



Oracle ONE
Product Review

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2. INTRODUCTION



Oracle delivers software to help organisations meet the complexities and challenges of operating in today's business environment, supplying organisations of all sizes with a rock-solid data infrastructure to support flexible operations within dynamic markets. In short: reliable solutions for agile businesses.

These solutions are built on over 30 years of data management experience and focus on three imperatives for modern organisations: protecting valuable

data, delivering actionable insight, and establishing flexible processes.

The benefits this brings to your business information systems are clear:

- Security
- Stability
- Accessibility
- Flexibility
- Transparency
- Scalability
- Value

Easy, rapid deployment, low maintenance and affordability complete the offer. With additional specialist support from a network of local partners, Oracle provides a uniquely attractive alternative to expensive, inflexible and insecure proprietary solutions.

3. PROTECTION AND MANAGEMENT

There are many reasons why your organisation needs to give careful consideration to its data protection and management strategy:

- **The value of data as an organisation asset**
Data now adds more value to a business than ever before – so it needs robust protection like any other corporate asset. Its infrastructure should offer multiple levels of security, including protection on the access level, comprehensive user ID management, data encryption, and fail-safe operation.
- **Protection against internal and external threats**
When implementing data security and protection measures, managers sometimes think all they need is a best-of-breed firewall for external protection and identity management for internal security. But there are a range of additional risks from intentional threats and from unintentional incidents like system failures.
- **Efficient and controlled access to relevant information**
Shielding information assets from unauthorised access, while encrypting the data travelling between systems on the network and beyond, is a minimum requirement. No matter how many staff an organisation has, manual user authentication is going to be time-consuming. And it is too prone to human error, with potentially dramatic consequences.
- **Compliance with legal and industry requirements**
In recent years, data protection has also become a legal requirement, with compliance involving security, traceability, regular backups and efficient archiving. Many organisations are aware of the regulations in their countries or industries, but do not know how to realise legal compliance in an efficient, automated and sustainable way.
- **Stable and available information infrastructure**
With the information infrastructure playing a key role in any organisation's operations, repeated planned or unplanned outages, poor performance and system failures affect staff productivity immediately and threaten the efficiency of an organisation over the long term. High-availability systems, centralised automatic backups and a consolidated data and information base are the key success factors for business continuity.

Oracle has a wide-ranging portfolio of software to support you in developing your data protection and management strategy. Read on to see how Oracle Database 11g, Oracle Universal Content Management and Oracle Identity Management can help.

If you want to assess your current strategy visit www.oracle.com/uk/one where you can take a short test and receive personalised feedback. You will also be able to access our Business Briefs including “Make compliance work for you”.

3.1 PROTECTION: DATABASE

Oracle Database 11g Standard Edition One is a full-featured data management solution ideally suited to the needs of fast-growing businesses. It is easy to install on Windows and Linux operating systems, and a high level of automation makes it easy to manage. Oracle Database 11g Standard Edition One also handles all data types and enables all your business applications to take advantage of the performance, reliability, security and scalability, for which Oracle is renowned, at a low cost.

Oracle Database Standard Edition One uses the same proven concurrency techniques as other Oracle Database editions, helping ensure maximum throughput for all workloads from your business applications software. Automated data mirroring* (phrases marked with an * are explained in the glossary from page 21) and backup and recovery* capabilities protect business data from common causes of data loss, without the need for expensive storage solutions. Powerful Flashback Query* capabilities allow you

to view and recover older versions of data without having to perform complex and time-consuming recovery operations.

Robust support for database roles* and auditing provides strong access control and accountability to address your security and privacy needs. Oracle Database 11g Standard Edition One is built from the same code base as our Enterprise Edition, providing the same mission-critical reliability Oracle is renowned for. As your requirements grow, simply upgrade from Standard Edition One to Standard or Enterprise Edition, protecting your initial investment now and into the future.

Oracle Database 11g Standard Edition builds on the solid foundation provided by Oracle Database 11g Standard Edition One and includes Oracle Real Application Clusters for enterprise-class availability, complete with its own cluster-ware* and automatic storage management* capabilities. As with Oracle Database 11g Standard Edition One, Oracle Database

11g Standard Edition manages all data types and enables all your business applications to make use of the product's intrinsic performance, reliability, security and scalability advantages.

When run on a cluster, a workload is automatically balanced across the available machines, ensuring maximum hardware utilisation. Clustering an environment with Real Application Clusters also protects business applications from system outages. When a machine fails, or needs maintenance, applications continue to access data uninterrupted on the other machines in the cluster.

The same compatibility that allows a seamless upgrade from Standard Edition One, also provides a straightforward migration path to Oracle Database 11g Enterprise Edition, delivering even longer-term investment protection.

Oracle Database 11g is available in a choice of editions tailored to meet the business and IT needs of all organisations, independent of size. Oracle also offers several optional database products that enhance the capabilities of Oracle 11g for specific business application software requirements.

- **Oracle Database 11g Standard Edition One (SE1)** delivers unprecedented ease-of-use, power, and price/performance for workgroup, departmental, and Web applications on single servers with a maximum capacity of two sockets*.

- **Oracle Database 11g Standard Edition (SE)** is available on single or clustered servers with a maximum capacity of four sockets in total. It includes Oracle Real Application Clusters as a standard feature at no additional cost.
- **Oracle Database 11g Enterprise Edition (EE)** provides efficient, reliable, secure data management for mission-critical online transaction processing applications, query-intensive data warehouses, content management, and Web 2.0 applications. It is available on single and clustered servers with no socket limitation.

All three editions of Oracle Database 11g are built using the same reliable database engine architecture and are completely compatible with each other. They are also available on a choice of operating systems and include a common set of application development tools and programming interfaces. You can start with Oracle Database 11g Standard Edition One and as your business grows, you can easily upgrade to Standard Edition or Enterprise Edition depending on what best meets your needs. One of the benefits of using Oracle products is the ease of upgrading – just install the software. You make *no* changes to your database or applications, and you get additional reliability and scalability.

Oracle Database 11g Enterprise Edition delivers industry leading performance, scalability, security and reliability on a choice of clustered or single-servers running Windows, Linux and Unix. It provides comprehensive features to easily manage the most demanding transaction processing, business intelligence, and content management applications.

Oracle Database 11g Enterprise Edition comes with a wide range of options to extend the #1 relational database¹ to help grow your business and meet your users' performance, security and availability service level expectations. A sample of Enterprise Edition options that augment the impressive core features of the Oracle database include:

- **Oracle Real Application Clusters (Oracle RAC)** is an option to Oracle Database 11g Enterprise Edition and included with Oracle Database 11g Standard Edition (on clusters with a maximum of 4 sockets*). Oracle RAC supports the deployment of a single database across a cluster of servers – providing unbeatable fault tolerance, performance and scalability with no application changes necessary. Analysts are taking note of Oracle RAC's growing importance in a wide range of customers across all industries for transaction processing and data warehousing applications.
- **Oracle Active Data Guard** enhances quality of service by offloading resource-intensive activities from a production database to one or more synchronised standby databases. Oracle Active Data Guard enables read-only access to a physical standby database for queries, sorting, reporting, Web-based access, etc., while continuously applying changes received from the production database. Oracle Active Data Guard also enables the use of fast incremental backups* when offloading backups to a standby database and can provide additional benefits of high availability and disaster protection against planned or unplanned outages at the production site.
- **Oracle Database Vault** helps protect against the insider threat and address regulatory compliance needs such as Sarbanes-Oxley (SOX) and PCI. Oracle Database Vault can prevent highly privileged users, including powerful application database administrators (DBAs) and others, from accessing sensitive applications and data in Oracle databases outside their authorised responsibilities. Oracle Database Vault can protect existing applications quickly and easily and requires no changes to your applications. Oracle Database Vault supports Oracle Database 11g, Oracle Database 10g Release 2, and Oracle Database 9i Release 2.
- **Oracle Advanced Security** provides extensive data protection to secure data at rest and in transit. It combines network encryption*, transparent data encryption at the column and table-space level, as well as strong authentication to help customers address data privacy and compliance requirements.
- **Oracle Label Security** adds extensive protection for sensitive information. It delivers multilevel security capabilities to protect access to data right down to individual rows in tables and addresses the real world data security and privacy problems faced by government and commercial entities worldwide.

¹ Gartner, Market Share: Relational Database Management System Software by Operating System, Worldwide, 2007 - Colleen Graham, Bhavish Sood, Horiuchi Hideaki, Dan Sommer - July 11, 2008

3.2 PROTECTION: CONTENT MANAGEMENT

With increased government scrutiny, electronic content and documentation is becoming more important during legal discovery and for regulatory compliance. Oracle Universal Content Management helps minimise risk by allowing organisations to control access to content, maintain audit trails, and automate the retention and disposition of content based on consistent policies.

Information that is not proactively managed results in resource bottlenecks, lost documents, duplicated data, security and version control issues, lost productivity, and decisions based on inaccurate information. Oracle Universal Content Management, an award-winning enterprise content management (ECM) platform, manages the entire spectrum of unstructured content – from documents, graphics, and Web pages to scanned images, e-mail, and records.

It is very difficult to share content with customers, partners, and suppliers across the enterprise and outside the firewall when it is stored in disparate systems. Although many organisations have used workarounds such as File Transfer Protocol (FTP) sites, they find it difficult to control access and security. Without mechanisms in place for version control or the “locking” of files, many versions of one document end up being created and shared with different users. Oracle Universal Content Management turns content into assets by making unstructured content easier to find, access, and reuse within an organisation. Oracle Universal Content Management converts nearly 400 file formats to Web-ready formats such as HTML, XML, GIF and PDF, and delivers content via Web sites, desktops, really simple syndication (RSS) feeds, mobile devices, and Web services.

Oracle Universal Content Management supports the entire content lifecycle, applying the appropriate amount of control and adding additional support for users during each lifecycle phase. This means that content is managed during creation, capture and storage. Additional features can be applied, such as version control, indexing for search, and metadata and security. Finally, services can be added to help distribute, publish, classify and retain, expire, and delete content.

Business applications are all powered with a combination of structured and unstructured information. ECM provides organisations with a platform to house their unstructured content and deliver it in the proper format to multiple enterprise applications. Oracle Universal Content Management’s unified approach to ECM offers organisations a single layer of integration and a common set of application programming interfaces (APIs)*, helping reduce integration costs and provide a lower total cost of ownership.

Users can efficiently reuse content and integrate hundreds of documented Oracle Universal Content Management services – such as checking in content, performing a search, returning search results, or approving an item in workflow – using standard integration methods such as Web services, Java, Java EE, Java Server Pages tags, command line utilities, Microsoft Component Object Model scripting, and Web-based distributed authoring and versioning.

Oracle Content Management Products

Universal Content Management

Standard Edition – Author and capture digital or paper-based content. Contribute content using Windows Explorer, Web browsers, or e-mail applications. Support Oracle database and third-party repositories. Search and retrieve content using full text or metadata. Manage and secure with library services, including check-in, check-out, and version control. Archive and dispose of content, including backup and recovery support. Share and distribute content with Web-based access from anywhere in the world.

Universal Content Management –

Extends UCM SE with: in-context Web site contribution, preview, updates, and approvals; e-mail notifications during workflow; library services, including full-text search, check-in or checkout, and version control; flexible metadata and security; template-based pages; libraries of reusable components and XML-based fragments; native content conversion to Web-viewable formats, including HTML, XML, and PDF; dynamic delivery and scheduled publishing models; personalised content delivery;

content release and expiration; full digital asset and records management features included.

Universal Records Management –

Centralises records and retention administration. Manages external applications and physical records using a distributed architecture. Provides “in-place” management of content. Manages file plans, policies, and business rules from a central console. Centralises holds, dispositions, and discoveries. Maintains a catalogue of all content. Provides audit trails and certificates of destruction

Imaging and Process Management –

Applies metadata, security, and version control to images. Annotate and mark up images. Automates routing and approvals. Applies record and retention management capabilities. Integrates with leading document scanning and capture solutions. E-forms for data gathering and verifications. Physical records management. Load balancing, parallel processing, and priority distribution rules. Certified integration with ERP and LOB applications. Supports high-volume applications for billions of items.

Information Rights Management –

Secures and tracks all copies of information – everywhere it is stored and used. Easy to use within existing applications and workflows. Transparent support for revocable, offline working. Centralised management of access rights, based on existing business processes and employee roles. Fine-grained administrative rights model. Easy integration with content management and records management policies. Complete audit trail of online and offline desktop access to “sealed” information. Industry standard AES and RSA cryptography. Industry-leading software tamper-proofing, screen grab protection and watermarks.

Document Capture – Unlimited

document scanning – no volume restrictions. Key-from-image automation. Barcode and optical character recognition. Electronic document importing and conversion. Efficient and reliable archiving.

3.3 PROTECTION: IDENTITY MANAGEMENT

The Oracle Identity and Access Management Suite allows organisations to manage the end-to-end lifecycle of user identities across all resources both within and beyond the firewall. You can now deploy applications faster, apply the most granular protection to resources, automatically eliminate latent access privileges, and much more. Oracle Identity and Access Management Suite, a member of the Oracle Fusion Middleware* family of products, can bring even greater agility, better decision-making, and reduced cost and risk to your IT environment.

Oracle leads the industry with award-winning Identity Management offerings that constitute the most comprehensive solution offered by any vendor. Not only do customers get a complete end-to-end solution, they also benefit from proven best-in-class functionality.

Comprehensive. Provides best-in-class technologies that include Web access control; identity administration; user provisioning; federated identity management; directory services, including virtual directory technologies*; and enterprise-wide user provisioning.

Hot-Pluggable and Open. Interoperates with all major directories, application servers, portals, business applications, databases, and operating systems. Oracle works with standards bodies, such as the Liberty Alliances and OASIS, and supports SAML, SPML, WS, Kerberos, and many more. Consult the Certification Matrix for supported platforms (you can find the Oracle certification matrices at <http://www.oracle.com/support/tools-resources/Web-based-support-tools.html>).

Application-centric. Weaves security into applications as opposed to bolting it on, promising unprecedented efficiencies and ROI.



With the Oracle Identity and Access Management Suite, customers can fulfil all of their identity management requirements from a single vendor, one that offers leading products and

capabilities. This means less time spent integrating disparate components, a single point of contact for support and a single license contract.

Oracle Identity Management Products

Oracle Access Manager delivers critical functionality for access control, single sign-on, and user profile management in heterogeneous application environments.

Oracle Identity Manager is a powerful and flexible enterprise identity provisioning and compliance monitoring solution that automates the creation, updating, and removal of users from enterprise systems such as directories, email, databases, and ERP in full.

Oracle Web Services Manager is a comprehensive solution for adding policy-driven security and management capabilities to existing or new Web services.

Oracle Enterprise Single Sign-On provides users with unified sign-on and authentication across all their enterprise resources including desktops, client-server, customer, and host-based mainframe applications.

4. INFORMATION INSIGHT

Reasons why your organisation needs to carefully consider its Information Insight strategy:

Creating insight from diverse data sources

The value of data as a business asset has never been greater, but it is the actionable insight derived from it that adds value to the organisation. Data that is hard to interpret due to a lack of centralised access, source compatibility or reporting functionality will not provide the competitive advantage that an efficient, insight-focused data management infrastructure can deliver.

Ensuring visibility of business operations and performance

One of the keys to maximising the value of data is to ensure that it is accessible both easily and quickly. Businesses that are unable to call up a clear snapshot of operations and performance on demand will find it more difficult to make fast, confident decisions and their competitive position can suffer as a result.

Improving decision-making to deliver competitive advantage

Markets and competitive situations change more rapidly today than ever before. This means that the ability to respond to those changes more quickly than other organisations through fast-informed decisions is a key competitive differentiator. Businesses without the information access, management and delivery infrastructure to help them optimise their decision-making process will find it more difficult to remain competitive.

Developing closer relationships with customers

Successful businesses ensure that customer relationships are rooted in trust and mutual understanding and are focused on the delivery of specific, measurable value that exceeds client expectations. Without an efficient means of collecting, compiling and distributing customer information, expertise and market experience, it is harder to ensure that solutions are being optimised and matched to changing customer needs. This makes relationships more difficult to manage and strengthen, and leaves the door open to competitors whose information management systems may enable them to be more responsive.

Data protection against any eventuality

The increased importance of data and information as a business success factor means that its availability is paramount. This means taking a truly comprehensive approach to security and fail-safe operations that copes with any threat, whether external or internal, deliberate or accidental, foreseeable or completely unpredictable. Anything less and the business runs the risk of losing critical data assets and threatens competitiveness when insight is needed to respond to changing market conditions.

Oracle has a wide-ranging portfolio of software to support you in developing your Information Insight strategy. Read on to see how Oracle Business Intelligence, Oracle Database and Oracle Data Integrator can help.

If you want to learn more please visit www.oracle.com/uk/one to read our Business Briefs including “Information at your fingertips”.

4.1 INFORMATION INSIGHT: BUSINESS INTELLIGENCE

Oracle Business Intelligence Standard Edition One is a complete, integrated, and attractively priced business intelligence (BI)* solution for midsize organisations or workgroups. It provides everything you need to create highly formatted reports, operational dashboards with ad-hoc analysis and consolidate your data for a complete view of your business. It includes the same technology as Oracle Business Intelligence Enterprise Edition, making it simple to scale as your business needs to grow.

You're a growing midsize organisation, you need a solid reporting solution. For example, a solution that can generate management reports, operation reports, invoices, and shipping labels. You also recognise the importance of having accurate, reliable, and timely information to analyse daily operations, closely monitor business performance, to maximise the efficiency of scarce resources, and to seize opportunities as soon as they arise. You understand the importance of integrating data from all your departments to get a complete picture of performance – sales, inventories, purchases, contracts, salaries, marketing expenses, and more. If you are like many organisations, you have numerous, semi-compatible systems in use that are relatively isolated from one another, requiring tremendous time and effort to bring data together. Ideally, you want a system that is easy-to-use, meets all of your reporting and information intelligence needs, and provides the insight you need to make better decisions across functions. You also want a system that is easy to implement, priced within your budget, and can scale and grow with your business over time. Oracle Business Intelligence Standard Edition One can help.

Designed with midsize organisations in mind, Oracle Business Intelligence Standard Edition One features a streamlined installation experience and is pre-configured out-of-the-box to be production-ready, getting you up and running quickly. In addition to providing a complete package with everything you need, Oracle Business Intelligence Standard Edition One is designed for flexible implementations. Organisations can pick and choose which components they want to start with and build out as business needs demand. For example, you might want to start with Oracle BI Publisher to generate invoices and later build out an operational dashboard using Oracle BI Interactive Dashboards and Oracle BI Answers.

Oracle Business Intelligence Standard Edition One was developed with business user self-sufficiency in mind; featuring business user interfaces that do not require coding, SQL or other technical skills. Report layout and design is conducted with everyday tools like Microsoft Word and Adobe Acrobat; new interactive dashboards are built through a simple, drag and drop Web interface; and new ad hoc analyses are built by pointing and clicking on items from a simplified, logical business model of the data. These ease-of-use capabilities enable greater business value and reduced reliance on IT for reporting and analysis needs.

Oracle Business Intelligence Standard Edition One uses the same technology components as Oracle Business Intelligence Enterprise Edition, so you can effortlessly upgrade to Enterprise Edition when your needs expand – with no need to convert or re-develop reports, dashboards, or data models. This makes it simple to expand your system via functionality provided with Oracle Business Intelligence Enterprise Edition, such as Oracle BI Delivers, an advanced proactive detection and alerting capability, or Oracle BI Disconnected Analytics, which provides full dashboard and ad hoc analysis capabilities on a disconnected laptop. As a result, any investment in Oracle Business Intelligence Standard Edition One is protected as your business grows.

Oracle Business Intelligence Standard Edition One provides you with an attractively priced, complete, and integrated solution for virtually all of your business intelligence needs. From operation reporting to data consolidation to management dashboard and ad hoc analysis, Oracle Business Intelligence Standard Edition One provides the right BI foundation for midsize organisations, now and for the future.

Oracle Business Intelligence Standard Edition One includes:

Oracle Business Intelligence Publisher – BI Publisher is a single solution to create, manage, and deliver all of your business documents and reports. Generate sales orders, invoices, checks, purchase orders, shipping labels, management reports, and even government forms. BI Publisher allows you to define report queries using a simple Web interface and create highly formatted layouts using tools you already know how to use like Microsoft Word and Adobe Acrobat. The BI Publisher report server then generates these documents and can deliver them to multiple destinations including printer, e-mail, fax, and directly over the Internet in formats such as PDF, HTML, Microsoft Office Excel, EFT, and more. Reports can be built directly against your database or the BI Server and you can leverage analysis developed within Oracle BI Answers.

Oracle Business Intelligence Interactive Dashboards – Interactive Dashboards provides a Web browser interface to instantaneously view important metrics, reports, and

visualisations – like gauges, charts, tickers, and more. It enables full drilling and navigation capabilities all the way to transactional data, and provides summary reports that take the pulse of the business – perfect for management reporting.

Oracle Business Intelligence Answers – Oracle BI Answers is a 100% thin client, ad hoc query and analysis solution that is fully integrated with Interactive Dashboards and BI Publisher. End users can easily and quickly create their own queries, then drill, analyse, visualise and embed the results in their personalised dashboard or deliver them to a variety of formats and channels via BI Publisher.

Oracle Business Intelligence Server – The same engine that powers Oracle Business Intelligence Enterprise Edition is also included. The BI Server provides a rich calculation engine and can integrate multiple, disparate data sources into a single federated view with support for Oracle and non-Oracle sources including Microsoft SQL Server, Microsoft Office Excel, most open database connectivity (ODBC) sources, multi-dimensional sources, XML, flat files, and more.

Oracle Warehouse Builder – Recognised by a technology analyst firm, Forrester, as one of the leading extract, transform and load (ETL)* tools, Warehouse Builder allows you to model, deploy, and maintain a coherent picture of data operations from multiple source systems such as relational, multi-dimensional, or flat files into your data warehouse.

Oracle Database Standard Edition One – The world's leading database is included, serving as the foundation for storing all of your integrated data in a data warehouse.

4.2 INFORMATION INSIGHT: DATABASE

Oracle Database 11g is a comprehensive database platform for data warehousing and business intelligence that combines industry-leading scalability and performance, deeply-integrated analytics, and embedded integration and data quality – all in a single platform running on a reliable, low-cost grid infrastructure*. Oracle Database 11g provides best-of-breed functionality for data warehouses* and data marts*, with proven scalability and leading performance. Oracle Database 11g also provides a uniquely integrated platform for analytics; by embedding online analytical processing (OLAP)*, Data Mining* and statistical capabilities directly into the database, Oracle delivers all of the functionality of standalone analytic engines with the enterprise scalability, security, and reliability of an Oracle Database. Since data

integration is a core requirement of any data warehouse, every edition of Oracle Database 11g includes Oracle Warehouse Builder, a complete and leading ETL* tool that leverages Oracle's scalable data transformation and heterogeneous data-access capabilities.

Today's information architecture is much more dynamic than it was just a few years ago. Businesses now demand more information, they want it sooner and they are delivering more analytics to an ever-widening set of users and applications.

To address these business requirements, Oracle Database 11g includes Oracle Warehouse Builder (OWB), a leading data-integration tool. The core features of Oracle Warehouse Builder are included as a no-cost database feature and are designed to allow any Oracle customer

to efficiently build a data mart or data warehouse of any size or complexity. It includes a multi-user metadata repository, data-modelling capabilities, a wide variety of transformation and extraction techniques and the performance and scalability of an ETL architecture.

A key advantage of Oracle Warehouse Builder is the breadth of functionality that it provides integrated within a single tool. Data modelling, data compliance, and data quality are core features that any enterprise data integration tool must possess. However, a key architectural advantage of Oracle Warehouse Builder is the integration of the components. Oracle Warehouse Builder provides all of its capabilities within a common repository and user interface.

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- **Oracle Database 11g Standard Edition One (SE1)** delivers unprecedented ease-of-use, power, and price/performance for workgroup, departmental, and Web applications on single servers with a maximum capacity of two sockets.
- **Oracle Database 11g Standard Edition (SE)** is available on single or clustered servers with a maximum capacity of

four sockets in total. It includes Oracle Real Application Clusters as a standard feature at no additional cost.

- **Oracle Database 11g Enterprise Edition (EE)** provides efficient, reliable, secure data management for mission-critical online transaction processing applications, query-intensive data warehouses, content management, and Web 2.0 applications. It is available on single and clustered servers with no socket limitation.

All three editions of Oracle Database 11g are built using the same reliable database engine architecture and are completely compatible with each other. They are also

available on a choice of operating systems and include a common set of application development tools and programming interfaces. Using Oracle Database 11g you can start out with Standard Edition One, and as your business grows, you can easily upgrade to Standard Edition or Enterprise Edition depending on what best meets your needs. One of the benefits of Oracle is that it is easy to upgrade – just install the next edition's software – you make *no* changes to your database or applications, and you get the additional reliability, and scalability for which Oracle is renowned.

By providing all of these capabilities in a single tool on top of a single repository, Oracle Warehouse Builder resolves a long-standing challenge in data integration. Many integration solutions provide separate tools for these distinct capabilities. However, it is terribly inefficient to do data-modelling in one tool, and then ETL mapping in another tool, and then data-profiling in yet another tool. Oracle Warehouse Builder provides one metadata repository and one user interface for the entire integration process.

Oracle Warehouse Builder uses an ETL architecture. Rather than providing an external data-transformation engine, Oracle Warehouse Builder executes all of its transformations within an Oracle database, leveraging the scalability and performance of the database platform.

The Oracle Database is the leader for data warehousing, built upon a solid foundation of scalability and performance, and augmented innovative features such as Oracle's unique read-consistency model* for near-real-time data warehouses, a flexible and powerful set of table partitioning* capabilities, the utilisation of OLAP technology to enhance relational environments, and unmatched support



for grid architectures. Oracle Database 11g also provides the most comprehensive database platform for data warehouses and other business intelligence applications by embedding data-integration, OLAP, and data mining capabilities. Moreover, Oracle Database 11g provides enterprise

ready availability, security and manageability – key requirements for data warehouses as much as any other enterprise system.

4.3 INFORMATION INSIGHT: DATA INTEGRATOR

In today's fast-paced, information-based economy, organisations must be able to quickly integrate vast amounts of data from disparate systems. Oracle Data Integrator streamlines the high-performance movement and transformation of data between disparate systems in batch, real-time, synchronous and asynchronous modes. Its innovative, modular design and built-in connectivity to all major databases, data warehouse appliances, analytic applications, and service-oriented architecture (SOA)* suites dramatically enhances user productivity.

Oracle Data Integrator is a comprehensive data integration platform that covers all data integration requirements – from high-volume, high-performance batches, to event-driven, trickle-feed integration processes, to SOA-enabled data services.

Oracle Data Integrator addresses multiple enterprise data integration needs.

- **Data Warehousing and Business Intelligence** – by executing high-volume, high-performance loading of data warehouses, data marts, Online Analytical Processing (OLAP) cubes, and analytical applications, Oracle Data Integrator transparently handles incremental loads and slowly changes dimensions, manages data integrity and consistency, and analyses data lineage.
- **Service-oriented architecture (SOA)** – by calling on external services for data integration and by deploying data services and transformation services that can be seamlessly integrated within an SOA infrastructure, Oracle Data Integrator adds support for high-volume, high-performance bulk data processing to an existing service-oriented architecture.

Oracle Data Integrator

- Supports all transformations and data controls on disparate systems.
- Performs complex joins between tables, aggregations, and complex calculations.
- Controls data integrity on the fly while data is processing.
- Designs and deploys the integration infrastructure quickly and easily, with little or no programming.
- Standard Data Quality and optional Advanced Data Governance features.
- Provides strong metadata features including dependency graphs, cross referencing, and impact analysis reports.
- Automatically implements Changed Data Capture on the source systems.
- Accesses and integrates all database systems, ERPs and CRMs, B2B systems, flat files, LDAP repositories, and XML data sources.
- Integrates into a service oriented architecture and provides automatically generated data services.
- Generates native code for distributed database engines and coordinates their work.
- Executes the complete integration process, from data transformation and transfer to error recovery and reporting.

5. PROCESS FLEXIBILITY

Reasons why your organisation needs to carefully consider its process flexibility strategy:

Flexibility to react to changing conditions and requirements

With limited resources, midsize organisations can struggle to adapt to changing market norms, whether it's time to market, standard service levels, or price. They need the flexibility that allows them to use their smaller size to their advantage, and react faster to change than larger, less agile competitors. But they also need to be able to achieve that flexibility in an affordable way.

Differentiation in a competitive market

Without the benefit of global brands and large-scale resources, midsize organisations need to find other ways of differentiating their business. Organisations whose operations are founded on streamlined yet flexible processes, retain the agility necessary to impress prospective or existing customers when faced with a non-standard requirement.

Improving time to market for competitive advantage

The ability to bring a product or service to market before a competitor represents a key competitive advantage, especially for midsize organisations that may not have the scale or brand awareness of a larger organisation. Streamlined processes that operate over an open, integrated infrastructure accelerate time to market by ensuring transparency, maximising production and operational efficiency and avoiding delays due to compatibility issues or communication failures.



Maximising customer satisfaction for current and future success

Midsize organisations often live or die by the quality and speed of service that they provide – without brand equity to fall back on, a lost customer may never return. Truly efficient and flexible processes enable them to offer outstanding responsiveness, both in terms of speed and customers' specific needs. In addition, once they are established, processes that operate as part of an open, integrated IT infrastructure remain flexible and scalable enough to ensure that customers remain happy and loyal well into the future.

Ensuring operational efficiency at all times

Complex processes that are not well-integrated into a unified IT infrastructure hinder efficiency right across an organisation.

Midsize organisations with multiple proprietary legacy systems can benefit from the streamlining effect that a centralised, open standards-based approach to data management can provide. This kind of architecture also makes IT infrastructures more scalable and new elements are easier to integrate as an organisation grows, ensuring efficient operation on an ongoing basis.

Oracle has a wide-ranging portfolio of software to support you in developing your Process Flexibility strategy. Read on to see how Oracle Database and Oracle SOA Suite can help.

If you want to learn more visit www.oracle.com/uk/one to read our Business Briefs.

5.1 PROCESS FLEXIBILITY: SOA

Changing markets, competitive pressures and evolving customer needs are placing increasing pressure on IT to deliver greater flexibility and speed. Organisations are adopting service-oriented architecture (SOA) as a means of delivering on these requirements. The key to an SOA approach is that it facilitates the development of enterprise software applications as modular business services that can be easily integrated. Benefits include reuse, ease of maintenance and change, and improved business visibility.

Oracle SOA Suite is a comprehensive, hot-pluggable software suite for the building, deployment, and management of a service-oriented architecture. This includes the service-oriented development of applications, service-oriented integration of applications and IT systems, and process orchestration of system services and human workflow. It plugs into heterogeneous IT infrastructures and enables your organisation to incrementally adopt SOA. The components of the suite benefit from common capabilities including a single deployment and management model, tooling, end-to-end security and unified metadata management.

Oracle SOA Suite improves an organisation's ability to predict change by improving its visibility to events in the business environment in real time and to respond to change by enabling it to develop and optimise business processes rapidly. It simplifies the IT

environment by being provisioned, deployed, monitored, and managed as a single cohesive infrastructure. It leverages existing investments by being modular, open, and extensible; it may be adopted in a heterogeneous environment without needing to remove or replace existing systems as well as in an incremental fashion.

Oracle SOA Suite consists of:

- Business Process Execution Language (BPEL)-based Process Manager to compose services into business processes;
- Business Activity Monitoring (BAM) solution to gain real-time visibility into operation and performance of business processes and services;
- business rules engine to capture and automate business policies;
- multiprotocol Enterprise Service Bus (ESB) to connect applications and route messages;
- Web services management and security solution to enforce authentication and authorisation policies on services
- services registry for discovering and managing the lifecycle of services; and an Integrated Service Environment (ISE) to develop, debug, profile, and deploy services.

Oracle SOA Suite consists of:

- **BPEL Process Manager**
 - Process Designer
 - Process Manager Console
 - Process Manager Server
 - Integration Services
 - Human Workflow
- **Business Activity Monitoring**
 - Web Browser Dashboard
 - Business User Authoring
 - Embedded Actions
 - Real-Time Analytics
- **Business Rules**
 - Business User Authoring
 - Small Footprint Engine
 - Seamless Integration
- **Enterprise Service Bus**
 - Multi-protocol bus
 - Data enrichment
 - Content based routing
 - Content filtering
- **Web Services Management**
 - Policy authoring
 - Policy enforcement
 - .NET and Java support
- **Web Services Registry**
 - Publish services
 - Categorise services
 - SOA System of Record
- **Connectivity**
 - 300+ Application adapters
 - Legacy adapters
 - Technology adapters
- **JDeveloper**
 - Develop Web services

5.2 PROCESS FLEXIBILITY: DATABASE

Oracle Database 11g Standard Edition One is optimised for deployment in fast-growing businesses. It is available on single servers supporting up to a maximum of 2 sockets. Oracle Database 11g Standard Edition One is available on all Oracle-supported operating systems, including Windows, Linux and Unix.

Oracle Database 11g Standard Edition One supports all standard relational data types, as well as native storage of XML, text, documents, images, audio, video and location data. Access to data is via standard interfaces such as SQL, JDBC, SQLJ, ODBC .NET, OLE .NET and ODP .NET, SQL/XML and Xquery, and WebDAV. Stored procedures can be written in Java, PL/SQL or using .NET CLR support in the Oracle Database. Also included are built-in analytical, statistical and modelling capabilities that can be used in any SQL-based Business Intelligence environment.

Oracle Database 11g Standard Edition builds on top of the solid foundation provided by Oracle Database 11g Standard Edition One with the inclusion of Oracle Real Application Clusters for enterprise-class availability, complete with its own cluster-ware and storage management capabilities. Just like Oracle Database 11g Standard Edition One, Oracle Database 11g Standard Edition manages all data types and enables all your business applications to take advantage of the performance, reliability, security and scalability for which Oracle is renowned. It also provides complete upward compatibility with Oracle Database 11g Enterprise Edition, protecting your investment as your requirements grow.

Oracle Database 11g is available in a choice of editions tailored to meet the business and IT needs of all organisations, independent of size. Oracle also offers several optional database products that enhance the capabilities of Oracle 11g for specific application requirements.

- **Oracle Database 11g Standard Edition One (SE1)** delivers unprecedented ease-of-use, power, and price/performance for workgroup, departmental, and Web applications on single servers with a maximum capacity of two sockets.
- **Oracle Database 11g Standard Edition (SE)** is available on single or clustered servers with a maximum capacity of four sockets in total. It includes Oracle Real Application Clusters as a standard feature at no additional cost.
- **Oracle Database 11g Enterprise Edition (EE)** provides efficient, reliable, secure data management for mission-critical online transaction

processing applications, query-intensive data warehouses, content management, and Web 2.0 applications. It is available on single and clustered servers with no socket limitation.

All three editions of Oracle Database 11g are built using the same reliable database engine architecture and are completely compatible with each other. They are also available on a choice of operating systems and include a common set of application development tools and programming interfaces. Using Oracle Database 11g you can start put with Standard Edition One, and as your business grows, you can easily upgrade to Standard Edition or Enterprise Edition depending on what best meets your needs. One of the benefits of Oracle is that it is easy to upgrade – just install the next edition's software – you make *no* changes to your database or applications, and you get the additional reliability and scalability, for which Oracle is renowned.

Oracle Database 11g Enterprise Edition delivers industry-leading performance, scalability, security and reliability on a choice of clustered or single-servers running Windows, Linux and Unix. It provides comprehensive features to easily manage the most demanding transaction processing, business intelligence, and content management applications.

Oracle Database 11g Enterprise Edition comes with a wide range of options to extend the #1 relational database¹ to help grow your business and meet the flexibility requirements demanded by your business. A sample of Enterprise Edition options that augment the impressive core features of the Oracle database include:

- **Partitioning** enables tables and indexes to be split into smaller, more manageable components and is a key feature for any large database with high performance and high availability requirements. Oracle Database 11g offers the widest choice of partitioning methods including interval, reference, list, and range in addition to composite partitions of two methods such as order date (range) and region (list) or region (list) and customer type (list). Oracle Partitioning aligns the business value of information to cost-effective storage tiers for large data warehousing and transaction processing applications.
- **Real Application Testing** allows businesses to quickly adopt new technologies while eliminating the risks associated with change. Agile businesses want to be able to quickly adopt new technologies, whether it's operating systems, servers or software, to help them stay ahead of the competition. However, change often introduces a period of instability into mission-critical IT systems. Real Application Testing combines a workload capture and replay feature with an SQL performance analyser to help you test changes against real-life workloads, then helps you fine-tune them before putting them into production.
- **Oracle Database Management Packs** makes Oracle 38 percent more productive than DB2 9.1 and SQL Server. Oracle provides an integrated management solution for managing Oracle databases with a unique top-down application management approach. With new self-managing capabilities, Oracle eliminates time-consuming, error-prone administrative tasks, so database administrators can focus on strategic business objectives instead of performance and availability fire drills.

¹ Gartner, Market Share: Relational Database Management System Software by Operating System, Worldwide, 2007 - Colleen Graham, Bhavish Sood, Horiuchi Hideaki, Dan Sommer - July 11, 2008



5.3 PROCESS FLEXIBILITY: INTEGRATION

Organisations need to analyse increasingly large volumes of information and respond to business events more rapidly by adapting their applications and IT systems to become event-driven. However, current infrastructures for processing and managing events are limited and require complex and expensive code development. Oracle Event-Driven Architecture Suite (EDA suite) complements the service interaction model of service-oriented architectures (SOA), providing infrastructure to manage event-based interactions and complex event analysis in real time.

Oracle Event-Driven Architecture Suite is a comprehensive, hot-pluggable software suite that enables customers to monitor, analyze, and respond to business events in real time. Organisations need to analyse increasingly large volumes of information and more rapidly respond to business events by adapting their applications and IT systems to become event driven. However, current infrastructures for processing and managing events are limited and require complex and expensive code development. Oracle Event-Driven Architecture Suite provides organisations in a broad range of industries – including financial services, telecommunications, retail, government, and manufacturing – with the ability to become real-time enterprises by enabling them to build, deploy, and manage event driven architectures (EDAs) without additional coding.

Leveraging Oracle Fusion Middleware's hot-pluggable architecture, Oracle Event-Driven Architecture Suite is interoperable with Oracle and non-Oracle application servers including IBM WebSphere Application Server, Oracle WebLogic Server, and JBoss Application Server as well as messaging buses that include IBM WebSphere MQ (formerly MQSeries), SonicMQ and Tibco Enterprise JMS. The offering includes native support to create, process, analyse, and manage events. It provides a flexible, declarative environment to rapidly build and adapt event-driven applications.

Oracle Event-Driven Architecture Suite improves an organisation's ability to predict change by improving its view of events in the physical world and business environment in real time. It simplifies the IT environment by being provisioned, deployed, monitored, and managed as a single cohesive infrastructure. It leverages existing investments by being modular, open, extensible, and hot-pluggable; this eliminates the need to remove or replace existing systems as well as supporting incremental deployment and ROI.

Oracle Event-Driven Architecture Suite consists of the following components:

- Business Activity Monitoring (BAM) solution to define and monitor events and patterns that occur throughout an organisation
- business rules engine to capture, automate, and flexibly change business policies
- complex event processing to process streams of events in real time with configurable quality of service (QoS) levels
- multi-protocol Oracle Service Bus to connect applications and route messages

Business Activity Monitoring Features

- Web browser dashboard
- Business user authoring
- Embedded actions
- Real-time analytics

Oracle Service Bus Features

- Multi-protocol ESB
- Configuration-driven integration
- Content and identity-based routing
- Policy-driven security
- Distributed ESB domains
- Superior QoS (RASP)

Oracle Complex Event Processing Features

- Real-time trends and pattern detection
- Instantaneous in-memory data manipulation
- Highly-optimised, lightweight application server

Business Rules Features

- Business user authoring
- Small footprint engine
- Seamless integration
- Rules SDK

6. GLOSSARY



Application Programming Interface (API)

A source code interface that an operating system, library or service provides to support requests made by computer programs.

Automatic Storage Management (ASM)

A feature in Oracle Database 10g/11g that provides the database administrator with a simple storage management interface that is consistent across all server and storage platforms. As a vertically integrated file system and volume manager, which has been purpose-built for Oracle database files, ASM provides the performance of asynchronous I/O with the easy management of a file system. ASM provides capability that saves the DBAs time and provides flexibility to manage a dynamic database environment with increased efficiency.

Backup and Recovery

Backup refers to making copies of data so that these additional copies may be used to Recover the original after a data loss event. These additional copies are typically called “backups”. Backups are primarily useful for two purposes. The first is to restore a state following a disaster (called disaster recovery). The second is to restore small numbers of files after they have been accidentally deleted. Backups are typically the last line of defence against data loss and, consequently, the least granular and the least convenient to use.

Business Intelligence

Technology solutions that deliver intuitive, role-based intelligence for everyone in an organisation – from front line employees to senior management – that enable better decisions, actions, and business processes. Based on best practices, these solutions enable organisations to gain greater insight and value from a range of data sources and applications.

Business Process Execution Language (BPEL)

A language for specifying business process behaviour based on Web services.

Clusterware

Software that enables servers to operate together as if they are one server. Each server looks like any standalone server. However, each server has additional processes that communicate with each other so the separate servers appear as if they are one server to applications and end users.

Data Mart

A data mart is a subset of an organisational data store, usually oriented to a specific purpose or major data subject, which may be distributed to support business needs. Data marts are analytical data stores designed to focus on specific business functions for a specific community within an organisation. Data marts are often derived from subsets of data in a data warehouse, though in the bottom-up data warehouse design methodology, the data warehouse is created from the union of organisational data marts.

Data Mining

The process of sorting through large amounts of data and picking out relevant information is called data mining. It is usually used by business intelligence organisations and financial analysts but is increasingly being used in the sciences to extract information from the enormous data sets generated by modern experimental and observational methods. In relation to enterprise resource planning, data mining is the statistical and logical analysis of large sets of transaction data, the search for patterns that can aid decision-making.

Data Mirroring

The act of copying data from one location to a storage device in real time is called data mirroring. Because the data is copied in real time, the information stored from the original location is always an exact copy of the data from the production device. Data mirroring is useful in the speedy recovery of critical data after a disaster. Data mirroring can be implemented locally or offsite at a completely different location.

Data Warehouse

A repository of an organisation's electronically stored data is called a data warehouse. Data warehouses are designed to facilitate reporting and analysis. This classic definition of the data warehouse focuses on data storage. However, the means to retrieve and analyse data, to extract, transform and load data, and to manage the data dictionary are also considered essential components of a data warehousing system. Many references to data warehousing use this broader context. An expanded definition for data warehousing includes business intelligence tools, tools to extract, transform and load data into the repository and tools to manage and retrieve metadata.

Database Roles

Managing and controlling privileges is made easier by using roles, which are named groups of related privileges that you grant, as a group, to users or other roles. Roles ease the administration of end-user privileges.

Encryption

Encryption is the process of converting information so as to render it unintelligible to anyone except authorised holders of a specific cryptographic key.

Extract, Transform and Load (ETL)

ETL is a process in data warehousing that involves:

- extracting data from outside sources,
- transforming it to fit business needs (which can include quality levels), and
- ultimately loading it into the end target, i.e. the data warehouse.

ETL is important because it is the way data actually gets loaded into the warehouse. This article assumes that data is always loaded into a data warehouse, whereas the term ETL can in fact refer to a process that loads any database. ETL can also be used for the integration with legacy systems. Usually ETL implementations store an audit trail on positive and negative process runs. In almost all designs, this audit trail is not at the level of granularity that would allow reproduction of the ETL's result if the raw data were not available.

Flashback Query

Oracle Flashback Query lets you view and repair historical data. You can perform queries on the database as of a certain wall clock time or user-specified system change number (SCN). Using Flashback Query, you can query the database as it existed this morning, yesterday, or last week.

Grid Infrastructure

For years, when you needed more computing capacity, you bought more expensive computers. Now, with the Oracle Grid, you can add capacity on demand with one inexpensive PC server at a time for superior scalability and fast ROI. And if one department needs more capacity, you can use Oracle software to borrow it from another while the grid keeps running. The Oracle Grid. Runs faster. Costs less. And never breaks.

Incremental backups

A backup method where multiple backups are kept (not just the last one). Each original piece of backed up information is stored only once and successive backups only contain the information that changed since a previous backup.

Java

A general purpose programming language with a number of features that make the language well-suited for use on the World Wide Web

Middleware

Computer software that connects software components or applications is called middleware. The software consists of a set of enabling services that allow multiple processes running on one or more machines to interact across a network.

Online Analytical Processing (OLAP)

OLAP is an approach to quickly provide answers to analytical queries that are multi-dimensional in nature. OLAP is part of the broader category called business intelligence, which also encompasses relational reporting and data mining. The typical applications of OLAP are in business reporting for sales, marketing, management reporting, business process management (BPM), budgeting and forecasting, financial reporting and similar areas.

Partitioning

Partitioning is a method that enables tables and indexes to be split into smaller, more manageable components and is a key feature for any large database with high performance and high availability requirements.

Read Consistency Model

In multi-user environments, concurrency control ensures that data updates made by one user do not adversely affect those made by other users. Database implementations differ in their ability to prevent well-known phenomena encountered in multi-user environments:

- Dirty, or uncommitted, reads happen when a transaction can read changes made to the database that have not yet been committed.
- Non-repeatable reads occur when a transaction re-reads data it has previously read and finds that another committed transaction has modified or deleted the data.
- Phantom reads happen when a transaction executes a query twice returning a set of rows that satisfy a search condition, and finds that the second query can retrieve additional rows which were not returned by the first query, because other applications were able to insert rows that satisfy the condition.

Oracle's implementation of multi-version read consistency always provides consistent and accurate results. When an update occurs in a transaction, the original data values are recorded in the database's undo records. Oracle uses the current information in the undo records to construct a read-consistent view of a table's data and to ensure that a version of the information, consistent at the beginning of the uncommitted transaction, can always be returned to any user.

Service-oriented architecture (SOA)

SOA is a computer system's architectural style for creating and using business processes, packaged as services, throughout their lifecycle. SOA also defines and provisions the IT infrastructure to allow different applications to exchange data and participate in business processes. These functions are loosely coupled with the operating systems and programming languages underlying the applications. SOA separates functions into distinct units (services) that can be distributed over a network and combined and reused to create business applications. These services communicate with each other by passing data from one service to another or by coordinating an activity between two or more services. SOA concepts are often seen as built upon, and evolving from older concepts of distributed computing and modular programming.

Socket

A socket is a receptacle into which a Central Processing Unit (CPU, or "Processor") can be inserted. A processor is counted equivalent to an occupied socket; however, in the case of multi-chip modules, each chip in the multi-chip module is counted as one occupied socket.

Virtual Directory Technologies

Technology that synchronises user-identities from often disparate data sources to provide a consolidated view without having to construct an entire directory infrastructure.

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