



Data Warehouse Success on Sun System Success Story — Cisco Systems, Inc.

Cisco Systems, Inc.

Success Story

Customer Highlights

Customer

Cisco Systems, Inc.

Industry

Networking

Business Issues

- Rapid growth required business decisions based on the best possible information
- Need to base individual department decisions on analysis of the entire enterprise's activities

Business Results

- All departments benefit from cross-departmental analysis
- Key decisions facing the company made more quickly
- Growth continues unimpeded

Data Warehouse

Data Sources: Oracle Financials

Data Warehouse Server:

Sun™ Enterprise 6000 (12-way)

Operating System: Solaris 2.5.1

RDBMS: Oracle 3.2.3.0

Query/Analysis Tools:

Andyne GQL (ad hoc), Seagate Holo (OLAP)

Few companies, even in Silicon Valley's success-laden landscape, can match the achievements of Cisco Systems, Inc. Barely 13 years old, the computer networking pioneer has reached \$7 billion in revenues and consistently leads its industry in profitability and growth. Over 11,000 employees populate the firm's sprawling San Jose, CA campus and satellite locations worldwide.

Much of this success derives from the boom in network computing, where Cisco's software and hardware products help users access information easily and ubiquitously over the Internet as well as local area networks. But this is a frenzied marketplace with hungry competitors, where making the wrong business decisions could turn the spiral downwards. In order to assure that decisions are made with as much advance knowledge of outcomes as possible, including the impact of a department's actions on another department's results, Cisco has implemented a rarity anywhere in industry — a truly enterprise-wide data warehouse. The Sun-based Cisco Data Warehouse (CDW) has been in production for three and a half years and is now an indispensable resource in the company's plan to reach \$20 billion.

One Man's Vision Yields a Tool for the Enterprise

The genesis of the CDW was the vision of Chief Information Officer Pete Solvik, whose experiences with previous employers led him to champion the adoption of data warehousing technology at Cisco.

Solvik's notion was to go one better than most existing data warehouses, where use is normally confined to a single department or function. He knew that any one department's actions could have profound impact on other departments' fortunes. Cutting the price of a product might not only boost bookings for the Sales Department making the pricing decision, but also present impossible demands for an unprepared Manufacturing Department. Expediting the manufacturing process by introducing new tools or techniques might have the desired effect for Manufacturing, yet create havoc for a Field Service Department which has not geared up for increased installation services demand. Only by including all departments in the CDW can cross-functional results of decisions be properly foreseen, Solvik knew, and only then can data warehousing technology bear its full fruit.

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— Tim Merrifield,
Information Systems Manager



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A Dedication to Openness Leads to the Selection of Sun

Cisco's legacy as an open systems leader made the choice of a data warehousing platform straightforward, as explained by Tim Merrifield, Information Systems Manager for Cisco's Cross Functional Support Team. "We have always been 100% open systems and UNIX®, where Sun is the undisputed leader," he began. "Furthermore we are 100% an Oracle shop. We use Oracle Financials to run our business, and all our databases are on Oracle. Sun's and Oracle's products dovetail nicely, especially in their exploitation of parallel processing. Add to that the positive experiences we'd had with Sun and their favorable pricing, and there was little doubt that Sun was the right vendor for the CDW."

A Four-Tier Data Warehouse Architecture Yields Top Performance

The CDW's architecture matches the sophistication level of Cisco's overall data warehousing strategy. Four tiers comprise the system. The first, or source, level consists primarily of Oracle Financials, augmented by sales orders, revenue reports, field service data, and other miscellaneous data sources.

At the second level lies the Global Extract System (GES), a Sun™ Enterprise™ 6000 server which extracts data from these sources and performs data preparation, de-duping, and table copying.

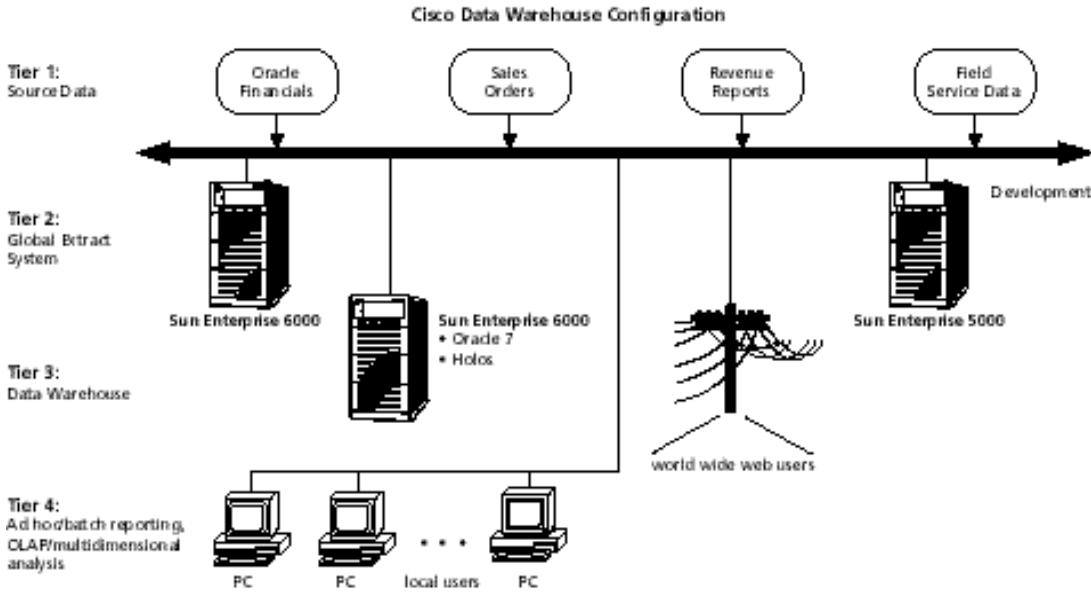
Every night the data warehouse proper, Cisco's third tier, processes two gigabytes of new information from GES. Here lies a second Sun Enterprise 6000 server on which the database has grown to 150 gigabytes in size, mirrored three ways for a total of 450 gigabytes of storage. This data is managed not only by Oracle 7 but also by Seagate Holos from Seagate Software, which was chosen as Cisco's On Line Analytical Processing tool because of its strong functionality and the fact that it runs well on Sun. Seagate Holos organizes data into "cubes" for speed without sacrificing the universal data access that is the CDW's hallmark.

At the fourth tier, users armed with personal computers perform their analysis using a combination of tools. For ad hoc queries, which comprise 75% of accesses, GQL from Andyne Corporation presents highly graphical answers to analysts' questions. Meanwhile Seagate Holos tools support multi-dimensional analysis on a read-only basis for intensive "slicing and dicing" batch queries. The user population of approximately 1000 analysts, which is growing at a rate of 1% per month, is split 75:25 between local and remote users.

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— *Tim Merrifield,*
Information Systems Manager

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Java™ currently plays a small but important role, where Java applets are employed in preparing web-based executive management reports. Java's role is expected to expand greatly in the future.

A third server, a Sun Enterprise 5000 server, is employed off-line for development.

Merrifield credits the system's superb performance to a combination of the Sun platform's power, the degree of integration between the system's hardware and software components, the CDW's overall architecture, the excellent system administration and DBA support provided by Cisco's operations team, and in no small measure to the value added by Cisco's products in assuring smooth network communications.

Continue Scaling with Sun

Cisco's rationale for choosing Sun in 1994 remains just as valid today. "As we've grown this system we repeatedly appreciated Sun's scalability, configurability, and performance," said Merrifield. "The entire system and Solaris™ in particular have proven to be exceptionally reliable and stable. Never has a hardware or operating system issue detained us from what we wanted to do."

The benefits of the CDW are sweeping, as testified best by Cisco's record for seemingly limitless growth. Clearly the right business decisions are being made. "It would be easy to cite a head count requirement reduction on the order of dozens of

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people as a benefit of the system,” said Merrifield, “but we don’t operate that way. Our approach is to continue to hire excellent people and to arm them to do their jobs more effectively. The CDW lets our analysts spend their time doing what they were hired for, drilling deeper and deeper for ever more reliable results. The bottom line of the CDW is that we couldn’t live without it.”

Broad and deep as the CDW is, demands for new functionality never cease. Even though each department is required to fund any new development it requests, Merrifield’s “in basket” remains flush with new requirements. “We plan to just keep going deeper and deeper into new functionality, continuing to scale with Sun,” he concluded.

“We have always been 100% open systems and UNIX[®], where Sun is the undisputed leader.”

— *Tim Merrifield,*
Information Systems Manager

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