workspaces).

The alternative to true cloud applications is software that the vendor adapted to run on a server hosted by the vendor or a third-party with whom they have contracted. This is sometimes called “single-tenant” since it only a single customer uses each instance of the software.

These vendors may or may not offer subscription pricing. In both cases you reduce internal demand for infrastructure and IT resources, but only the true cloud pools hardware resources including servers and storage.

True cloud defined

An application that is “real cloud” was designed from the ground up for the cloud. It did not start life as an on-premises application. The real / true cloud application is not a “web-enabled version” of an on-premises application or suite.

The true cloud application was not first planned and coded to run a separate instance for each customer, whether on a physical or virtual server owned or operated by the end-user.

Instead, it is owned, operated, tended to, secured, and improved and upgraded by a software vendor and it is only accessible to end users who are in other locations.

The software vendor is in charge of the virtual and physical servers that run the application, or contracts with another company to operate them, such as a hosting company or data center. No matter what the story is with the servers, the software vendor operates the application, and runs it as a multi-tenant instance.

Every company which has subscribed to the real cloud application—you, and every user at those other companies--is making use of the same code. The multi-tenant application is designed for security and has protections built in to keep

each company's data, planning models, users and privilege levels, and customized features or configurations separate and completely insulated from all other companies.

On-premises adaptations with partial Web access

In practice, on-premises software that is partially web-enabled is very similar to the underlying client-server application that was designed with a substantial implementation project in mind. As a result, these adaptations often require optimization experts or customization consultants for the initial setup, and they require IT intervention and assistance on an ongoing basis. Independence from IT is probably not realistic.

Customer preference: True cloud over hosted applications

In the Executive Summary, we referred to the choice that companies can make between true cloud and a hosted application. We see that the distinction is not universally understood, and that it has confused potential users of cloud and hosted technology.

The Pulse 2013 survey asked: "Would you rather get your cloud-based solution from a vendor that has product, business model, and pricing designed specifically for the cloud, or from a vendor that is focused on an on-premises solution, but offers a single-tenant hosted version as well?"

Among those who showed a preference, the cloud-first-vendor was favored 4 to 1 over software vendors with a single-tenant hosted version. Surprisingly, 56% responded that it didn't matter to them. This is at such odds with the group which does care, that we believe some of these "Doesn't Matter" respondents do not understand the distinction clearly—because we all know that it most likely *does* matter to them.

Cloud, but not "True Cloud"

Significantly different from true, multi-tenant cloud SaaS is the variant called "hosted single-tenant" or private cloud. This architecture typically involves an

application running on a server which is operated by the end user company. In this scenario, upgrades are not automatically disseminated to customers.

How significant is it that a BPM suite is built from the ground up for the cloud? In other words, does it matter to anyone except technology purists whether a unified application is “true cloud”?

When you consider some of the key factors that make cloud-based applications attractive in the first place, the logic of multi-tenant “true cloud” design is more evident.

Cloud adaptations of mature on-premises performance management applications

The mega-vendors in particular have a deep legacy investment in their well-proven, mature performance management applications. It is a difficult choice to step away from this investment and start anew with a completely new set of code architected for the true cloud. Instead, they enable web access to certain portions of their functionality, and this brings the issue of multiple simultaneous access demands on the core system, a challenge for which it was not designed.

Scalability issues often result from this retrofit approach. In addition, security is usually not as strong as you will find with a true cloud application, because that too is a retrofit.

Comparisons: True Cloud versus Main Alternatives

It's important that potential users of cloud-based BPM understand what they are actually shopping for: an on-premises solution hosted for them personally by the vendor through a third-party, or a cloud solution provided as the standard approach for all of a vendor's customers.

Table 1. Technology comparison

	On-Premises	Hosted Single-tenant	Multi-Tenant Cloud
Multi-tenant application architecture	No	No	Yes
Access via Web Browser	No	Sometimes	Yes
Requires customer IT resources	Yes	No	No
Pooled hardware (servers, network)	No	No	Yes
Tier 4 Datacenters	Depends	Depends	Yes
Always on latest software version	No	No	Yes
Pace of innovation (frequency of upgrades)	18 to 24 months	Depends	Quarterly
Vendor fully responsible for upgrades	No	No	Yes

The multi-tenant architecture is the key to scalability, efficiency, and economy of scale. The cloud vendor typically operates an instance of the software application wherein every user/customer makes use of the same code, but within that customer's own, insulated virtual workspace. Each customer is a "tenant" within the shared software instance.

Mature multi-tenant cloud application vendors usually deploy using the most robust "Tier 4" datacenters, and can efficiently allocate hardware resources among their entire customer base. This is key to lowering TCO.

The largest barrier to software upgrades in the enterprise is the implementation and rollout, which entail expense and risk. In the multi-tenant, cloud-based scenario, both are accomplished for all customers at once. This is one reason that true cloud vendors tend to issue major releases four times yearly.

Never behind on versions

With true cloud solutions you are always running the latest version of the software. The end user has immediate access to every bug fix or enhancement that is issued without having to go through a tedious internal upgrade process. These vendors are dependent on the cloud infrastructure for their success, and need to have covered their bases with appropriate security and high availability measures and certifications.

When the vendor upgrades its true-cloud applications, it upgrades just once – to the only existing instance that is running—and it becomes potentially available to every end user at the same time. The various customers can decide whether to access the new features or not, whether they come free or not.

There is no question as to whether the upgrade is distributed to a particular user, because it doesn't have to be distributed. All tenants are immediately able to take advantage of the upgrade.

Hosted single-tenant category is short on references and track record

Paradoxically, despite hosted single-tenant vendors (in the BPM space) including mega-vendors, the category lacks examples of successful product offerings. There's a lack of reference customers, particularly in the large-enterprise bracket. The long-term commitment of large ERP vendors to hosted BPM applications is less than clear.

There are no examples of single-tenant hosted applications getting traction in other software categories like CRM, ERP, or BI. On the contrary, there are examples of single-tenant applications that have failed to scale and stranded customers on dead-end software.

Cost and business model

Since cost is a leading motivation to choose a cloud-based solution, let's consider the business aspects next.

Table 2. Business value comparison

Value	On-premises software	Hosted single-tenant	Multi-tenant cloud
Low total cost of ownership	No	Depends	Yes
Subscription	No	Yes	Yes
Finance-owned	No	Depends	Yes
Fast time to value	No	Depends	Yes

Based on prevailing pricing, we find that multi-tenant cloud-based applications for BPM have a lower TCO in most situations. Even where the subscription is annual, it creates a predictable and therefore more manageable cost.

Subscription pricing

These vendors typically price on an annual subscription basis. While this is generally a plus from a cash flow perspective, prepaying for the year can be a hefty outlay. Some vendors offer payment of multiple years in advance in exchange for deeper discounts.

The hosted single-tenant application may require the end user’s IT group to take ownership and responsibility for the application and server, whereas the cloud-based application nearly always allows complete independence from IT.

Table 3. Product capability and functionality comparison

	On-premises	Hosted single-tenant	Multi-tenant cloud
Full suite available	Yes	In some cases	Yes
Unlimited # of users	Yes	Not always – check	Yes
Unlimited database	Yes	Not always	Yes
Well-defined product roadmap	Yes	Depends	Yes

The development roadmap for recently launched hosted versions of on-premises applications are sometimes unclear because the product is somewhat experimental on the vendor’s part.

Some hosted applications impose a ceiling on the number of users and the amount of data. This can box in a growing company.

Security compared

The most prevalent reason that larger companies are reluctant to consider a cloud-based performance management solution was cited in the Pulse Survey as security.

Table 4. Security comparison

	On-premises	Hosted single-tenant	Multi-tenant cloud
Immediate security patches	No	No	Yes
Third-party audits	No	In some cases	Yes
Penetration testing	No	In some cases	Yes
Designed for cloud security	No	No	Yes, as overriding priority

As the cloud applications industry has matured, it's become evident that security with a true cloud application is often more effective than with other models, particularly on-premises, licensed software. For one thing, it is commonly cited that 70 percent of security threats are internal. On the other, cloud software vendors enforce and are held to exacting standards including third-party audits and penetration testing.

Support issues

Table 5. Support comparison

	On-premises	Hosted single-tenant	Multi-tenant cloud
Support staff know customer configuration	No	No	Yes
Online support via customer community	No	No	Yes

Although it's not commonly at the forefront of a debate on moving to a true cloud solution, it's worth looking at support issues. Customization of on-premises and hosted single-tenant applications will mean that support staff at the vendor most likely do not know about the specific customer's configuration.

Because modifications of a true cloud, multi-tenant application are limited to an approved set of configurable options, the support personnel can identify these quickly and should be familiar with them. In addition, true cloud application support teams deal with a large number of customers who report similar issues –every

customer leverages the same code—and gain deep familiarity with the most frequently reported issues. This ups the likelihood of a swift resolution on most issues with a true cloud vendor, other factors being equal.

True Cloud, Multi-Tenant Performance and Availability

Customers often raise the issue of how the cloud vendor allocates resources, and what happens in a demand spike.

Table 6. Performance and availability comparison

	On-premises	Hosted single-tenant	Multi-tenant cloud
Performance maintains despite adding users or data	No	No	Yes
Vendor SLA for uptime	No	In some cases	Yes
Vendor proactively monitors performance and availability	No	In some cases	Yes
Redundant data centers	No	In some cases	Yes
Hourly backups	No	In some cases	Yes

Even when one end-user makes extraordinary demands on the application – let’s say, for argument’s sake, that all of its 500 licensed seats run the most processing-intensive queries possible at the same moment – the multi-tenant application will typically not allow those demands to degrade performance to the other tenants. Or, to be more specific, it will not let them degrade beyond a pre-agreed service level (SLA). As a potential customer, you will want to obtain details of SLAs and real-world performance from the software vendor, because there are many different approaches to balancing demands on the multi-tenant application and its available hardware resources.

Taking one possible approach to “fair sharing” – in real life in the world of BPM – if some subscribers to a cloud-based application are running heavy queries or demanding calculations, a load-balancing algorithm might borrow 5% here, 10% there, causing a slight hit to performance which might be barely perceptible to the other subscribers.

Conclusions

The majority of companies using BPM applications understand the distinctions between on-premises and cloud-based solutions, and it's now a minority that cling to overstated security concerns about external hosting of software.

Some vendors of on-premises performance management software have sought to offer their software in the cloud marketplace without abandoning their investment in established applications. Big vendors favored web-enablement in specified modules of their suite; other software vendors adapted their solutions as hosted applications running a separate instance for each customer.

The different alternatives to on-premises applications, and terms like private cloud and hybrid cloud, have created some confusion among potential customers.

Companies considering a performance management solution will find significant and ongoing benefits in choosing a true cloud-based unified application with multi-tenant architecture.

About BPM Partners

BPM Partners is the leading independent authority on business performance management (BPM) and related business intelligence solutions. The company helps organizations address their budgeting, planning, financial reporting, regulatory compliance, profitability optimization, key performance indicator (KPI) development, and operational performance challenges with vendor-neutral experts who can guide companies through their BPM initiatives from start to finish while both reducing risk and minimizing costs. For further details, go to <http://www.bpmpartners.com>. Follow BPM Partners on Twitter [@BPMTeam](#).

About Host Analytics

Host Analytics provides cloud-based financial applications for [planning](#), [consolidation](#), [reporting](#) and [analytics](#). Host Analytics enterprise performance management (EPM) customers benefit from improved business agility, improved security, and lower overall cost compared to legacy on-premises alternatives. World-class companies like NEC, Burlington Coat Factory, and Sanmina trust Host Analytics to power their strategic financial processes. Host Analytics is a fast-growing, private company backed by leading venture capitalists and is headquartered in Silicon Valley with offices around the globe.

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