CHAPTER 5   **IT INFRASTRUCTURE AND EMERGING TECHNOLOGIES**

CASE 1   # ESPN.com: Getting to eXtreme Scale On the Web

VIDEO CASE

SUMMARY   ESPN is the world's largest cable television sports programming network. In addition, it is the Web's most popular online source for sports results, content, and commentary. Servicing an online audience of more than 50 million unique visitors every month requires ESPN to adopt processing technologies that are extremely efficient, powerful, and flexible. L= 5:40.

URL   http://www.youtube.com/watch?v=NIqru81sjV4

CASE   ESPN (Entertainment and Sports Programming Network) is a multimedia, global cable television network with headquarters in Bristol, Connecticut. Founded in 1979 with financing provided by The Getty Oil Company, ESPN grew along with the cable television industry to become a mainstay of American popular culture. After a series of investments by Hearst Publications, and ABC (the American Broadcasting Network), 80 percent of ESPN finally ended up in the hands of entertainment giant The Walt Disney Company, and 20 percent with the Hearst Corporation, a 100-year-old media company based largely on newspaper and magazine businesses. ESPN focuses on sports programming, including live and pre-taped event telecasts, sports talk shows, and other original programming. While originally a cable media company, ESPN has since expanded aggressively to the Internet as well as radio

and print magazines. In 2012 ESPN cable outlets have approximately 100 million subscribers in the United States, and over 140 million subscribers world wide.

ESPN is actually a family of sports networks and individual shows. There are eight 24-hour domestic television sports networks: ESPN, ESPN2, ESPNEWS, ESPN Classic, ESPN Deportes (a Spanish language network), ESPNU (a network devoted to college sports), ESPN 3D (a 3D service), and the regionally focused Longhorn Network (a network dedicated to The University of Texas athletics). ESPN also operates five high-definition television simulcast services, ESPN HD, ESPN2 HD, ESPNEWS HD, ESPNU HD, and ESPN Deportes HD. ESPN programs the sports schedule on the ABC Television Network, which is branded ESPN on ABC. ESPN owns, has equity interests in, or has distribution agreements with 47 international sports networks, reaching households in more than 200 countries and territories in 16 languages including a live sports network in the UK. ESPN holds a 50 percent equity interest in ESPN Star Sports, which distributes sports programming throughout most of Asia, and a 30 percent equity interest in CTV Specialty Television, Inc., which owns The Sports Network, The Sports Network 2, Le Réseau des Sports, ESPN Classic Canada, the NHL Network and Discovery Canada.

In addition to its media outlets, ESPN is well-known for its ownership of the rights to various professional and college sports programming, including NFL, NBA, the SEC, ACC and Pac 12 college football and basketball conferences, NASCAR, and MLB (Major League Baseball).

On the Internet, ESPN owns ESPN.com, which delivers comprehensive sports programming, news, information, and video each month through its national hub and five local sites—ESPNBoston.com, ESPNChicago.com, ESPNDallas.com, ESPNLosAngeles.com and ESPNNewYork.com. ESPN3.com is a broadband service available to 70 million subscribers that delivers more than 4,000 live events.

In 2011 U.S. sports fans spent 4.7 billion total minutes on ESPN.com in September, a sports category record, according to data released by comScore. The total minutes generated by ESPN translate to an average minute audience of 107,878 for the month, also a record in the sports category. In terms of reach, ESPN led all sports sites with 52.2 million unique visitors in September. In most demographic categories, ESPN.com is the fifth most popular site on the Internet (following Facebook, Google, Yahoo, and Microsoft).

With 52 million unique online visitors, ESPN receives an avalanche of requests for information services every second of every day. ESPN needs to keep track of each visitor's personal interests and profile in order to provide those services. To cope with this highly interactive environment, ESPN adopted an IBM technology called WebSphere® eXtreme Scale. eXtreme Scale is a set of software and hardware tools that rely on distributed cache memory as opposed to hard-disk drives to access data. Combining the processing power of 20 or more server computers into a single environment called a "grid," makes it possible for ESPN to process very large volumes of transactions (requests for service) in single millisecond time

frames. In addition, the system is highly flexible and can be scaled up or down depending on the demand for services.

1. How many requests from users does ESPN receive each second? Do you think this is a consistent pattern or does it have peaks and valleys? When does it peak?

2. Why does ESPN store personal information and preferences on its databases and how does this personal information complicate the ability of ESPN to respond to requests from users? Why can't ESPN just use Web page caching to handle the loads?

3. How much information on users does ESPN store? Why does this pose a challenge for ESPN? Can't they just use a standard 1 terabyte hard drive from a PC? Why can't they use a single PC?

4. What platforms do ESPN customers use when accessing their Web sites, and how does this further complicate ESPN's processing picture?

5. What are the key components in ESPN's solution? Describe the function of each.

6. Why is scalability so important to ESPN?