Research

Competitive Review of BPM in the Cloud

A high-level review of Cloud BPM from Appian, IBM, OpenText and Pegasystems

Author: Steve Craggs
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Executive Summary

Lustratus has written in detail about Business Process Management (BPM) in the past, and this report is not intended to replay the general BPM story. Instead it is the aim of this report to focus on the cloud-based BPM offerings now being delivered by many BPM vendors, and in particular those delivered by Appian, IBM, OpenText and Pegasystems. These four vendors all provide a Platform-as-a-Service BPM offering to complement their on-premise license-based solutions.

Platform-as-a-Service (PaaS) is an attractive deployment option for BPM for a number of reasons; it provides a way to mitigate shortfalls in BPM experience and skills, it provides a cost-effective, usage-based funding alternative to license costs, it requires little in the way of support staff and it offers rapid delivery opportunities due to its ease of use characteristics. Since BPM processes usually involve people and their tasks, the collaborative nature of cloud-based offerings and their support for modern devices such as mobile phones and tablets also adds to the attraction of a BPM PaaS offering.

This assessment therefore looks at each offering in terms of how well it addresses this cloud computing model. But it also takes into account the four key use cases for cloud-based BPM; an education vehicle for staff to gain BPM experience, a development and test platform, a platform for building workgroup processes to manage local task execution and workflow and a full cloud-based BPM deployment. The final summary takes into account all use cases and rates each vendor based on three factors:

- Cloud features – how closely the offering and vendor match cloud computing expectations
- Cloud BPM functionality – how well the offering addresses BPM needs across the likely use cases
- Solution extensibility – how much scope is offered for added value solutions of which cloud BPM is a part

The table below provides a high level summary of the comparative strengths of each solution, in alphabetical order of supplier:

<table>
<thead>
<tr>
<th>BPM Cloud strengths</th>
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</thead>
<tbody>
<tr>
<td>IBM</td>
</tr>
<tr>
<td>Appian</td>
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<tr>
<td>PegaSystems</td>
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<tr>
<td>OpenText Cordys</td>
</tr>
</tbody>
</table>

*Figure 1: Competitive summary of BPM PaaS offerings from Appian, IBM, OpenText and Pegasystems*
Introduction

Maturity in Business Process Management (BPM) solutions has increased significantly in the last five to ten years, as companies become more familiar with the benefits of driving IT applications based on the underlying business process requirements. However, while much of the market growth has been in the traditional license-based model of on-premise BPM solutions, many major BPM vendors now offer cloud-based variants too. Typically these products range from simply enabling the existing on-premise product to run in a cloud environment to providing true, cloud-centric Platform-as-a-Service (PaaS) offerings that fit more closely with the general cloud ethos. This review looks at the BPM PaaS offerings from four of the leading BPM vendors; Appian, IBM, OpenText and Pegasystems. The methodology for this review follows the popular Lustratus competitive assessment approach, providing a factual summary of each vendor’s offerings against a common frame of reference and then reviewing each offering against a backdrop of buyers’ wants and needs.

Cloud computing characteristics

When looking at cloud-based solutions it is important to appreciate the different expectations of the cloud computing world. Whether the cloud is being used as a virtual hardware/operating system server (Infrastructure as a Service or IaaS), a virtual platform for applications (Platform as a Service or PaaS) or packaged software services (Software as a Service or SaaS) there are common characteristics expected by users. These include some form of usage-based subscription pricing, a self-service model where resources and services can be managed simply and easily and a level of elasticity that allows resources to be assigned and released on an as-needed basis. Low barrier to entry and a general simplicity and ease of use are also expected. Some cloud providers put great focus on ‘uptime’ SLA figures as a measure of reliability, but in fact most clouds can boast similar figures so they provide little in the way of differentiation. In fact they are also highly misleading; saying any system is ‘up’ says nothing about whether it is providing acceptable levels of service.

Why BPM in the Cloud?

BPM started out very much as an on-premise, licensed technology stack. Initially it was most commonly used to control human-oriented processes such as customer services or form handling, but increasingly it started to be deployed to handle system-level interactions between different programs. Today most BPM solutions handle a mix of system, human and image-based processes, requiring a broad range of powerful facilities and functionality that can handle multiple different sets of user needs. As such, on-premise BPM offerings are typically functionally rich but correspondingly quite complex, with many different options and modes of usage. Since these offerings support unlimited usage, within the limits of the system resources allocated, the pricing model is usually the traditional software product licensing approach.

With the growing popularity of cloud computing, it is natural that some companies have shown an interest in using BPM in the cloud. It may be that companies want to deploy BPM in private or on-premise clouds, or in a public cloud, but generally the considerations are similar for all BPM cloud choices. A common driver is to lower the BPM entry costs and improve the expenses flexibility, by reducing or removing up-front capital expenses and adopting a user-based cost model.

In order to anchor any assessment of BPM PaaS offerings in the real world, it is important to appreciate the most prevalent use cases; often BPM PaaS scenarios are different from the more traditional on-premise deployments. The most frequent use cases for BPM in the cloud are:

- **BPM education** – investigate BPM, understand the offering, try it out
- **Development and test** – provide an environment for developers to build and test new BPM deliverables
- **Workgroup BPM** – manage and streamline common workflows between groups of employees
- **Full BPM in the cloud** – particularly for companies whose IT services are primarily cloud-based
**BPM education**

When a company adopts any new IT technology there is an associated cost in terms of skills, resources and IT expenses. Cloud computing offers an ideal model for gaining experience in a new technology before finalizing the decision and committing to it, with easy installation and usage based costs. Because BPM is both functionally rich and a change of approach, the cloud computing model provides a particularly attractive route to gaining some preliminary experience. Companies can quickly gain experience and build a skills base before any corporate decision on BPM product adoption. An important point in this use case is that since this is an exercise to gather experience with the BPM solution, if that solution is to be based on-premise instead of or as well as in the cloud then it is vital that the cloud version reflects the on-premise version as closely as possible, in order to facilitate seamless migration of skills and artefacts from one to the other.

**Development and test**

Cloud computing is often used as a quick and cost-effective development and test environment. Using a PaaS approach, developers can have their own virtual hardware and software stacks rather than having to either share machines with production usage or incur the cost of a separate server. In addition, cloud models offer great flexibility in access to the services and an elastic resource model that can easily accommodate the different stages of testing and simulation. In this scenario it is even more important to ensure portability across the cloud and on-premise BPM solutions since by definition the projects built in the cloud environment are destined to be finally deployed on-premise. The self-service nature of the cloud BPM tools will be important too, because developers will want to be able to reconfigure systems quickly and easily without having to be a drain on IT support.

**Workgroup BPM**

BPM projects come in a number of flavours; some focus on serving the needs of system-level strategic processes that primarily link different production application components, while others are geared to improving workgroup productivity by providing a structure for day-to-day activities. This latter category is what Lustratus calls Workgroup BPM; it is opportunistic, often ad hoc and very fluid and flexible. It may be related to simple processes between employees, or be of the case management style where the process is adaptable based on the specific data related to the case. Its main goal is to improve the productivity and effectiveness of a group of employees working on a common task by providing automation, structure, accuracy and repeatability. An example might be on-boarding a new hire; this process encompasses numerous tasks carried out by different employees. Tasks might include getting a security badge, ensuring the new hire is added to the HR and Payroll systems, provisioning a desk and informing the manager of the arrival date. BPM ensures that all the steps are executed, alerting staff across the team of actions required and correlating the subtasks to ensure overall success.

While this could certainly be achieved with on-premise BPM rather than a cloud offering, there are a number of reasons why a cloud deployment might suit these types of projects. Usually, the people who know what is needed in the process are the people carrying it out; the quickest approach to developing accurate BPM flows will be to allow this team to collaborate on rapidly assembling the necessary BPM steps in terms of who owns which step, what the inputs and outputs are and how exceptions should be handled. Processes are likely to be optimized and refined dynamically as the team continues to execute them, meaning that a flexible and ‘hands-on’ form of process collaboration and design is ideal. The cloud model supports this approach without a lot of overhead in terms of skills acquisition, platform implementation and cost.

**Full BPM in the cloud**

While many companies will want to operate BPM both in the cloud and on-premise, there are a growing number of companies at the smaller end of the scale who use the cloud for all their main IT operations. These companies will expect BPM in the cloud to provide the full range of on-premise BPM services, since they look at the cloud as their corporate IT implementation. However, they will still expect the cloud computing model of usage-based pricing, self-service operations, ease of use and built-in support. Beyond this, a particular
requirement for these companies is likely to be connectivity to other cloud-based services; a company running its operations in the cloud will almost certainly be using a range of SaaS or PaaS offerings to handle such needs as CRM and SFA.

**Assessment approach**

This assessment follows the standard Lustratus approach for competitive evaluations; provide a factual summary of each solution against a ‘normalized’ frame of reference, then assess each solution against the key use cases.

**BPM in the cloud – frame of reference**

There are three key areas to be considered:

- **Cloud features**: How well has the product/vendor addressed cloud computing expectations?
- **BPM functionality**: What functionality is included in the cloud offering?
- **Solution extensions**: What has the vendor put in place to fill out the offerings into broader solutions?

A summary of the key categories in each area is included below.

<table>
<thead>
<tr>
<th>Cloud features</th>
<th>BPM functionality</th>
<th>Solution extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Usage-based subscription pricing</td>
<td>• Ease of use</td>
<td>• Portability and hybrid support</td>
</tr>
<tr>
<td>• Ease of startup</td>
<td>• Process discovery</td>
<td>• On-premise access</td>
</tr>
<tr>
<td>• Self service operations</td>
<td>• Process design</td>
<td>• Prepackaged solutions</td>
</tr>
<tr>
<td>• User administration</td>
<td>• Collaboration tools</td>
<td>• BRMS support</td>
</tr>
<tr>
<td>• Help desk and support</td>
<td>• Social support</td>
<td>• CEP support</td>
</tr>
<tr>
<td>• Community forum</td>
<td>• Test and simulation</td>
<td>• Analytics and BAM</td>
</tr>
<tr>
<td>• Automatic updates</td>
<td>• Rules, case management and events support</td>
<td>• Data access</td>
</tr>
<tr>
<td>• Deployment options</td>
<td>• Security</td>
<td>• Recovery scenarios</td>
</tr>
<tr>
<td>• Mobile and social support</td>
<td>• Versioning</td>
<td>• Professional services</td>
</tr>
<tr>
<td>• Broader cloud solutions</td>
<td>• Standards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Management</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2**: Reference framework for outlining BPM in the cloud offerings

**Cloud features**

Naturally, a key evaluation area is how well the solution has responded to modern cloud-based expectations. There are widely differing views of what constitutes a cloud offering, ranging from cloud-tolerant to cloud-native products. Cloud tolerance may simply be a matter of packaging the existing on-premise product with different terms and conditions and delivering it on a suitable cloud platform. In contrast, cloud-native offerings focus much more closely on the cloud computing model which is not only about usage-based pricing but also self-service operations, ease of adoption, deployment flexibility and resource usage. Apart from these basic aspects of cloud-native offerings, users often relate areas such as mobile support and social networking interaction with cloud computing as well.
In terms of deployment, companies will want easy access to the cloud offering, and may also want to control whether the offering is deployed in a multi-tenancy or isolated configuration or even a share-all environment. Interoperation with other environments such as on-premise applications is also expected. A cloud-based BPM PaaS may be only one part of a broader cloud commitment, and therefore one element of assessing cloud BPM solutions is the extent to which the vendor satisfies these additional cloud needs; for example cloud-focused users are likely to be interested in specific adapters for other cloud-based offerings such as popular SaaS solutions, and support for cloud-based application development and testing.

**BPM functionality**

Apart from the cloud features provided, the other key judgement factor for any BPM cloud offering is necessarily the level of BPM functionality. BPM has been around long enough now that all products offer more or less common base functionality such as swim-lanes, process charts and BPMN standards support. Beyond this, users of BPM in the cloud will typically be looking at a highly collaborative process discovery and design approach since this follows the working practices expected from cloud computing. Integration with social tools to enable this collaboration will be key, enabling a much more productive and high quality process design experience. Pre-built process templates are also very useful, tackling specific industry process or sub-process needs. These can be loaded and then configured as required, making the design process much easier and quicker. Associated functions such as business rules-based decision support, event-handling and case management capabilities will also be important for some scenarios. Once the process is designed, verification and test options will also be important, as will process simulation support to enable the created or modified process to be evaluated against historical data.

Management tools need to take into account the fact that cloud users may not have a lot of specialized skills or local IT support, and therefore the tools need to be easy to use. But perhaps the most critical area of functionality is to handle the security aspects of using a cloud environment. Users may expect to have single sign-on between cloud and local systems, and cloud configuration choices may have a strong bearing on security, especially if a shared-all or multi-tenancy model is used.

Returning for a moment to the need for social tooling and integration, this is not only important in the process modelling phase where designers can share designs and discuss with others; it is perhaps even more valuable for process participants. Typically, they will not have the same familiarity with the tools and interfaces as developers, and having easy social interaction mechanisms for discussing progress and necessary actions can be enormously helpful, giving confidence and improving quality of execution. This also links to the need for mobile support, since it is process participants who are often the most keen to be able to work on whichever device they choose.

**Solution extensions**

The third area considers the extent to which a PaaS offering can be integrated into a broader solution. One key area, for example, is supporting seamless portability and/or hybrid operations between on-premise and cloud platforms; if a vendor has restricted the BPM functionality in the cloud deliverable then it may be possible to move projects from cloud to on-premise but not in the other direction. Security in these mixed environments will be critical; VPN support may be needed for on-premise access, and data access may be a particular issue. Some solutions mitigate this data problem by providing easy-to-use data access services to cloud users that allow them to take this data into account without risking unfettered access.

Other technologies may be desired in cloud BPM projects, especially in the ‘full BPM’ use case. While basic rules, events and case management support were included under the BPM functionality category, processes may want to take advantage of fuller support for business rules management systems (BRMS) and complex event processing (CEP) for example. Analytics is another important area, with companies often wanting to take advantage of real-time analytics at both the historical and predictive levels to dynamically alter business processes. On the operational front, although most BPM cloud offerings will include basic management services, some users will want to be able to use a broader set of business activity management (BAM)
capabilities. Recovery scenarios are another area for consideration; typically companies expect that a cloud solution should have full disaster recovery across the chosen cloud platform.

Professional services availability will probably be important to many users; process-based projects typically require considerable planning and design experience for best results, and being able to find local, skilled resources, preferably with the relevant industry experience, will help to deliver higher quality projects more efficiently and effectively.

Looking at the BPM cloud offerings

The four vendor offerings can now be summarized against the frame-of-reference detailed in the previous section. The intention is to pull out salient points rather than to provide an exhaustive, in-depth analysis of each solution; prospective users should carry out their own due diligence analysis as part of their RFP processes.

Appian

Appian Corporation was founded in 1999 as a pure-play BPM vendor. Its BPM product was designed from the start to be 100% web-based, and it has been offering a cloud-based version of its Appian BPM Suite since 2007, deployed as a platform-as-a-service on Amazon EC2. Appian is still currently a private company but already has an impressive customer list.

Cloud features

The Appian BPM Suite PaaS offering provides subscription pricing at both named user and participating user levels. Licenses are typically supplied on a 3-year basis, with named users being priced around $100 / month and participating user subscriptions being calculated based on what they will be doing and how often. The Appian cloud BPM product is extremely easy to use and users can become productive with little in the way of previous skills. Deployment is as an Amazon EC2 image, either in a shared operating system or shared-all multi-tenancy model. Production, development/test or disaster recovery images can be provisioned within minutes from the Appian self-service facilities. These services also cover monitoring/reporting, management and administration as well as delivering 24x7 automated backups, maintenance updates and redundancy as required. In terms of support, Appian staffs a 24x7 helpdesk for Appian BPM Suite cloud users, and also hosts a community forum for all Appian BPM users for self-help.

As part of the Appian BPM Suite PaaS offering, Appian provides its Appian Sail UI support to make forms, social interactions and other user-facing content available on a range of mobile offerings including iPhone, iPad, Android and Blackberry. For corporate users it also offers private branded URL access. In terms of accessing other cloud services, Appian offers a number of features; it provides a simple way for users to view data that may be populated directly from corporate databases or other SaaS services, and it also provides tight integration to a small subset of major applications and services such as Salesforce.com.

BPM functionality

Appian BPM Suite is all written in Java, making it portable; the browser-based tools are certified for Windows IE, Mozilla Firefox, Apple Safari and Google Chrome. There is a collaborative process discovery tool to enable teams to come up with the desired processes, although Appian only offers a limited library of pre-built process templates. The process modeller tool provides standard BPMN 2.0-based process design capabilities, with built-in support for rules and events declarations to be used as part of the process flow. The tool provides for validation of process and rule definitions, and the process modeller also offers a process debugging tool to aid in testing. While Appian provides extensive and intuitive social computing integration for process participants, including a news/alerts service, it does not offer much in the way of social integration at the process design stage. If mobile deployment is required, choosing the mobile UI is simply a matter of selecting that option from the design palette when creating the particular forms. Appian also offers email and web services integration.
Key performance indicators can be defined through the Business Activity Monitoring (BAM) support, and performance against these KPIs can be viewed in executive dashboard format through the monitoring facility. Wider predictive analytics are available through Appian’s in-memory analytics engine. Security is provided through the use of SSL encryption to handle data privacy needs and support for LDAP, Active Directory or SAML-compliant authorization and authentication. Single sign-on support is also available. Appian BPM Suite supports versioning, and users with the required authorization level, such as Administrators, can even dynamically change in-flight processes if needed.

**Solution Extensions**

The Appian BPM Suite provides the same base for both on-premise and cloud deployments. As a result, Appian offers easy migration of processes, rules and content between cloud and on-premise deployments with no changes required. Secure VPN access is supported, and in terms of added value BPM functionality, Appian also offers in-memory events handling and analytics. These services can be used within Appian process flows to trigger specific activities or to provide input to processes that can in turn affect the process design dynamically. The Appian BPM reporting facilities not only allow the generation of analytics reports for external consumption, but also make these reports available to the run-time engine so processes can act based on real-time performance analysis. Predictive analytics are also available as input to the process execution.

Appian also has support available for ‘process-less’ processes; that is, users can use the Appian tools to create tasks in an ad hoc fashion for others to action without the requirement for any underlying process model. Appian offers a range of services to help customers plan, design and implement their BPM projects. Some operational services such as disaster recovery are offered too. However, availability of these services may be limited based on geography and area; Appian relies on a partner ecosystem to fill these gaps.

The table below summarizes the salient points regarding Appian’s BPM Cloud support:

<table>
<thead>
<tr>
<th>Cloud features</th>
<th>BPM functionality</th>
<th>Solution extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Usage pricing for named / participating users</td>
<td>• 100% Java product</td>
<td>• Single product base for cloud and on-premise deployments</td>
</tr>
<tr>
<td>• Subscription calculated based on what user will do and how often</td>
<td>• Toolset is 100% browser based</td>
<td>• VPN support</td>
</tr>
<tr>
<td>• Deployed on Amazon EC2 cloud</td>
<td>• Collaborative process discovery</td>
<td>• In-memory analytics can change process dynamically</td>
</tr>
<tr>
<td>• Multi-tenancy, shared operating system or shared all</td>
<td>• BPMN 2.0 modeler with rules, case management and events support</td>
<td>• Historic and real-time reports</td>
</tr>
<tr>
<td>• 24 x 7 Help Desk and support</td>
<td>• Rule and process validation and test</td>
<td>• CEP support</td>
</tr>
<tr>
<td>• Automated updates and backups</td>
<td>• Social and mobile support</td>
<td>• BAM tool</td>
</tr>
<tr>
<td>• Administration tool provides rapid self-service provisioning</td>
<td>• KPI definition and reporting</td>
<td>• Support for ad hoc, ‘process-less’ processes</td>
</tr>
<tr>
<td>• Provision as production, development, disaster recovery</td>
<td>• Support for LDAP, Active Directory, SAML-compliant authentication</td>
<td>• Limited professional services resources</td>
</tr>
<tr>
<td>• Self-service includes monitoring, administration</td>
<td>• Single signon support and SSL encryption</td>
<td>• Disaster recovery service</td>
</tr>
<tr>
<td>• Support for mobiles and social</td>
<td>• Versioning</td>
<td>• Third party partner ecosystem</td>
</tr>
</tbody>
</table>

**Figure 3: Key characteristics of Appian’s BPM PaaS**
IBM

IBM has been delivering BPM functionality for a number of years now through its IBM Business Process Manager and related products, and now offers a full platform-as-a-service (PaaS) cloud-based deployment built on IBM SoftLayer cloud infrastructure.

Cloud features

IBM’s BPM PaaS offers usage-based subscription pricing starting at $199 per user per month; subscription rates are discounted by volume. In IBM terms there is no distinction between a process participant and a process designer in the usage bands, but buyers can choose whether to adopt usage pricing based on either named users or a concurrent user limit. Typically, concurrent user pricing will be best suited to large groups of users that access the service infrequently, while named user pricing is more applicable to smaller groups of more frequent users.

The IBM offering focuses on making the process of getting started with BPM as easy and quick as possible. It offers a self-service portal where administrators can see how the system is being used and performing from a process perspective without getting dragged down into the underlying system details. Administrators can use the portal to carry out user management tasks like inviting new users, specifying user roles and deleting users.

IBM BPM cloud deployments are fully isolated for security; setup defaults to an internet addressable environment, but it can be made into a private cloud if desired. The IBM SoftLayer cloud is a 24x7 managed environment with helpdesk for user support, hosted in various data centres across the world. Encrypted offsite backups are taken automatically and disaster recovery is offered without the need for user involvement.

IBM Business Process Manager offers extensive support for social integration, providing social-based collaboration for process designers, testers and participants. Since the same basic product is used for both PaaS and on-premise deployment, the same facilities are available in both environments. In addition, IBM Bluemix provides a community forum that serves thousands of BPM users worldwide. IBM also offers strong mobile capabilities through its Worklight tool, providing support for iPhone, Android, Blackberry and other mobile devices. IBM’s mobile support also enables processes to take mobile-specific factors into account in process modelling, such as device geo-location and charge status.

For broader cloud usage, IBM supplies a number of key facilities such as interoperation with a wide range of other cloud services through its Cast Iron connectivity capabilities and the IBM Bluemix Live forum which offers numerous resources and tools for cloud users. Of particular note is the IBM Bluemix cloud application development environment which enables rapid application development based on popular frameworks like Node.js and Ruby on Rails and a growing selection of pre-packaged services contributed by IBM, third parties and the community.

BPM functionality

IBM offers collaborative process discovery and an extensive library of pre-built process templates, both available through IBM BlueWorks Live. Process design is then carried out in Process Designer, an Eclipse-based IDE with standard BPMN 2.0 support. Case management, rules and events support are all included, as well as process validation, testing and simulation support. One powerful aspect of the IBM process design capability is the guided design enabled through its Coach facility, where the designer can be guided through common views and definitions. Another is its intuitive integration with social computing functionality to enable process designers, testers and participants to interact and collaborate with other employees as required. Designers can discuss aspects of the design with others by simply including a conversation, and when changes are made these are highlighted to other collaborators. Process participants can instigate conversations if they need help or perhaps to confirm their actions are correct.

Comprehensive support for mobile devices is provided through the Worklight mobile toolkit, accessible directly from Process Designer. This enables forms to be provided for mobile devices like iPhone, iPad and Android,
and also provides access to physical device attributes such as geolocation. For process development and test, IBM also offers a live DB2 datastore for business data needed for testing and simulation. Monitoring is automated and performance can be viewed through the self-service portal. KPIs can be declared and monitored from the BAM portal.

Security is self-service, controlled by a suitably authorized user. Single signon and SAML 2.0 are supported, and the IBM BPM PaaS can interact with any third-party SAML-compliant identity software if required. For privacy, SSL-based encryption within processes and automated backups are also encrypted. IBM supports full versioning and dynamic deployment for process changes.

**Solution extensions**

Because the same IBM Business Process Manager product forms the basis for both cloud PaaS and on-premise deployments, there are no portability issues when migrating processes or other artefacts between the two. For companies running hybrid BPM environments IBM offers all the necessary connectivity to the on-premise system through IBM WebSphere MQ or IBM Websphere ESB with full security, and also provides secure VPN access. The IBM management and BAM tools can manage the BPM process flows across the boundaries of the two BPM deployment models.

IBM provides a range of powerful historic and predictive analytics capabilities for BAM and business analytics. These are available with the IBM cloud offering, with the BAM capabilities supported through the self-service administration portal. Recovery scenarios are handled through the IBM managed cloud infrastructure; encrypted backups are taken from the PaaS BPM deployments and there is full support for disaster recovery.

On the professional services front, IBM can call upon a wealth of resources from its global services business, available worldwide. IBM also benefits from a large ecosystem of third-party service providers that can provide specialist domain and/or regional knowledge globally.

The table below summarizes the salient points regarding IBM’s BPM PaaS.

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**BPM PaaS from IBM**

<table>
<thead>
<tr>
<th>Cloud features</th>
<th>BPM functionality</th>
<th>Solution extensions</th>
</tr>
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</table>
| • Usage subscription pricing based on named users or a concurrent user limit  
• Self-service portal  
• Easy-to-use user admin including invite, define role and delete  
• Isolated deployment on managed SoftLayer cloud, hosted globally  
• Automated, encrypted backups and automated system updates  
• 24x7 helpdesk and support  
• Comprehensive mobile support  
• Social collaboration  
• Broad cloud solution support through Cast Iron, Bluemix, Blueworks Live | • Collaborative process discovery tool  
• Large library of pre-built process templates  
• Coach facility for guided design  
• Process validation, testing and simulation tools  
• Built-in social computing interface to support collaboration activities  
• Case, rules and events support  
• Certificate-based security  
• Support for any SAML-compliant third party identification manager  
• SSL encryption for data privacy  
• Full versioning support, including snapshot capability  
• Dynamic process deployment | • Shared product base for both cloud and on-premise ensures seamless migration  
• VPN support  
• SOA and ESB for supporting hybrid deployments  
• BAM tool  
• Business analytics support covering historical, real-time and predictive analysis  
• Automated disaster recovery support  
• Extensive, global professional services support through IBM Global Services  
• Comprehensive ecosystem of third-party service providers |

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*Figure 4: Key characteristics of IBM’s BPM PaaS*
OpenText Cordys

OpenText started off as an Enterprise Content Management company, founded in 1991 and based in Canada. It has grown through acquisition over the years, and entered the BPM market in 2011 when it acquired two small pure-play BPM companies, Metastorm and Global360. In August 2013 it acquired Cordys, a well-respected middleware vendor based in Europe. It now offers Cordys as a PaaS BPM offering as well as an on-premise licensed product.

Before looking at the OpenText Cordys Cloud suite of offerings in more detail, it is worth understanding a little about the Cordys architecture because it has considerable bearing on the cloud offering. Cordys offers an integrated platform that covers Composite Application Programming (CAP), BPM and ESB-based integration, all based on a service-oriented architecture (SOA). As such, its design is very service-oriented; in particular, its Smart Services Grid underlying its implementation is an architecture that provides containers for each service to run in, all connected through the ESB. More recently it added enterprise mobile capabilities through an SDK that talks to other Cordys components via SOAP-based web services. Finally, it added multi-tenancy awareness to its service container architecture so that containers may be deployed on the cloud or on-premise; this architecture is two-layered, allowing tenants and subtenants with independent deployment. This is the basis for the Cordys Cloud suite.

Throughout the rest of this paper, Cordys references will omit the OpenText prefix for convenience, but all the discussions still relate to the OpenText Cordys Cloud product.

Cloud features

The Cordys Cloud BPM offering is based around a user subscription model at around $125 per user per month. Volume discounts apply, but in reality OpenText usually special bids larger deals offering customized subscription levels depending on the client’s needs. For example, a disaster recovery service would require an additional subscription. The self-service features of the PaaS offering are somewhat limited, largely because Cordys starts from a position of viewing cloud as just another deployment option for containers. For ISVs and service providers building solutions on the Cordys PaaS, the separately priced Cordys Cloud Provisioning product handles user and application enrollment, metering and provisioning needs.

Amazon WS is the chosen deployment infrastructure operated by Cordys, but Cordys Cloud BPM can be deployed on other operating systems too, for example on another service provider’s cloud or on-premise. OpenText also provides a 24x7 Cordys Cloud Operations team that can provide services such as monitoring and managing tenants; detecting and addressing system problems; managing backups and disaster recovery; and other services such as tenant-scheduled maintenance.

Because it is built on the Cordys Smart Services Grid, Cordys Cloud can offer a great deal of flexibility in multi-tenant deployments; for example, a service provider operating in a multi-tenancy environment could offer shared processes but isolated databases with full security, or an enterprise user could operate a full secured private cloud in a public cloud environment. This is all made possible by the SOA-based design. System software updates can be handled as a service by the Cordys Cloud Operations team, but there is limited helpdesk support.

Mobile support is provided through the Cordys Mobile SDK which interoperates with the BPM engine through SOAP-based web service calls. This support is fairly primitive and definitely not as easy to use as mobile support from some of the other vendors. Social collaboration for end-user participation is offered through the OpenText Tempo component.

For broader cloud-based solutions, while Cordys does not offer anything further, OpenText does. OpenText Cloud Services include a hosting service, a social collaboration service and a data exchange service for handling the exchange of structured and unstructured data across cloud environments.
**BPM functionality**

Functionality for the Cordys Cloud BPM offering is a little confused by the availability of the Cordys Process Factory (CPF) offering, a lightweight cloud-native offering for handling ad hoc process needs usually tied around Google Apps. Companies looking for this level of BPM only can benefit from a lower subscription, but for wider BPM needs the Cordys Cloud BPM offering will be required. This review concentrates solely on this broader Cordys PaaS deliverable. It is also worth mentioning that all Cordys offerings are SOA-based.

The key tool for developers (business and technical) is the Cordys Collaborative Workspace. This is a browser-based IDE for designing and implementing new processes. Process discovery is either done through the use of various mining tools or through collaborative goal / activity modelling. Cordys does provide a small set of process templates available for specific process types, but its coverage is very limited. The IDE offers standard BPMN 2.0 process design which can handle both structured, straight-through processes, and unstructured ones through its built-in case management support. Cordys Cloud BPM also incorporates a full BRMS for handling business rules included in the process. An important point to note is that when Cordys refers to its ‘Collaborative’ Workspace, it means collaborative in the sense that multiple users with different roles, such as business and technical analysts, can share the same artefacts and projects; there is little integrated social collaboration provided by Cordys Cloud BPM for tasks like discussing process design or raising execution questions. OpenText does offer its Tempo social networking platform that enables different social computing solutions, but this is not well integrated to the BPM Collaborative Workspace.

Cordys processes are built on top of a unified metadata model; what this means is that the product understands the different artefacts involved, such as processes, forms and rules, and how they are associated with each other. As a result, changes to these artefacts can be validated and corrected based on the definitions in the metadata model. This approach also enables the IDE to offer design and development guidance when processes are being created or modified, based on its understanding from the model of which services can be connected to which processes. For development and test purposes, the IDE can also be loaded on the user’s local machine if desired.

Security can leverage any SAML-compliant identity system for authentication and SSL encryption is supported for data privacy. Cordys Cloud BPM offers Subversion-based versioning and dynamic deployment to cover process change needs.

**Solution Extensions**

Cordys Cloud BPM and Cordys on-premise BPM offerings share the same product base, so portability of processes and definitions is straightforward. In fact, due to the container-based services architecture it is possible to operate solution components on-premise or in the cloud in a hybrid environment, with all communications managed by the Cordys ESB. When operating in a hybrid mode, Cordys Cloud offers a virtual appliance implementation of its ESB to handle the communications between cloud and on-premise securely and safely, and also supports VPN. However, due to the SOA design point, communications tend to be at the SOAP / Web Service level.

Case management is built in to the Cordys BPM Cloud PaaS, as is full BRMS support. There is no CEP support though. The Cordys Business Activity Monitoring (BAM) component provides BAM services such as composing business events to trigger activities, editing and viewing KPIs and operational dashboards. When an alert is raised, it can notify a user, send an email or trigger a web services or process execution.

Cordys provides a Cordys Cloud Operations team that can offer services to handle operational needs such as disaster recovery, backups management, system monitoring, maintenance and even application acceptance and production management for tenants. The availability support is all based around Amazon Availability Zones; Cordys can be configured to run on two geographically different zones and service containers can be HA clustered, with synchronous replication of primary databases to a remote standby for switchover. Limited professional services are available, mostly centred around basic product usage as opposed to process design...
needs. However Cordys does have a number of third party relationships including a major strategic partnership with Fujitsu who not only resell Cordys Cloud but have a global consulting practice based around it.

The table below summarizes the salient points regarding Cordys BPM PaaS.

### BPM PaaS from OpenText

#### Cloud features
- User-based subscription pricing, customized on a per case basis
- Self-service portal for handling basic administration and monitoring needs
- Limited helpdesk support
- Collaboration support for process design
- Automatic backups and system updates
- Support for mobile devices such as iPhone and Android
- Border cloud support through OpenText Cloud Services

#### BPM functionality
- SOA-based implementation
- Discovery through mining tools or goal/action planning
- IDE can be deployed locally
- Full BRMS for rules support
- Basic events support included
- Case management support also available as an option
- Testing and validation tools
- Guided design from metadata relationships knowledge base
- Security can link with Active Directory and LDAP for authentication purposes
- SSL encryption for data privacy
- SVN-based versioning support

#### Solution extensions
- Same product base used for on-premise and cloud delivery, ensuring seamless migration from one to the other
- VPN support
- ESB appliance provided to assist in hybrid operations
- BAM and basic analytics support
- Operations services offered for maintenance, recovery, availability, monitoring
- Product-related professional services available
- Fujitsu resells Cordys Cloud and provides a worldwide professional service practice around it

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**Figure 5: Key characteristics of Cordys BPM PaaS**

### Pegasystems

Pegasystems is one of the few remaining pure-play BPM vendors in the marketplace, and is certainly the most established. The Pegasystems approach differs from most other BPM vendors in that it is more focused on selling specific, industry-based process solutions such as Claims Management for Life Insurance, rather than a BPM platform for general BPM process development and deployment. Pega BPM can still be used for bespoke process development, but its core value is in its packaged solutions. Pegasystems introduced its cloud-based offering, Pega Cloud, in 2009 to complement its on-premise Pega BPM offering.

### Cloud features

Pega Cloud is the Pegasystems PaaS delivery of its BPM software. It is hosted on Amazon WS, although it can also run on other cloud and virtualization platforms, and offers a usage-based pricing subscription model. User subscriptions start at around $100-150 per month, but this price varies depending on what processes are being used, whether case management is required, volume needed, services required and other factors. Basically, Pega Cloud pricing is determined on a case by case basis depending on the combination of features, solutions and numbers.

Pega Cloud is reasonably straightforward to deploy. It provides a number of tools for self service operations, including a management portal for administration and a BAM dashboard. The Security Access Manager provides an intuitive and easy-to-use tool for self-service security management. Administrators with the necessary authority can display tables of which user types can perform what action in relation to which process type, and further drilldown shows capabilities against roles. Access can be granted or denied with one click.

Pegasystems provides a helpdesk and 24x7 customer support. It also offers a range of availability features and...
services, including daily incremental and weekly full backups, standby systems and disaster recovery support. Browser recovery is also provided so employees working on tasks are returned to the same status on their browsers after a browser crashes. Mobile support is provided by Pega’s Omni-Channel UX support, handling interface needs across devices such as iPad, Android and Blackberry.

Unsurprisingly, since Pegasystems is a company with a long history of providing on-premise BPM solutions, it appears to view cloud as a deployment platform just like any other. As a consequence, it does little to support broader cloud-based solutions other than providing integration with a limited list of key SaaS offerings such as Salesforce.com.

**BPM functionality**

Pega Cloud provides process discovery assistance, in particular with its “Design by Doing” feature where a user can execute an ad hoc process and then turn it into a repeatable process component. It also offers a number of packaged process solutions for particular industry activities. The templates accelerate delivery times, only requiring configuration and customization in many cases, but they are specialized solutions to the specific associated business problem and each one deployed incurs extra subscription charges. As a result, the template library is limited in coverage.

Beyond the specialized templates, Pega Cloud offers the normal BPMN 2.0-based process design tools, although the Pega model is very rules oriented and as such it is best suited to rules-heavy processes. Analytics services include both real-time and predictive analytics that can alter process flows dynamically. Pegasystems offers its Pega Pulse Social Collaboration capabilities for collaboration although this is mostly directed to the process participant rather than process design time.

Testing and debugging tools are included, together with validation and simulation tools. The Pega Cloud rules support is provided through a full BRMS implementation offering comprehensive business rules capabilities. Processes can also take advantage of built-in events handling. Security provisions include authorization and authentication support that can integrate with SAML-compliant third party authentication mechanisms as required, all managed through the self-service style Security Access Manager. SSL-based encryption is also available for data privacy needs.

Pega Cloud supports powerful versioning facilities. Not only can different levels of process and rules changes be versioned, but updating a process version that spans multiple tenants is a simple one-step operation. Process changes can be deployed dynamically, as can underlying rules changes. Management is all carried out through the Pega Cloud manager portal.

**Solution Extensions**

Pega Cloud and the Pegasystems on-premise BPM product share the same product base, so portability is not a problem. Definitions and processes can be easily transferred between the two environments. Hybrid operations are also supported and secure VPN access is provided if needed. Case management is available for the BPM PaaS offering, although this is a chargeable feature. BRMS support is built in to all Pegasystems deployments whether on-premise or in the cloud. Pegasystems offers both historical and predictive analytics that can be incorporated into processes, and it also provides Business Activity Monitoring (BAM) tools for managing business metrics such as KPIs.

Pegasystems high availability support is provided in a number of different flavours. It offers HA cluster support, regular backups, remote synchronous updates in a geographically remote zone for disaster recovery and browser state recovery following a user’s browser failure.

Professional services are provided by Pegasystems through its worldwide support organization or through its ecosystem of partners encompassing all of the major systems integrations as well as boutique service providers specializing in particular industries or geographical locations. These services are particularly needed when the user is implementing processes outside of the specialized solution packages offered by Pegasystems, because
developing custom processes can be complicated.

The table below summarizes the salient points regarding Pegasystems’ BPM PaaS.

<table>
<thead>
<tr>
<th>Cloud features</th>
<th>BPM functionality</th>
<th>Solution extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Usage subscription pricing available, calculated on a case by case basis</td>
<td>• Process discovery support, including ad hoc processes that copy successful execution</td>
<td>• Same product base for cloud and on-premise ensures seamless migration between the two</td>
</tr>
<tr>
<td>• Deployed on Amazon WS cloud but supports other cloud deployments</td>
<td>• Packaged process templates for some specific industry solutions</td>
<td>• VPN support</td>
</tr>
<tr>
<td>• Multi-tenancy deployment</td>
<td>• Rules-oriented process design</td>
<td>• Dynamic case management supported</td>
</tr>
<tr>
<td>• Self-service portal for administration and management needs</td>
<td>• Test, debug, validation and simulation tools</td>
<td>• BAM support available</td>
</tr>
<tr>
<td>• Self-service security portal</td>
<td>• Built-in events support</td>
<td>• Full BRMS included in base product</td>
</tr>
<tr>
<td>• 24x7 help-desk support</td>
<td>• Security authentication and authorization support</td>
<td>• Professional services resources provided worldwide, either directly or through partners</td>
</tr>
<tr>
<td>• Automatic updates and backups</td>
<td>• Data encryption for privacy</td>
<td></td>
</tr>
<tr>
<td>• Mobile support</td>
<td>• Versioning support includes multi-tenant versioning</td>
<td></td>
</tr>
<tr>
<td>• Collaborative support</td>
<td>• Dynamic process change</td>
<td></td>
</tr>
<tr>
<td>• Limited integration with other cloud services eg Salesforce.com</td>
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</tbody>
</table>

*Figure 6:* Key characteristics of Pegasystems’ BPM PaaS
Contrasting the BPM PaaS offerings

Comparing the products against the BPM cloud use cases

Having summarized each cloud BPM PaaS offering against the same frame of reference, solutions can now be assessed against the use cases laid out earlier; education, development / test, workgroup BPM and full BPM.

Education

People wanting to use cloud BPM for education purposes will presumably be thinking of potentially adopting that same product in the future, so overall BPM functionality will have a major influence on product choice and may even dictate it. The educational experience will be particularly influenced by how easy it is to set the product up and use it, bearing in mind that many users will have little or no experience in BPM.

All four vendors offer relatively easy set-up, particularly those vendors deploying on easily available clouds like Amazon. However the self-service tools and their ease of use for inexperienced users do differ between vendors. The root of these differences is that some of the vendors are much more focused on delivering a complete BPM solution with cloud as simply one possible deployment option while others focus much more on cloud as a key environment in its own right. Pegasystems is one company that appears to see cloud as more of an adjunct than a key platform, which is reflected in the fact that the majority of Pega Cloud usage is limited to Development and Test. Cordys has the same tendency as far as the Cordys Cloud BPM PaaS is concerned, although it has had considerable success with its lightweight Cordys Process Factory cloud-based offering for Google Docs-related ad hoc processes.

Two major factors in helping people gain basic BPM experience is to provide quick and easy packaged process templates that can be uploaded as a ‘fast start’, and a socially integrated mechanism where users can share experience and discuss progress quickly and easily. Looking at each offering, there are definite differences.

While all vendors offer some number of sample processes that can be uploaded, IBM has by far the most extensive set, making it easier for users to find samples that fit their own industry-based needs. Of the others, Pegasystems really concentrates on providing fully-packaged process solutions in its library, and as such they are of limited value when used simply for education purposes. However in balance to this, Pega Cloud does have its ‘Design by Doing’ support for quickly creating ad hoc processes and this might be a useful path to education. The Appian PaaS is very usable and intuitive; although it offers relatively few samples, users generally find it quick and easy to get something done. Cordys BPM Cloud is not so easy for newcomers, although its prior Cordys Process Factory product is much more easily consumable.

But the biggest differentiator is probably the provision of well-integrated and easy to use social integration to support the learning process. Here, IBM and to a lesser extent Appian stand out. Both vendors make it very easy for process participants to start conversations and collaborate, and their embracing of mobile technology enables users to take part in these conversations easily from any device. IBM also provides this much needed social collaboration as part of its Designer tool to enable process designers to easily discuss the processes with others at design time. Although Cordys and Pegasystems have their Tempo and Pulse social collaboration platforms respectively, they are not as closely integrated with the BPM tools as the Appian or IBM support.

Development and Test

All four vendors use the same base for both on-premise and cloud-based offerings, making it easy and relatively seamless to migrate processes and associated artefacts from the cloud to on-premise systems. As such, the ease of access, ease of provisioning, low-cost and self-service nature of cloud makes cloud BPM an ideal development and test environment. However care must be taken when considering moving on-premise processes into the cloud. Although in all four vendor cases the on-premise and cloud deployments share a common base, some vendors do not yet offer the same level of complementary products in the cloud that they do on-premise. One useful addition is the ability to run at least part of the design process locally, on the
developer’s own computer; this can be useful when developers want to be able to continue working when they have no secure cloud access, for example when travelling. Appian offers its process development IDE locally to support this need, and IBM supports local use of the Integration Designer tool.

Testing tools are similar across the four vendors, all offering the ability to try out processes, step through them, provide test information and display forms output for verification. The differences lie in the area of governance and simulation however. These are areas where IBM stands out; it provides governance facilities that control the entire process lifecycle, with detailed records on testing status and approvals for stepping through the different phases, and simulation capabilities based on uploaded historical data that can be loaded into a special DB2-based work area for extensive simulation and measurement work.

**Workgroup BPM**

Workgroup BPM processes are usually very people-oriented with a lot of human interaction. The level of BPM or even IT maturity of process participants in this scenario may be very low, and therefore it is vital that the chosen solution is easy to understand and use. Social collaboration is particularly important to help the team come up with the highest quality processes and to assist process participants in using the process and its related forms and task lists accurately and effectively.

Appian started out life addressing almost exactly this market segment. As a result, its cloud offering provides an intuitive environment for process building and strong social support for process participants as they work through their tasks. IBM’s cloud offering has an even stronger story to tell on social collaboration, with closely integrated support for social networking and collaboration in process discovery, process design and process execution. Although Pegasystems and Cordys offer social collaboration platforms, they are not as closely tied into the BPM product structure. In this use case, sample process libraries have perhaps slightly less value than in some other scenarios. If the user wants to create a common process such as employee on-boarding for example, then a process template will speed design up considerably, but much of the process design is probably going to be around specific group operations that are specialized to that particular organization.

One area that is likely to be very important in this use case is dynamic case management support; often groups will see the vehicle driving task activity as a data-related object, with the process dynamically adapting to the specific data instance. All four vendors offer case management support in their PaasS offerings, including the ability for the case management process to adapt based on the data inherent in the case. Other design-related differences include the Appian feature to allow users to create ad hoc, on-the-fly ‘process-less’ processes where users just define tasks for others and kick them off. This is a flexible way of delivering productivity improvements, but it also raises issues around process governance and control. The Pega Cloud ‘Design by Doing’ support also deserves special mention, offering another productive way to establish processes by essentially enabling users to ‘remember’ how they achieved some process successfully and then translating that into a recorded process.

While this use case is primarily about workgroups, that does not mean to say it is isolated from corporate IT applications or procedures; workgroup processes may still need to query corporate resources and if they also need to update them then proper governance procedures will be needed to control deployment. For integration purposes, IBM and Cordys provide their own ESBs (Enterprise Service Bus) offering extensive connectivity to host applications and data sources. Pegasystems does not have its own communications bus but instead leverages that of the application server on which it is deployed, so integration services are available but will not be as seamless. Appian takes a slightly different approach; although it offers general web services connectivity which leaves a lot of work for the user, it does provide its Records facility where the process participant can call up information from corporate databases and applications as needed. In terms of integrating with other cloud-based services, such as SaaS CRM tools for example, IBM has the most powerful set of adapters with its Cast Iron connectivity solution.

Since Workgroup BPM can be very fluid, with frequently changing processes as teams continually improve
them, governance is also be important. Team members need to be empowered but at the same control must be maintained over what is deployed. Each vendor gives some attention to governance, but IBM has probably the strongest set of capabilities with its forms-based lifecycle governance facilities.

**Full BPM in the cloud**

This is the most demanding area for cloud BPM, where users are looking at running a wide range of processes of all types in the cloud. The only limiting factor is that these companies are usually smaller in size and as such although they may want a wide breadth of BPM functionality, they may have less need for support for some of the more complex scenarios.

This is a use case where process template libraries will be extremely valuable. It is very likely that companies will want to implement standard industry-based processes, and having a template to work from will greatly speed up this effort and improve the quality of the delivery. As mentioned previously, while all the vendors offer a handful of process templates for common activities, the IBM Blueworks Live library is by far the largest and most comprehensive resource; it is also well integrated with Process Designer making it easy to upload and start with one of these templates. Pegasystems takes the template idea further, providing not just templates but a more ‘soup-to-nuts’ level of process packages that just require configuration; however, the downside is that necessarily the number of these specialized solutions is very limited. Cordys has a different problem; a number of its specific process solutions are based on its other two BPM acquisitions, Metastorm and Global 360. This in itself is a source of concern, because it introduces an element of risk multiple BPM products either means the need for different skill sets or the risk of some sort of convergence or rationalization of the portfolio.

In terms of process discovery and design, ease of use and productivity are once again heavily affected by the level of collaboration possible. The level of social collaboration possible with the integrated capabilities offered by IBM and Appian help them to stand out in comparison to the less well integrated Cordys and Pegasystems support; in particular, IBM’s attention to the process discovery task, process designers and testers as well as process participants is very valuable. Mobile support also differs; although all vendors make it possible to work with mobile devices, Cordys and Pegasystems concentrate only on the UI while Appian and IBM also provide access to a wider range of device-specific functionality such as geo-location. The Cordys support is also SOAP-based, making calls between the mobile toolkit and the process engine rather cumbersome. At a more general design level, one observation worth making is that because Pegasystems is very rules-based it can be difficult to build processes that are not rules-heavy. On the testing front, although all vendors offer test and validation toolkits, IBM has the most comprehensive simulation capabilities.

Governance has already been mentioned in the context of Workgroup BPM, but it is even more essential here. Since this use case is the most extensive in terms of BPM usage and also involves more critical business processes, it will be imperative to have a strong and flexible governance process, and IBM’s tools stand out across the full process lifecycle.

Hybrid operations are supported by all four vendors and it is this use case where this support will be most critical. As discussed in the previous section, IBM and Cordys provide the strongest integration functionality because of their integrated SOA approach; and IBM also benefits from its rich integration with other cloud services through its Cast Iron facility. However, Pegasystems does have the ability to leverage the integration capabilities of the underlying application server platform on which it is deployed; and Appian complements its web services-based integration with easy access to corporate data and application output through its Records facility. All four vendors offer a range of availability and operations support tools and services. All provide automated backups and maintenance as part of the PaaS package, but the more complex availability services such as HA clusters, redundancy and disaster recovery are usually priced separately.
Cross use case considerations

While the main focus has been on the needs of the four identified use cases, there are some issues that are cross use case. The two main ones are the terms and conditions covering usage pricing, and the support for broader cloud solutions.

On pricing, Appian offers a base subscription for a named user but then evaluates participating users based on what they are going to be doing, how many there are and so on. Essentially the overall cost to the user is a special bid process where the figure is calculated based on what is required. This is fine to a point, but the problem is it becomes difficult to understand the budget implications of a change in working practices such as signing up a new department or group of users. Cordys is more straightforward, with a per-user subscription price based on a volume discount grid. IBM simplifies things further by acknowledging only one sort of user rather than trying to distinguish between different user roles, and then offering two subscription pricing models; a signed-up set of authorized users, or a concurrent users high watermark. This approach makes it much easier to predict ongoing costs. Pegasystems subscription pricing is complicated and difficult to predict and manage, particularly since Pegasystems price both based on functions used, such as case management, and the number of processes used.

Support for broader cloud solutions, as discussed previously, is relevant because the cloud features supported will be an important measure of suitability to cloud-focused users as they plan their overall cloud strategies. As a pure-play BPM vendor with a strong history in on-premise BPM solutions, Pegasystems does not really focus on the broader cloud picture but just views cloud as a deployment option, probably for ease of development and testing before eventual deployment on on-premise systems. Although Appian is also a pure-play BPM vendor, it takes a different approach because its sweet spot has always been in the sort of workgroup environment very suited to cloud. As a result Appian provides additional services like its Records facility to provide a cloud-based view of enterprise data. While Cordys was also a pure-play BPM vendor, it is now part of OpenText and as such users can benefit from the wider range of OpenText offerings. OpenText is much more broadly focused on cloud, with its OpenText Cloud Services encompassing services like hosting and information exchange. But the strongest of the four in cloud-focused terms is IBM. Not only does IBM provide its managed cloud environment through SoftLayer, but its Cast Iron-based connectivity to other cloud services is a powerful facility and IBM Bluemix is quickly developing into a comprehensive and productive rapid AD platform for cloud-based applications.
Summary

Deploying BPM functionality in the cloud has a number of attractions; it removes the need for capital expense investment, provides a fast route to getting started with BPM and offers a high degree of flexibility in use cases and resource deployments. Each of the four vendors in this assessment provide BPM Platform as a Service (PaaS) offerings to deliver BPM capabilities in the cloud with the added advantage that they all use the same product base used for their on-premise license-based deployments, making processes, rules and skills portable between the two environments.

This review has focused particularly on four specific use cases for a BPM PaaS offering; education, development and test, workgroup BPM and full BPM. Each vendor considered has its strengths and weaknesses and prospective buyers will need to judge these against their objectives, but this review concludes with a high-level summary of how Lustratus rates each vendor on addressing cloud BPM needs across these four scenarios.

Appian offers an intuitive and easy to use cloud deployment that provides a quick and effective platform for getting early experience of BPM. Its original BPM design point of providing a solution for workgroup BPM needs unsurprisingly results in a strong showing in this use case. However the Appian BPM PaaS does have its drawbacks in the wider BPM picture. It does not provide much to help developers collaborate or simulate process change results, and in the fuller BPM sense it is particularly lacking in prebuilt solution templates for accelerating time to value. Its support for the process participant is probably the strongest of the set of four, with social integration, simple interfaces, access to reports and corporate records and the ability to create processes ‘on-the-fly’. But when deployed in a hybrid environment or requiring integration with corporate systems it suffers from limited connectivity options and adapters. Its pricing is also complex, making future budget planning difficult, and Appian as a vendor offers little for the cloud environment beyond its BPM service.

IBM also offers a collaborative environment, providing a rich set of functions for building a wide range of processes from the simplest to the most complex. It provides a good vehicle for gaining BPM experience, and in particular its development and test support is strong with a powerful set of process discovery, testing, simulation and modeling tools. The IBM offering provides strong support for social collaboration across the board, all the way from process discovery through process design and test to process participants. On the broader BPM front, IBM’s large library of process templates provides considerable value, whether learning the BPM discipline or building strategic BPM projects for production use. It has powerful governance capabilities spanning the process lifecycle, and its Cast Iron-based cloud integration features combined with its SOA and ESB support deliver probably the strongest option for a broader integrated solution. In addition, the simplified approach to usage pricing adopted by IBM makes budget planning easier. On top of this, some of the additional products and services provided by IBM for the cloud like the Bluemix rapid application development platform and the Blueworks Live community and tools make it attractive as a broader cloud solution supplier.

OpenText has provided its acquired Cordys product as a PaaS offering to complement its lightweight Cordys Process Factory which is mostly concerned with ad hoc processes around Google docs. The SOA design used by Cordys provides a flexible base for BPM functionality, but the OpenText Cordys PaaS comes across as a BPM product that can be run on the cloud as opposed to a cloud-native offering, requiring rather more effort than might be expected from a cloud-based service. There is little in the way of process discovery assistance and the collaboration and social support is somewhat limited. In addition, Cordys does not provide much in the way of prebuilt process templates to speed deployment. The ‘special bid’ nature of pricing is also complicated. However built-in case management support is a definite plus point, and the SOA-based design makes Cordys Cloud BPM very flexible in deployment terms, providing comprehensive support for hybrid operations. Beyond the Cordys offering itself, OpenText also provides a number of broader cloud services like hosting and information exchange.

Pega Cloud has remained faithful to the underlying Pega BPM offering in terms of its functionality, which is both
an advantage and a disadvantage for its PaaS offering. Functionality is rich and powerful, offering a wide range of BPM functionality such as case management, a built-in BRMS, events processing and analytics; but the result is that BPM process design and development is quite complex, requiring considerable skills or professional services assistance. This impacts a number of the use cases for cloud BPM, and is probably one of the main reasons why Pega Cloud is primarily used as a development and test environment to support on-premise Pega BPM deployments. Having said that, for companies looking to implement one of the prebuilt process solutions in the Pegasystems portfolio, Pega Cloud will still be an attractive choice as a potential cloud deployment platform for BPM.

Taking into account all the points made throughout this assessment, the final Lustratus summary of BPM PaaS offerings from the four named vendors is summarized below in alphabetical order of supplier, based on three dimensions:

- Cloud features – how closely the offering and vendor match cloud computing expectations
- Cloud BPM functionality – how well the offering addresses BPM needs across the likely use cases
- Solution extensibility – how much scope is offered for added value solutions of which cloud BPM is a part

![BPM Cloud strengths](image)

*Figure 7: Competitive summary of BPM PaaS offerings from Appian, IBM, OpenText and Pegasystems*
About Lustratus Research

Lustratus Research Limited, founded in 2006, aims to deliver independent and unbiased analysis of global software technology trends for senior IT and business unit management, shedding light on the latest developments and best practices and interpreting them into business value and impact. Lustratus analysts include some of the top thought leaders worldwide in infrastructure software.

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The REPAMA research methodology is central to Lustratus’ consultancy services and provides a detailed map of the go-to-market strategies of the vendors in a particular market segment. We represent these strategies and tactics graphically as well as textually which makes it simpler to compare vendors’ strategies and to identify strengths and weaknesses.

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