

Case Study: Strategic Downshift at Sabre Holdings

In the early 1960s, American Airlines and IBM developed SABRE, the first online airline reservations system. The system built upon much of what IBM and MIT had pioneered during the 1950s (notably in real-time computing) by designing computer systems to support the SAGE air defense radar system.⁵

During the 1970s and 1980s, Sabre was often cited as an exemplar of a strategic IT system (e.g., Hopper 1990). To provide competitive advantage for American, Sabre employed an expensive proprietary architecture incorporating custom applications, IBM's Transaction Processing Facility (TPF) applications platform, and IBM-compatible mainframes. American eventually concluded that selling services to its competitors would generate more value than any advantage provided by vertical integration. In 1996, it spun out The Sabre Group (later Sabre Holdings) as a partly-owned subsidiary, which was fully divested in 2000.

In the mid-1990s, the Sabre division had concluded that it needed to migrate applications off its mainframe to lower cost open systems while maintaining the reliability, scalability and performance of the mainframe environment. One problem was that its web-based shopping service Travelocity.com allowed potential customers to browse for possible flights without necessarily buying; any rise in the "look to book" ratio increased Sabre's data processing costs without increasing revenues.

In response, Sabre developed a new three-level IT architecture. For the lowest revenue, most-compute intensive activity — air travel shopping — the new system uses Itanium and Opteron servers running two open source packages: the Linux operating system and the MySQL database. The new architecture delivers adequate data synchronization and reliability at a lower cost, while the use of commodity processors improves scalability and upgradeability.

When it comes time for Sabre to book the customer's flight — creating a contractual obligation to provide air carrier service at the quoted price — Sabre needs higher reliability and data integrity than with its shopping system. It reduced costs by shifting the final pricing from the mainframe to fault-tolerant, open standards HP NonStop Servers, while retaining the mainframe (at least temporarily) for executing the booking transaction. A single customer sale would thus involve three separate architectures, each one optimized by Sabre for the particular risk vs. cost trade-offs of that part of the shopper's visit — and integrated so that the handover is transparent to the buyer.

The entire Sabre system demonstrates the concept of strategic downshift, as the once highly strategic system faced increasing cost pressures. Part of the architecture migrated to *support* stage systems, using commodity hardware and open source software to provide "good enough" solutions; the remainder of the architecture was supported by *mission critical* stage systems that deliver high reliability at the lowest possible cost.

Sources: National Research Council 1999; Stafford, 2003; Anthes 2004, Burt, 2004; AA.com, IBM.com and Sabre-Holdings.com websites.

From Kwan, S.K. and Joel West, "A Conceptual Model for Enterprise Adoption of Open Source Software" in S. Bolin, ed., The Standards Edge: Open Season, Sheridan Books, Ann Arbor, MI, 2005.