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# The Forrester Wave™: Enterprise Data Warehousing Platforms, Q1 2011

by James G. Kobielus
for Business Process Professionals

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## Teradata, Oracle, Sybase (SAP), IBM, SAP, EMC Greenplum, Netezza (IBM), and Microsoft Lead, With Vertica Systems As A Strong Performer

**by James G. Kobielus**
with Boris Evelson, Connie Moore, and Charles Coit

## EXECUTIVE SUMMARY

In Forrester's 56-criteria evaluation of enterprise data warehousing (EDW) platform vendors, we found the EDW market increasingly competitive, as illustrated by tighter clustering of top vendors. Teradata, Oracle, Sybase (SAP), and IBM lead by offering high-performance, scalable, flexible, and robust EDW solutions. Teradata provides the most scalable, flexible, cloud-capable EDW solution in today's market. Oracle has built its Exadata Database Machine into a formidable new product family. Sybase, recently acquired by SAP, continues to enhance IQ's massively parallel columnar technology for real-time analytics. IBM has ramped up its EDW solution focus and now sets the pace on petabyte-scale Hadoop integration. SAP is rapidly evolving and converging BW and BWA into a high-performance EDW with an in-memory, columnar infrastructure optimized for real-time analytics. EMC Greenplum demonstrates solid execution and continued innovation. Netezza (recently acquired by IBM) has integrated in-database analytics into its high-performance EDW appliances. Microsoft has launched cost-effective EDW appliances for midmarket and large enterprises, and Strong Performer Vertica Systems continues to enhance its high-performance all-columnar EDW architecture.

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## NOTES & RESOURCES

Forrester conducted product evaluations in Q3 2010 and interviewed nine vendor companies: EMC Greenplum, IBM, Microsoft, Netezza (now owned by IBM), Oracle, SAP, Sybase (now owned by SAP), Teradata, and Vertica Systems. We also used an online survey to gather feedback from customer references provided by each of these vendors.

### Related Research Documents

"The ROI Of Data Warehousing Appliances: Benefits, Costs, And Risks"
November 10, 2010

"The ROI Of Data Warehousing Appliances: Flexibility"
November 10, 2010

"In-Database Analytics: The Heart Of The Predictive Enterprise"
November 12, 2009

## EDW PROVIDES CORE INFRASTRUCTURE FOR AGILE BUSINESS PROCESSES

Successful business processes depend on a steady stream of high-quality decisions. Your enterprise data warehouse (EDW) can provide the core infrastructure driving smart decisions across your company and extended value chain. An EDW's core purpose is to deliver actionable, timely, and trustworthy intelligence to a wide range of business processes. As a best practice, an EDW organizes analytical, historical data into functional domains — such as customer, finance, manufacturing, and human resources — that align with key processes, roles, and applications. Just as important, an EDW offers high performance, 24x7 availability, modular scalability, stringent security, and other robust features to support the most demanding business requirements.[1]

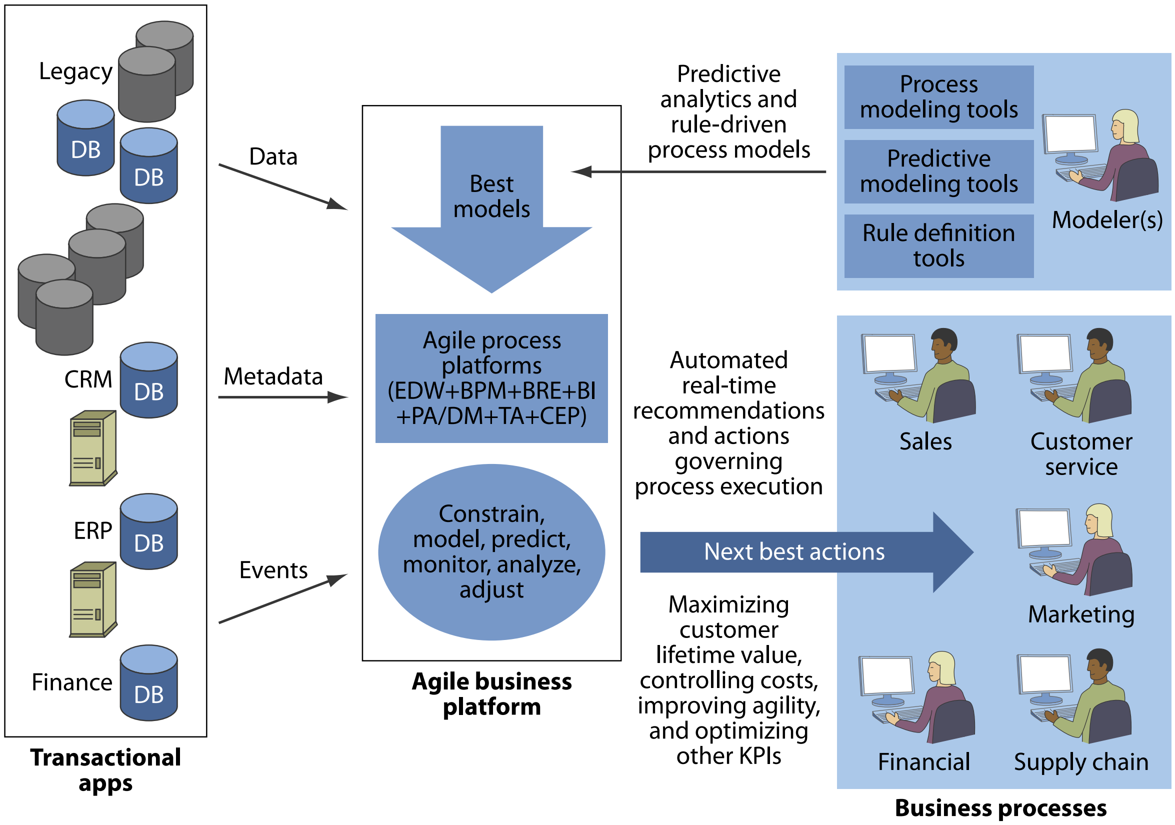
Business process and information management professionals regularly make substantial investments in EDW software, hardware, services, and personnel that consume millions of dollars. If you have introduced business intelligence (BI) across your enterprise, you will typically need an EDW (physical or logical) to populate reports, queries, dashboards, and other analytic applications with trusted, reconciled, and integrated data. Likewise, if you have invested in customer relationship management (CRM), enterprise resource planning (ERP), or other line-of-business (LOB) apps, you need an EDW to consolidate data from these transactional sources, offload compute-intensive analytical applications, and drive high-quality decision support to the operational frontlines.

### Next-Generation EDW Powers "Next Best Actions" Everywhere

Enterprises increasingly incorporate their EDW into continually agile and self-optimizing business processes. An EDW — extended through in-database analytics, embedded statistical algorithms, predictive models, and complex business rules — can function as the core of a "recommendation engine" that drives "next best actions" across all processes. This allows you to design closed-loop back-end processes that are continuously optimized through inline analytics. EDW-powered recommendation engines can also continuously extend targeted offers to customers through the call center, self-service portal, point of sale, and other channels — maximizing customer lifetime value (see Figure 1).[2]

**Figure 1** EDW Is Driving Next Best Actions Across Optimized Business Processes




57357 Source: Forrester Research, Inc.

## EDW Industry Consolidation Strengthens All-In-One Product Portfolios

The EDW market has evolved rapidly in the two years since Forrester published the first EDW Forrester Wave.[3]

In that prior Forrester Wave, all of the leading EDW platform vendors had realigned their go-to-market, packaging, and development strategies around the appliance model, which remains the dominant approach used by vendors in this current evaluation. At heart, an appliance provides a prebuilt, pre-optimized bundle that incorporates all the requisite software — such as analytical databases; query optimization, data loading, and workload management tools; and backup and recovery capabilities — plus the underlying hardware to support EDW functions and applications. Figure 2 illustrates, at a functional level, the core components of an EDW appliance (see Figure 2).

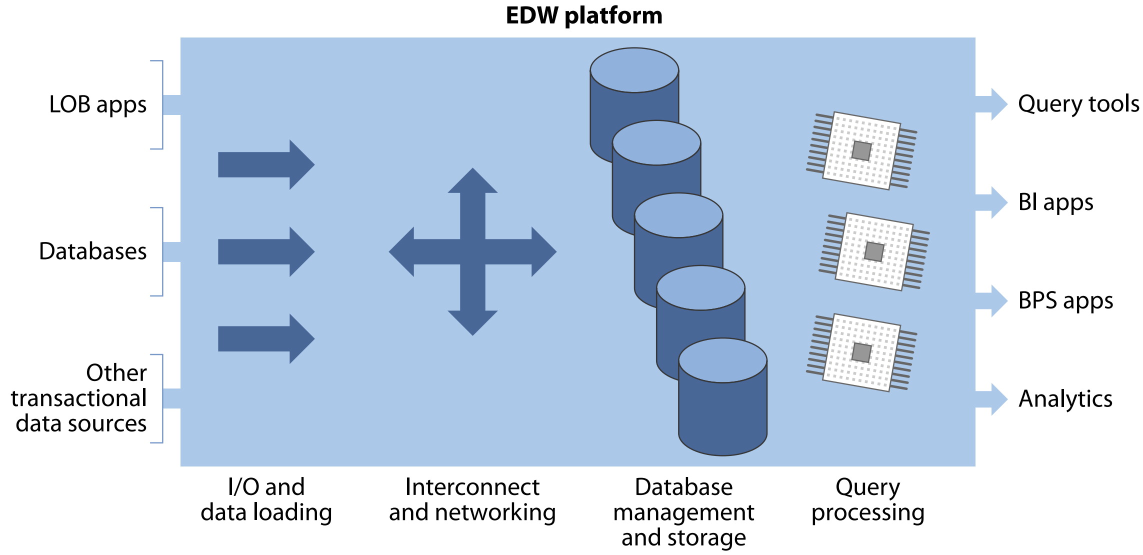
Since the last Forrester Wave evaluation of the EDW market, competition has reached a new level of intensity. The chief competitive trends include:

- **EDW vendors have consolidated.** The EDW market has largely consolidated, though startup activity remains strong. Customer demand for one-stop shopping has driven consolidation and demand for appliance-based EDWs. Mergers and acquisitions brought appliance-based startups such as Netezza and Greenplum into larger solutions vendors (IBM and EMC, respectively). SAP and Sybase — established EDW vendors with limited appliance offerings — merged and began to ship next-generation appliances with innovative approaches such as reliance on all-in-memory architectures. During this two-year period, Oracle released three generations of its Exadata appliance product, with the latest incorporating hardware from its Sun Microsystems acquisition. And Microsoft, which acquired DATAllegro in mid-2008, finally began to ship its long-promised SQL Server 2008 R2 Parallel Data Warehouse appliance product with petabyte-scalability.

- **Established EDW vendors have released substantially new product families.** In the past two years, Teradata, IBM/Netezza, Oracle, Microsoft, and SAP/Sybase have released significantly new appliance product families. Several of them — in particular, Teradata, IBM/Netezza, and Oracle — have also launched growing families of industry-specific and/or business-function-focused analytic solution appliances that build on their core platforms, leveraging industry- and function-specific logical domain models (LDMs), enabling quick value for more complex or specific customer requirements.

- **The EDW appliance price war has gone into overdrive.** The EDW appliance market has commoditized as vendors flood the market with solutions, and budget-conscious customers maintain their laser focus on price-performance. Vendors continue to cut EDW list prices, with many now hovering around a starting-price threshold of $20,000 per terabyte of usable, raw data on the EDW appliance. Oracle and IBM/Netezza were prime movers in popularizing their price point with their latest-generation appliances, but Microsoft has done even better with a starting price of $11,000 per terabyte on its Fast Track appliances and $13,000 per terabyte on its new PDW (Parallel Data Warehouse) product. Across the market, other vendors have had to follow its lead — or justify their premium prices on various architectural and/or functional "secret sauce" factors.[4]

**Figure 2** Core Functional Components Of An EDW Appliance




57357 Source: Forrester Research, Inc.

## EDW Appliances Dominate, But Cloud Architectures Are Emerging Rapidly

Vendor consolidations, new product launches, and price wars are just the start. Many other trends have transformed the EDW platform market over the past two years. For this Forrester Wave, we have extended, modified, and adjusted the core evaluation criteria to address these trends of growing importance to EDW users:

- **Cloud/SaaS EDWs come into the enterprise.** Over the next two to three years, cloud and software-as-a-service (SaaS) EDWs will gain greater enterprise adoption as a complement or outright replacement for appliance- and software-based EDWs. A growing number of EDW vendors now offer cloud/SaaS offerings in diversified portfolios that usually include one or more appliances. Consequently, we've given greater weight to enabling technologies — such as shared-nothing massively parallel processing (MPP), platform virtualization, federated deployments, and the Hadoop Distributed File System — that form the bedrock for the emerging age of EDW clouds, both premises-based and public.

- **In-database analytics and transaction processing transform the EDW's roles.** Increasingly, EDWs are deployed at the heart of the next-generation enterprise application server, executing and integrating analytics and transactional computing functions. Clearly, "next best action" recommendation engines demand integration of these functions. The current best-of-breed EDW platforms support these application integration scenarios through features and interfaces such as MapReduce, in-database function pushdown, embedded statistical algorithm libraries, predictive modeling integration, decision automation, and mixed workload management.[5]

- **Social media drive unstructured data and real-time architectures into the EDW.** Marketing, sales, and customer service professionals everywhere integrate social media into their B2C customer-facing processes. A key application is social media analytic dashboards to monitor customer awareness, sentiment, and propensities in real time. To address these requirements, and the convergence of in-database data mining and text analytics, next-generation EDWs incorporate unstructured sources, hybrid storage architectures, in-memory execution, distributed cache, complex event processing, solid-state drives, geospatial data sets, and rich metadata.[6]

## EDW PLATFORMS EVALUATION OVERVIEW

To assess the state of the EDW platform market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top EDW vendors.

### Evaluation Criteria Focus On Present And Future Solutions

After examining past research, user need assessments, and vendor and expert interviews, Forrester developed a comprehensive set of evaluation criteria. We evaluated vendors against 56 criteria, which we grouped into three high-level buckets:

- **Current offering.** To assess the breadth and depth of each vendor's EDW product set, we evaluated each solution's architectural and operational functionality.

- **Strategy.** We reviewed each vendor's strategy to assess how each vendor plans to evolve its EDW solution to meet emerging customer demands. We also evaluated each vendor's go-to-market approach, commitment, and direction strategies.

- **Market presence.** To establish each EDW product's market presence, we evaluated each solution provider's company financials, adoption, and partnerships.

### Evaluated Vendors Must Meet Functional, Architectural, And Market Presence Criteria

Forrester included nine vendors in this assessment (several of which were involved in high-profile mergers and acquisitions in 2010): Greenplum (acquired by EMC), IBM's DB2-based InfoSphere EDW portfolio, Microsoft, Netezza (acquired by IBM), Oracle, SAP's Business Warehouse EDW portfolio, Sybase (acquired by SAP), Teradata, and Vertica Systems. Each of these vendors meet the following inclusion criteria:

- **Core EDW functionality.** We included vendors offering at least one solution with general availability by August 25, 2010 and providing at least the following core DW functional components, tools, or features: 1) management of structured analytic data in a storage engine/layer; 2) integration with one or more same-vendor and/or third-party database management system that is tuned for analytical workloads; 3) query optimization; 4) load optimization; and 5) query against relational or multidimensional data directly by Structured Query Language (SQL).

- **A standalone EDW solution.** We included products not technologically or functionally tied or limited to particular functional or horizontal applications (such as ERP or CRM), or to a particular business intelligence (BI), business performance solution (BPS), predictive analytics, ETL, or middleware stack, and that do not require embedding in other applications.

- **Significant EDW revenues.** We included vendors with at least US$30 million in EDW-specific revenues in the latest fiscal calendar year, where at least 80% of revenues derive from DW solutions, not professional services.

- **Sufficient market presence.** We included vendors with at least 100 in-production customers spanning more than one major geographical region (Americas, Europe/Middle East/Africa, and Asia Pacific); representing five or more industry verticals; collectively having more than 10% of installations with more than 100 users (developers, power users, and/or end users) each; and collectively having more than 10% of installations that serve applications that cross business group/departmental boundaries.

- **Interest among large enterprise and SMB buyers.** We selected vendor EDW solutions that were mentioned in at least 10% of Forrester's EDW-related customer inquiries, advisory, or consulting projects.

Note that several vendors released new EDW platform solutions after the cutoff date and before publication. Having been released after the cutoff date in the inclusion criteria, these particular solutions were not scored directly under "Current Offering," but indirectly in "Corporate Direction" and/or "Product Direction" under the "Strategy" Section. Figure 3 includes a detailed list of the vendor EDW platforms evaluated under "Current Offering" (see Figure 3). Any vendor EDW vendor platforms released after August 25, 2010 were evaluated under "Strategy."

**Figure 3** Evaluated Vendors: Product Information And Selection Criteria

| Vendor | Product evaluated | Date evaluated |
|---|---|---|
| EMC Greenplum | EMC Greenplum Database 4.0 | Q3 2010 |
| | EMC Greenplum Database Single-Node Edition | Q3 2010 |
| IBM | IBM Smart Analytics System 9600 R1 | Q3 2010 |
| | IBM Smart Analytics System 7700 R1 | Q3 2010 |
| | IBM Smart Analytics System 5600 R1 | Q3 2010 |
| | IBM InfoSphere Big Insights | Q3 2010 |
| Microsoft | Microsoft SQL Server 2008 R2 Enterprise & Data Center Editions | Q3 2010 |
| | SQL Server 2008 Fast Data Warehouse | Q3 2010 |
| Netezza (IBM) | Netezza TwinFin (3, 6, 12, 18, 24, 30, 36, 48, 72, 84, 96, 120) | Q3 2010 |
| | Netezza TwinFin i-Class | Q3 2010 |
| | Netezza Skimmer (1) | Q3 2010 |
| | Netezza Data Virtualizer | Q3 2010 |
| | Netezza Migrator | Q3 2010 |
| | Netezza Spatial | Q3 2010 |
| | Netezza Mantra | Q3 2010 |
| | Netezza Retail Analytic Appliance | Q3 2010 |
| Oracle | Oracle Database 11g | Q3 2010 |
| | Oracle Exadata Database Machine v2 | Q3 2010 |
| | Oracle Exadata Intelligent Warehouse Solutions | Q3 2010 |
| SAP | SAP NetWeaver Business Warehouse 7.30 | Q3 2010 |
| | SAP NetWeaver Business Warehouse Accelerator 7.20 | Q3 2010 |
| Sybase (SAP) | Sybase IQ 15.2 | Q3 2010 |
| | Sybase Analytic Appliance | Q3 2010 |

Source: Forrester Research, Inc.

**Figure 3** Evaluated Vendors: Product Information And Selection Criteria (Cont.)

| Vendor | Product evaluated | Date evaluated |
|---|---|---|
| Teradata | Teradata 13.10 | Q3 2010 |
| | Teradata Active Enterprise Data Warehouse 5650 | Q3 2010 |
| | Teradata Extreme Performance Appliance 4600 | Q3 2010 |
| | Teradata Data Warehouse Appliance 2650 | Q3 2010 |
| | Teradata Extreme Data Appliance 1600 | Q3 2010 |
| | Teradata Data Mart Appliance 551 | Q3 2010 |
| | Teradata Data Mart Edition | Q3 2010 |
| | Teradata Virtual Storage | Q3 2010 |
| | Teradata Agile Analytics Cloud | Q3 2010 |
| | Teradata Express for VMware Player | Q3 2010 |
| | Teradata Express for Amazon EC2 | Q3 2010 |
| Vertica Systems | Vertica Analytic Database 4.0 | Q3 2010 |

**Vendor selection criteria**

**Report at least US$30 million in EDW-specific revenues in the latest fiscal or calendar year, where at least 80% of those revenues are from EDW solutions, not professional services.**

**Offer at least the following functional components, tools, or features in at least one EDW solution that is generally available by August 2010:**
- Storage engine.
- Analytics-optimized database management system and/or integration with a third-party analytic DBMS.
- Query planning and optimization tools and data loading tools.

**Show that these components, tools, or features:**
- Support query, reporting, and analytics against relational or multidimensional databases.
- Constitute generic DW offerings that are not technologically or functionally tied or limited to particular functional or horizontal applications or to a particular business intelligence (BI) or analytic application stack.
- Are being marketed, sold, and implemented as integral features of a self-sufficient, general-purpose DW environment or platform that does not need to be embedded in other applications.

**Substantiate at least 100 in-production customers that span more than one major geographical region and represent five or more industry verticals.**

**Sufficient interest from Forrester clients, with at least 10% of EDW-related customer inquiries and/or advisory/consulting projects mentioning, addressing, or concerning the vendor's solutions.**

Source: Forrester Research, Inc.

## LEADING EDW PLATFORMS ARE SHIFTING TO A SOLUTION AND SERVICES FOCUS

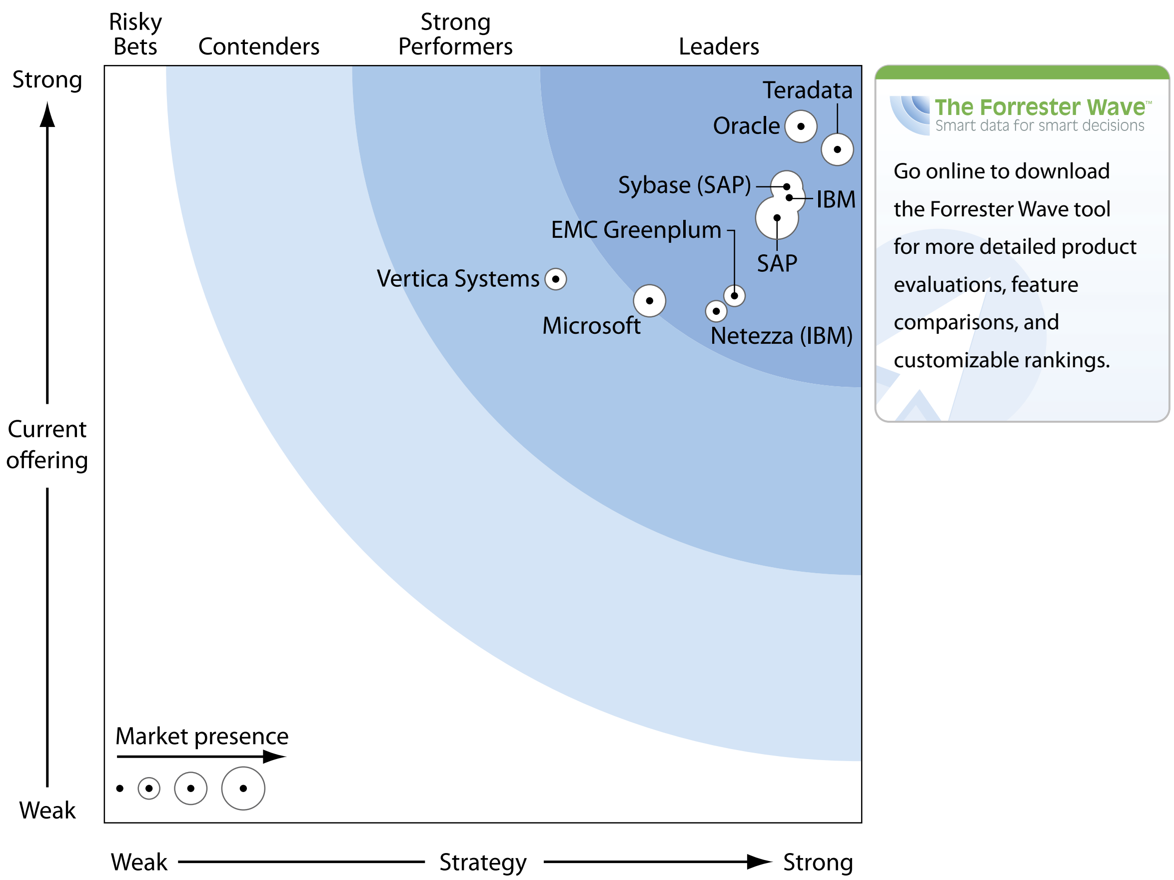
The evaluation uncovered a EDW market in which (see Figure 4):

- **Eight vendors lead the pack with mature petabyte-scale EDW offerings for large enterprises.** Oracle has built its Exadata EDW appliances into a formidable new product family. Teradata provides the most scalable, flexible, cloud-capable EDW solution portfolio in today's market. IBM has ramped up its EDW solution focus and now sets the pace on petabyte-scale Hadoop integration. Sybase, recently acquired by SAP, continues to enhance IQ's massively parallel columnar technology for real-time analytics. SAP is rapidly evolving and converging BW and BWA into a high-performance EDW with an in-memory, columnar infrastructure optimized for real-time analytics. EMC Greenplum has risen fast into the top tier of EDW platform providers through solid execution and continued innovation. Netezza, recently acquired by IBM, has integrated in-database analytics into its low-cost, high-performance EDW appliances. Microsoft has launched cost-effective EDW appliances for midmarket and large enterprises.

- **The other vendor offers a strong solution for core enterprise apps.** Vertica has rapidly gained enterprise customers with its high-performance all-columnar EDW architecture.

Use this evaluation of the EDW platforms market as a starting point only. We encourage readers to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

**Figure 4** The Forrester Wave™: Enterprise Data Warehousing Platforms, Q1 2011




Source: Forrester Research, Inc.

**Figure 4** The Forrester Wave™: Enterprise Data Warehousing Platforms, Q1 2011 (Cont.)

| | Forrester's Weighting | EMC Greenplum | IBM | Microsoft | Netezza (IBM) | Oracle | SAP | Sybase (SAP) | Teradata | Vertica Systems |
|---|---|---|---|---|---|---|---|---|---|---|
| CURRENT OFFERING | 50% | 3.48 | 4.13 | 3.45 | 3.38 | 4.60 | 4.00 | 4.20 | 4.45 | 3.59 |
| Architecture | 25% | 3.25 | 4.20 | 3.00 | 3.30 | 4.15 | 4.15 | 4.20 | 4.00 | 3.70 |
| Operational | 75% | 3.55 | 4.10 | 3.60 | 3.40 | 4.75 | 3.95 | 4.20 | 4.60 | 3.55 |
| STRATEGY | 50% | 4.16 | 4.52 | 3.60 | 4.04 | 4.60 | 4.44 | 4.50 | 4.84 | 2.98 |
| Go-to-market | 40% | 5.00 | 4.60 | 4.40 | 3.40 | 4.60 | 4.60 | 4.80 | 5.00 | 2.60 |
| Commitment | 20% | 3.80 | 3.40 | 4.20 | 3.40 | 3.80 | 3.00 | 3.40 | 4.20 | 4.20 |
| Direction | 40% | 3.50 | 5.00 | 2.50 | 5.00 | 5.00 | 5.00 | 4.75 | 5.00 | 2.75 |
| MARKET PRESENCE | 0% | 2.59 | 3.66 | 3.87 | 2.03 | 4.00 | 4.13 | 3.83 | 3.52 | 2.93 |
| Company financials | 10% | 3.00 | 4.00 | 4.00 | 2.00 | 5.00 | 4.00 | 3.00 | 4.00 | 3.00 |
| Adoption | 80% | 2.30 | 3.70 | 3.90 | 1.85 | 3.75 | 4.10 | 4.00 | 3.40 | 2.85 |
| Partnerships | 10% | 4.50 | 3.00 | 3.50 | 3.50 | 5.00 | 4.50 | 3.25 | 4.00 | 3.50 |

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc.

## VENDOR PROFILES

### Leaders: One-Stop EDW And Analytics Solution Shopping

The EDW Leaders — Teradata, Oracle, Sybase/SAP, IBM Smart Analytics System (ISAS), EMC Greenplum, Netezza (IBM), and Microsoft — provide robust support for large enterprise customers' decision-support needs. All offer mature, high-performance, scalable, flexible, secure, and robust EDW solutions that combine an analytics-optimized database with query optimization, fast loading, and mixed-workload management tools. Just as important, they each provide customers with an EDW platform pre-optimized to work with the vendor's own BI, ETL, and other tools (for Oracle, IBM, SAP, and Microsoft) or, for all these vendors, those of certified solution partners. Clearly, business process and information management professionals have strong EDW platform options to meet their most demanding requirements.[7] In fact, Forrester saw a tighter clustering of the leading EDW vendors in this Wave than in its predecessor from early 2009, illustrating that the market has become increasingly competitive and that feature disparities are diminishing.

- **Teradata offers the most scalable, flexible, cloud-capable EDW solution in today's market.** With a growing focus on midmarket EDW appliances and in-database analytics, Teradata increasingly positions its EDW offerings as the platform for partners to build analytic solution packages for specific industries and business functions. And through its significant investment to build, deepen, and diversify its already formidable EDW-focused consulting organization, Teradata stands poised for further growth and diversification to address new enterprise analytic requirements.

Teradata has many differentiators, including one of the widest sets of EDW packaging, licensing, pricing, and professional service options on the market, as well as certified integration with a broad range of partner application and middleware components. Teradata provides the ability to deploy an EDW on several form factors, including as licensed software, as pre-integrated appliances, as cloud/SaaS services, and virtualized offerings. It provides appliance-based EDW solutions for various customer size and functionality requirements. It provides sophisticated functionality for in-database analytics, caching, compression, partitioning, indexing, cost-based query optimization, and workload management. And it provides sophisticated in-database analytics, LDMs, user-defined functions (UDFs), and stored procedures for EDW extensibility and customization.

However, Teradata's EDW solutions are weak in database integration, in that they only integrate with a single, proprietary DBMS (increasingly, enterprise customers require a choice of DBMS within their EDW infrastructure, and also the ability to extend and optimize their EDW DBMS to their specific requirements, a requirement that proprietary closed-source DBMS architectures make difficult to address). Also, because Teradata lacks a broad range of application and middleware products that integrate out of the box with its EDW offerings, it must rely on partners for many supplementary applications, infrastructure, and tools. It has few cloud/SaaS partners. And it only provides row-based data persistence, lacking native columnar or file-based persistence offerings.

Nevertheless, Teradata has strong revenues, installed base, momentum, and partnerships in the EDW market. It increasingly targets the midmarket with new products such as the 2600-series EDW appliances. It continues to invest in new, differentiating technologies and approaches, including cloud, virtualization, geospatial, real-time, in-memory, in-database analytics, MapReduce, Hadoop, social media, unstructured data, and solid-state drive (SSD). It has deepened its focus on price-performance and total cost of ownership (TCO). Plus, it has established partnerships with vendors such as SAS Institute and KXEN in support of in-database analytics. And it continues to expand its solution-based partner-focused "Accelerate" initiative that combines Teradata analytic applications with offerings from key partners such as SAS. It also continues to build, deepen, and diversify its already formidable EDW-focused consulting organization.

Teradata's mature product portfolio, coupled with intensifying innovation and a renewed focus on price-performance, gives it a competitive advantage. Expect Teradata to leverage these strengths, plus its expert consulting organization, to grow its share of the EDW market among large enterprises and midmarket customers.

- **Oracle has built its Exadata Database Machine into a formidable new product family.** With an increased focus on embedding the Exadata platform into its full range of application and middleware products, Oracle positions its EDW offerings as a scalable, high-performance integration platform for analytic and transactional applications. Through aggressive migration of its large DBMS installed base to the Exadata product family and the beginnings of a more solution-oriented packaging approach, Oracle clearly intends to dominate this critically important market segment.

  Oracle has many EDW differentiators. For starters, all Oracle-based EDW solutions incorporate its robust enterprise DBMS. Oracle provides the ability to deploy an EDW on any of several form factors, including as licensed software, pre-integrated appliance (Exadata), cloud/SaaS services (in Amazon), and virtualized offerings. Oracle-based EDWs, implemented on the Exadata appliance platform, can scale out to a petabyte-scale grid of intelligent storage nodes, execute massively parallel in-database analytics, and support real-time analytics through integrated flash cache. Oracle provides considerable extensibility and customization of EDWs through in-database analytics, LDMs, UDFs, and stored procedures. Oracle Exadata supports execution flexibility through a hybrid of in-memory, flash caching, and disk-based execution in all EDW tiers. And, among other differentiators, Oracle provides rich caching, efficient compression, flexible partitioning, powerful indexing, and sophisticated cost-based query optimization capabilities in its core database.

  However, Oracle's EDW solutions are weak in database integration, in that its offerings integrate with just one proprietary DBMS (increasingly, enterprise customers require a choice of DBMS within their EDW infrastructure, and also the ability to extend and optimize their EDW DBMS to their specific requirements, a requirement that proprietary closed-source DBMS architectures make difficult to address). Also, though it competes well in deployment flexibility, Oracle has optimized its EDW offerings for centralized deployments and discourages customers from deploying the database in hub-and-spoke or federated EDW topologies. In addition, Oracle has not placed a high priority on deepening support for unstructured content or Hadoop in its Exadata EDW road map.

  Nevertheless, Oracle has strong revenues, growth, installed base, and partnerships in the EDW market. Oracle has demonstrated its corporate direction in the EDW market through a highly differentiated go-to-market message, predicated on OLTP and analytics integration. It has kept up a vigorous acquisition and/or partnering push to strengthen its EDW solution portfolio, including recent acquisitions such as Sun, Silver Creek Systems, and GoldenGate. It aggressively prices and pushes Exadata-based solutions across all customer-size segments, geographies, and vertical industries. It is investing in in-database analytics, cloud, virtualization, columnar, real-time, in-memory, and SSD technologies for continuing enhancement of the Exadata product family. And, among other differentiators, it offers a growing Exadata analytic solution appliance family packaged for specific vertical industries and business functions.

Oracle's predominant position in the enterprise DBMS market, coupled with deep portfolio of application and middleware solutions, gives it a competitive advantage. Expect Oracle to leverage these strengths, plus continue to evolve its highly scalable, cost-effective Exadata product family — growing its share of the EDW market among all market segments.

- **Sybase, acquired by SAP, continues to enhance IQ for real-time analytics.** With a deepening focus on in-memory execution, Sybase is expanding its in-database analytics libraries to address new opportunities across many vertical markets. Through its central role in catalyzing SAP's move toward a completely in-memory, columnar EDW platform, Sybase plays a pivotal role in helping its parent fend off aggressive assaults from Oracle and others in the EDW market. In this Forrester Wave, we evaluated SAP Sybase's EDW value proposition separately from the pre-acquisition EDW portfolio of its new parent.

SAP Sybase offers many differentiators in the EDW market. It provides a best-of-breed real-time analytics solution portfolio that incorporates IQ's mature columnar database technology. It ships in software and appliance form factors, with midmarket-focused pricing on Sybase's EDW appliances. Also, its IQ-based offerings support parallel scale-out in the query/access tier through a robust grid technology, supplementing the ingest-tier parallelism supported by the vendor's ETL technology. The vendor integrates its EDW offerings with its data modeling and data integration tools. Furthermore, SAP Sybase's EDW offerings run on a broad range of software and hardware platforms. It supports considerable extensibility and customization through in-database analytics, LDMs, UDFs, and stored procedures. And, among other differentiators, it supports execution flexibility through a hybrid of in-memory/caching and disk-based execution in all EDW tiers.

However, SAP Sybase has not yet demonstrated a ramped-up commitment to professional services focused on EDW opportunities. And it has no cloud/SaaS partners focused on EDW.

Nevertheless, SAP Sybase stakes claim to a strong installed base, customer-size segment diversification, geographic momentum, and partnerships (software and professional services) in the EDW market. It promotes a differentiating go-to-market message focused on in-memory, real-time, columnar, cloud, parallel processing, cloud, virtualization, predictive analytics, complex event processing, solid-state drive, Hadoop, unstructured data, mobile access, and OLTP/analytics integration technologies. It invested significantly to expand its EDW presence in the midmarket customer segment and diverse vertical markets in addition to its stronghold in financial services. It has stepped up a focus on price-performance, scalability, TCO, and flexible deployment of the IQ portfolio of EDW solutions. It has expanded its partner-focused in-database analytics strategy. SAP Sybase has intensified efforts to expand its presence in the OEM market. And it has shifted its go-to-market strategy to focus on solution-based EDW offerings for new vertical markets and use cases.

Sybase's mature columnar EDW platform, coupled with a fresh injection of development capital from new parent SAP, gives it a competitive advantage. Expect SAP Sybase to leverage these strengths, plus intensify its focus on in-memory and in-database analytics, to grow its share of the EDW market among large enterprises requiring robust real-time analytics solutions.

- **IBM has ramped up its EDW focus and sets the pace on petabyte-scale Hadoop integration.** With an increased focus on targeted solution-based EDW packaging, IBM positions its EDW offerings as feature-complete quick-value analytic deployments with customer- and partner-extensible domain models. In this Forrester Wave, we evaluated IBM's EDW value proposition for IBM Smart Analytics System/Big Insights separate from the newly acquired Netezza product portfolio.

  IBM offers many EDW differentiators. Its (IBM Smart Analytics System) product family incorporates a robust enterprise database and deploys an EDW as licensed software, as pre-integrated appliances, as cloud/SaaS services, and virtualized offerings. IBM's Smart Analytics System appliances can scale out in a cluster supporting hundreds of terabytes, in diverse EDW and BI topologies, and in full integration with IBM's InfoSphere, Cognos, SPSS, WebSphere, FileNet, Rational, Optim, and other portfolios. Enterprises can deploy IBM Smart Analytics System offerings on diverse hardware and software platforms, supporting mixed workloads of reporting, ad hoc query, OLAP, in-database analytics, batch ETL, and real-time decision support transactions. It supports a wide range of interface standards, including native support for MapReduce and Hadoop APIs. It provides strong extensibility and customization through in-database analytics, logical domain models, user-defined functions, and stored procedures. And, among other differentiators, it offers world-class EDW consulting and system integration through its Global Business Services' Business Analytics and Optimization (BAO) professional services organization.

  However, IBM's EDW solutions show a weakness in database integration by integrating with only one proprietary DBMS: DB2 (increasingly, enterprise customers require a choice of DBMS within their EDW infrastructure, and also the ability to extend and optimize their EDW DBMS to their specific requirements, a requirement that proprietary closed-source DBMS architectures make difficult to address).

  Nevertheless, IBM can claim strong revenues, installed base, and partnerships (hardware, software, and professional services) in the EDW market. It continues to make a substantial financial commitment to EDW-related R&D, sales, and support. It has focused on continuing improvements in price-performance, scalability, flexibility, workload management, and TCO. It has achieved considerable pacesetting innovation in in-database analytics, Hadoop, real-time analytics, decision automation, virtualization, social media analytics, content analytics, complex event processing, cloud computing, in-memory architectures, and SSD technology. And it offers the most comprehensive portfolios of EDW-based analytic solution appliances on the market, including both its IBM Smart Analytics System- and TwinFin-based offerings.

IBM's comprehensive analytics product portfolio, coupled with its formidable GBS BAO professional service organization, gives it a competitive advantage. Expect IBM to leverage these strengths, plus its formidable global R&D organization, to deliver its solutions in every conceivable EDW market segment going forward.

- **SAP is rapidly converging BW and BWA into a high-performance EDW platform.** With a focus on massively parallel scale-out through its HANA technology, SAP positions BW/BWA as an increasingly scalable platform for heterogeneous data analytics environments of SAP and non-SAP solutions. Through its acquisition of Sybase and rapid delivery of the promised next-generation HANA appliance, SAP distances itself from the slow-moving competitor of yore and becomes a technology pacesetter in this segment. In this Forrester Wave, we evaluated SAP's EDW value proposition for BW/BWA separately from the newly acquired Sybase product portfolio.

  Prior to the recent release of HANA, SAP's key EDW differentiator with BW was its ability to persist data to a choice of database management systems (DBMSes) (IBM DB2, Microsoft SQL Server, Oracle Database, Teradata, plus the open source MaxDB). Additionally, SAP productizes its EDW solutions as software (SAP NetWeaver BW), appliance (BWA only, front-end), and SaaS offerings (through SAP Business ByDesign). Furthermore, SAP supports row-based storage (through third-party databases and, now, through its own Sybase ASE) and, via HANA and BWA, columnar/cache persistence. These offerings integrate deeply into the vendor's service-oriented architecture (SOA), application platform, middleware, BI, performance management, and desktop software. Another differentiator is its native support for both relational and dimensional logical storage, including integration of in-memory/cache and SSD option for physical data persistence. It natively integrates with multiple DBMSes — Oracle, IBM, Microsoft, Teradata, HP Neoview, SAP MaxDB, SAP/Sybase IQ — which run on multiple hardware and software platforms. And it provides a broad range of EDW professional services through its own sales force and through a global partner ecosystem.

  However, SAP lacks native integration of MapReduce and Hadoop integration into BW, and its HANA technology is a 1.0 release that has not converged into the BW and BWA platforms and does not address the price-competitiveness issue that prevent SAP from competing head-on with Oracle Exadata and IBM Netezza TwinFin for new accounts.

  Nevertheless, SAP can claim a large installed base of EDW customers, concentrated in large enterprises, across a wide range of verticals, and distributed globally across geographies, with deepening penetration of the midmarket. It shows strong growth, a large installed base, vertical diversification, customer-size segment momentum, and partnerships in the EDW market. Its differentiating go-to-market message for EDW focuses on in-memory, real-time, columnar technologies. It has an aggressive acquisition and partnering push around EDW — its most noteworthy recent move was acquiring Sybase, but it also shows increased attention to hardware partnerships for the in-development HANA EDW appliance platform. It has a strong focus on price-performance, scalability, TCO, and flexible deployment in its EDW portfolio. SAP has a comprehensive partner-focused in-database analytics strategy. And it is making deep investments in cloud, virtualization, real-time, in-memory, columnar, predictive analytics, CEP, SSD, Hadoop, unstructured data, mobile access, and OLTP/analytics integration technologies.

SAP's recent acquisition of Sybase, and alignment of the BW and IQ product portfolios going forward, will help the company to innovate and even acquire new EDW business with non-SAP shops. Expect SAP to leverage these strengths, and to build out its in-memory columnar HANA-based EDW platform, to differentiate itself from Oracle, IBM/Netezza, and other formidable rivals and to grow its share of the EDW market among large and midmarket customers.

- **EMC Greenplum has risen fast into the top tier of EDW platform providers.** With an increased focus on hybrid storage architectures, EMC Greenplum positions its offerings for private clouds and for any enterprise requirements that demand elastic provisioning of very large EDWs.

  EMC Greenplum offers several differentiators in the EDW arena. It provides flexible data storage, leveraging a hybrid of row-oriented, column-oriented, dimensional, and file-based storage. It provides the ability to deploy an EDW on any of several form factors, including as licensed software, as pre-integrated hardware/software reference configurations from various partners, as virtualized VMware deployments, and as hosted solutions from Greenplum partners. It provides native support for MapReduce and for integration with external Hadoop clusters. And it has made deep investments in proactive high availability, mixed workload management, real-time analytics, virtualization, cloud, in-database analytics, flexible storage, solution-based packaging, and MapReduce/Hadoop integration.

  However, EMC Greenplum's EDW solutions integrate with a limited range of hardware platforms, include weak design and deployment tools, lack the ability to execute in-memory, and incorporate no information life-cycle management tools. EMC Greenplum also lacks an aggressive effort to penetrate the EDW midmarket, and it has not emphasized TCO or indicated any deep investment in in-memory, SSD, or unstructured data technologies.

  Nevertheless, EMC Greenplum demonstrates strong growth, geographic diversification, vertical momentum, and partnerships in the EDW market. It has penetrated into new geographies such as China and India and new vertical industry segments such as government, insurance, and healthcare. Also, by establishing a new Data Computing Division soon after acquiring Greenplum and by rapidly rolling out a new high-performance appliance optimized for its own storage platform, EMC demonstrated a serious commitment for Greenplum to challenge Teradata, IBM, Oracle, and other established EDW vendors for banner accounts.

EMC Greenplum's strong scale-out parallelism, coupled with its steady innovation and strong cloud focus, gives it a competitive advantage in the hypercompetitive EDW segment. Expect EMC Greenplum to leverage these strengths, plus fresh commitment of growth capital from its new parent, to grow its share of the EDW market among large enterprises that have traditionally flocked to rivals such as Teradata, Oracle, and IBM.

- **Netezza, acquired by IBM, has integrated in-database analytics into its EDW appliances**. With an increased focus on integrating a comprehensive library of statistical, mathematical, and other functions into its appliances, Netezza positions its offerings as extensible platforms for advanced analytics. In this Forrester Wave, we evaluated Netezza's EDW value proposition separately from the pre-acquisition EDW portfolio of its new parent.

  Netezza lays claim to several differentiators in the EDW arena (and its acquisition by IBM adds still another layer of differentiators associated with being one component of a much larger EDW portfolio). Netezza/IBM provides a mature, field-proven EDW appliance product family. It offers a wide range of capacity-tiered appliances under a flexible capacity- and performance-based pricing approach. It offers an intelligent storage layer that performs query-predicate processing in field programmable gate arrays, thereby speeding the streaming of data from disk into the host processors in its appliances. It provides a hybrid physical data persistence/storage model that leverages both row- and column-based approaches to enable fast, scalable query processing. It supports a wide range of deployment scenarios, including hub-and-spoke (with its Skimmer appliances in front of TwinFin) and federated (with its Data Virtualizer solution, developed in conjunction with Composite Software). It integrates a powerful in-database analytics framework and embedded function libraries in the TwinFin platform. And, among other differentiators, it works with a growing range of partners who provide Netezza-based analytic solution appliances for diverse vertical industries and business functions, as well as offering its own branded offerings for verticals such as retail.

  However, Netezza is weak on EDW packaging because it is entirely focused on appliances (increasingly, enterprise customers require a choice of form factors — software, appliance, cloud/SaaS, and/or virtualized — to acquire and deploy an EDW; Netezza has SaaS/hosting partners, but no Netezza-branded SaaS offering of its own). And Netezza lacks its own consulting offerings (though new parent IBM has ample offerings in that area).

  Nevertheless, Netezza's new parent IBM offers the full range of EDW form factors, and, as noted, some cloud/SaaS partners base their services on Netezza appliances. Likewise, IBM's GBS BAO professional service force plugs a large gap in Netezza's go-to-market offerings. Furthermore, even prior to the acquisition by IBM, Netezza had continued to grow its foothold in the EDW market, focusing on large enterprise accounts. Its acquisition by deep-pocketed IBM should help to deepen its market presence even further across diverse verticals and geographies. Also, injection of capital by its new parent should help Netezza strengthen its already considerable investments in R&D and sales, to bolster its technical support force, to significantly ramp its professional service team and ecosystem, and to expand its already impressive roster of analytic solution appliance partners. Expect to see a growing range of Netezza-based IBM-branded analytic solution appliances that leverage the parent's full range of analytics and information management brands, including Cognos, SPSS, Unica, and InfoSphere. And expect to see Netezza, under IBM, invest considerable resources into developing cloud, virtualization, real-time, in-memory, SSD, unstructured, geospatial, and MapReduce/Hadoop technologies.

Netezza's incorporation into IBM's substantial information management and analytics solution portfolio, coupled with IBM's professional services force, gives it a competitive advantage. Anticipate that Netezza will leverage these strengths, plus continue to develop its TwinFin i-Class advanced-analytics appliances and solution-oriented offerings, to grow its share of the EDW market among large and midmarket accounts.

- **Microsoft has launched cost-effective EDW appliances for midmarket and large enterprises**. With an increased focus on massively parallel EDW scale-out, Microsoft positions its EDW offerings as the foundation for self-service BI for information workers who rely on SQL Server.

  Microsoft's EDW portfolio is a strong platform for most mainstream enterprise requirements. The recent release of PDW now enables Microsoft customers to scale out their SQL Server-based EDWs well beyond tens of terabytes into a petabyte-scale distributed grid. One of Microsoft's key EDW solution differentiators is its robust enterprise database, SQL Server, which is in widespread global deployment in organizations of all sizes. Also, customers can deploy Microsoft SQL Server flexibly in diverse EDW and BI topologies, as well as integrate the DBMS with the vendor's diverse application platform, middleware, BI, performance management, and desktop software solutions. Furthermore, SQL Server supports diverse BI, query, OLAP, advanced analytics, and real-time workloads. It provides sophisticated caching, compression, partitioning, indexing, cost-based query optimization, and workload management functionality. And it offers strong EDW execution flexibility leveraging disk-based and in-memory persistence.

  However, Microsoft's EDW solutions show up weak in database integration, in that they only integrate with a single row-based DBMS, SQL Server, which is proprietary (increasingly, enterprise customers require a choice of DBMS within their EDW infrastructure, and also the ability to extend and optimize their EDW DBMS to their specific requirements, a requirement that proprietary closed-source DBMS architectures make difficult to address). It also only integrates with a single software platform (Microsoft Windows). Microsoft has not provided any clear differentiating go-to-market message around its EDW strategy. It has not focused on penetrating new geographic and vertical segments with its EDW offerings. It has neither developed the in-database analytics features of its EDW offerings nor implemented MapReduce/Hadoop interfaces. The vendor hasn't embedded a statistical library in the EDW platforms, nor has it aligned or converged its PDW and SQL Azure strategies, and it hasn't addressed how its

EDW platforms will evolve to handling unstructured content. Plus it has not pursued a solution focus in its packaging and partnering of EDW-based solutions.

Nevertheless, Microsoft shows strong EDW revenues, installed base, and partnerships (hardware, software, and professional services). The vendor maintains a respectable level of financial commitment to EDW-related R&D, sales, and support. In recent years, it has acquired vendors (most notably, DATAllegro, Stratature, and Zoomix) and partnered with others (most notably, HP) to build up its EDW solution portfolio and feature set. Microsoft has demonstrated a strong product direction in EDW through its price-performance and TCO focus for PDW and Fast Track appliances; through scalability and flexibility emphasis with the PDW; and with its investments in real-time, in-memory, SSD, cloud, columnar, and virtualization technologies. It has focused on building a substantial professional services team or ecosystem around EDW. And, by finally delivering PDW and working with partners on appliances that leverage PDW and its Fast Track reference architectures, Microsoft demonstrates that it intends to provide a family of EDW appliances to support modular growth from low-end to petabyte-scale applications.

Microsoft's substantially beefed-up EDW platform — along with its strong presence in the DBMS, BI, portal, spreadsheet, collaboration, and browser markets — provides a strong competitive advantage. Expect that Microsoft will leverage these positions to deliver its growing EDW solution stack, including future cloud-based EDW services, into fresh opportunities across diverse market segments.

### Strong Performer: Scalable EDW Platforms From A Proven Vendor

EDW platform Strong Performer Vertica Systems aggressively challenges the Leaders with a scalable product for large enterprises and the midmarket. Vertica offers an appliance-based EDW product and has aggressively improved its price-performance through massively parallel architectures and optimized storage layers. The vendor provides business process and information management professionals with solid platforms that can support a broad range of BI and advanced analytics requirements.

- **Vertica has rapidly gained enterprise customers with its high-performance EDW architecture.** With an increasing focus on performance, scalability, optimized storage, and in-database analytics, Vertica Systems positions its EDW offerings as a robust platform for the most demanding enterprise analytics.

  Vertica stakes claim to many differentiators in the EDW arena. It provides EDW offerings in all principal form factors: software, appliance, cloud/SaaS, and virtualized. Its Vertica Database runs on multiple software and hardware platforms. The vendor supports extensibility and customization through in-database analytics, LDMs, UDFs, and stored procedures, with an integrated library of statistical, data profiling, data sampling, data preparation, data mining, predictive analytics, spatial, and other functions. And it provides policy-oriented visual tooling for dynamic management and resource provisioning of mixed workloads across distributed deployments.

However, Vertica EDW solutions only support disk-based execution. Also, it has few hardware partners for its appliance offerings. It lacks a clear emphasis on EDW price/affordability and has not made a significant investment in real-time, in-memory, or unstructured data technologies. It does not hold a high-profile user and/or partner conference around EDW, and it has not actively invested in building up an internal consulting organization or a significant consulting, system integration, or professional services ecosystem.

Nevertheless, Vertica has strong growth and momentum in the EDW market. It has maintained a clear focus on improving the scalability, performance, deployment flexibility, and TCO of its EDW offerings. It offers a differentiating go-to-market message founded on columnar technology's price-performance advantages. It has an active acquisition and partnering push to broaden the application functionality and deployment options for its appliance and SaaS/cloud offerings. Vertica has made a growing investment in in-database analytics, MapReduce, Hadoop, SSD, cloud, and virtualization technologies. It has ramped up solution-focused partnerships with software and hardware vendors. And it has invested in sales and marketing in new geographies such as Asia Pacific and Japan.

Vertica's customer momentum, coupled with its focus on enhancing its columnar-based EDW architecture, gives it a competitive advantage. Expect that Vertica will leverage these strengths, plus partnerships to expand its cloud-based EDW value proposition, to grow its share of the market among large enterprises looking for a high-performance massively parallel EDW. We strongly believe that Vertica will be acquired in the next one or two years by a vendor of complementary data analytics solutions.

## SUPPLEMENTAL MATERIAL

### Online Resource

The online version of Figure 4 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

### Data Sources Used In This Forrester Wave

Forrester used a combination of the following data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.

- **Product demos.** We asked vendors to conduct demonstrations of their product's functionality. We used findings from these product demos to validate details of each vendor's product capabilities.

## The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and we encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

## ENDNOTES

1 The EDW is the heart of your agile business process environment. Agile development of business intelligence, advanced analytics, and other customer-facing applications requires a new generation of model and metadata-driven tooling, as well as a new generation of EDW that integrates with these tools. Next-generation development tools enable rapid, iterative prototyping and development of analytic views, reports, dashboards, data mining models, subject-oriented data marts, and other artifacts and deliverables. For more details on this trend and emerging tool market, see the April 22, 2010, "Agile BI Out Of The Box" report.

2 Predictive models are the heart of the new agile business process platform that has the EDW at its core. Predictive models drive the killer application of the agile multichannel CRM process: real-time, behaviorally targeted "next best offers" that customer service agents make to diverse customer segments. These predictive models may incorporate some blend of data mining, text analytics, social network analysis, and other approaches to identify how likely various customers are to respond favorably to various offers. For more details, see the October 22, 2010, "Zero In On CRM HEROes: The Role Of Social Network Analysis" report.

3 The EDW appliance segment has begun to eclipse traditional software-centric solutions in customer mindshare, as Forrester clearly sees from customer inquiries, consulting, and research. The EDW appliance segment has undergone considerable change in the short period since the first Forrester Wave on this segment was published. Most of the major vendors have released substantially new, improved, re-architected EDW appliance product platforms. Several startup EDW vendors have risen into the industry's

top tier of EDW platform providers. Mergers and acquisitions have narrowed the list of leading providers. Forrester plans to publish an update to this Forrester Wave in Q1 2011. See the February 6, 2009, "The Forrester Wave™: Enterprise Data Warehousing Platforms, Q1 2009" report.

4 An EDW appliance supports TCO reductions while providing a cost-effective platform for growth and evolution. Today's EDW appliances support easier scaling and evolution of your analytics environment; provide fast-deploy platforms for consolidating BI, reporting, dashboarding, and other operational analytics platforms; supports integration of analytic applications into a wider range of business processes and decision scenarios; and provide a focal point for key data management initiatives, such as data governance, data quality, and master data management. For further details, see the November 10, 2010, "The ROI Of Data Warehousing Appliances: Flexibility" report.

5 In-database analytics is where the EDW and advanced analytics are joined at the hip. In-database analytics supports more pervasive embedding of predictive models in business processes and mission-critical applications. With in-database analytics, enterprises migrate their predictive analysis (PA), data mining (DM), and other compute-intensive analytic functions from separate, standalone applications to execute in the enterprise data warehouse (EDW). Business process and applications (BP&A) professionals should implement in-database analytics in conjunction with ongoing efforts to consolidate and scale their EDW. For more details, see the November 12, 2009, "In-Database Analytics: The Heart Of The Predictive Enterprise" report.

6 Social media is an important new source of rich intelligence for customer analytics, which has long been a key application domain for advanced analytics. Data mining, text analytics, and complex event processing are converging to support rich social media analytics, with the next-generation EDW as a focal point for deployment. Social media analytics addresses the decision-support needs of various customer-facing processes (sales, marketing, customer service, etc.). As companies bring social architectures into all the business process platforms, we'll see social media analytics also infused into back-office processes such as finance, risk management, and operations, as well as into the BI platforms on which decision support in all processes depends. For details on the growing penetration of advanced analytics in the BI platform, see the August 18, 2009, "Business Intelligence (BI) Polishes Its Crystal Ball" report.

7 Leaders and Strong Performers in this Forrester Wave all implement, or are aggressively developing, next-generation EDW platforms that push the scalability and performance envelope without sacrificing the agility to optimize this critical infrastructure to ever-changing analytic workloads. The industry is aligning around some key EDW architectural approaches, including deploying 64-bit multicore EDW processing nodes, scaling out through massively parallel processing (MPP), pushing query processing to grid-enabled intelligent storage layers, applying efficient compression in the storage layer, and deploying preconfigured high-end EDW appliances. For more details, see the June 3, 2009, "Massive But Agile: Best Practices For Scaling The Next-Generation Enterprise Data Warehouse" report.

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