Key3 Media Group PRESENTS NETWORLD+INTEROP
INTEROP

Optimizing the Generation of Dynamic Web Content

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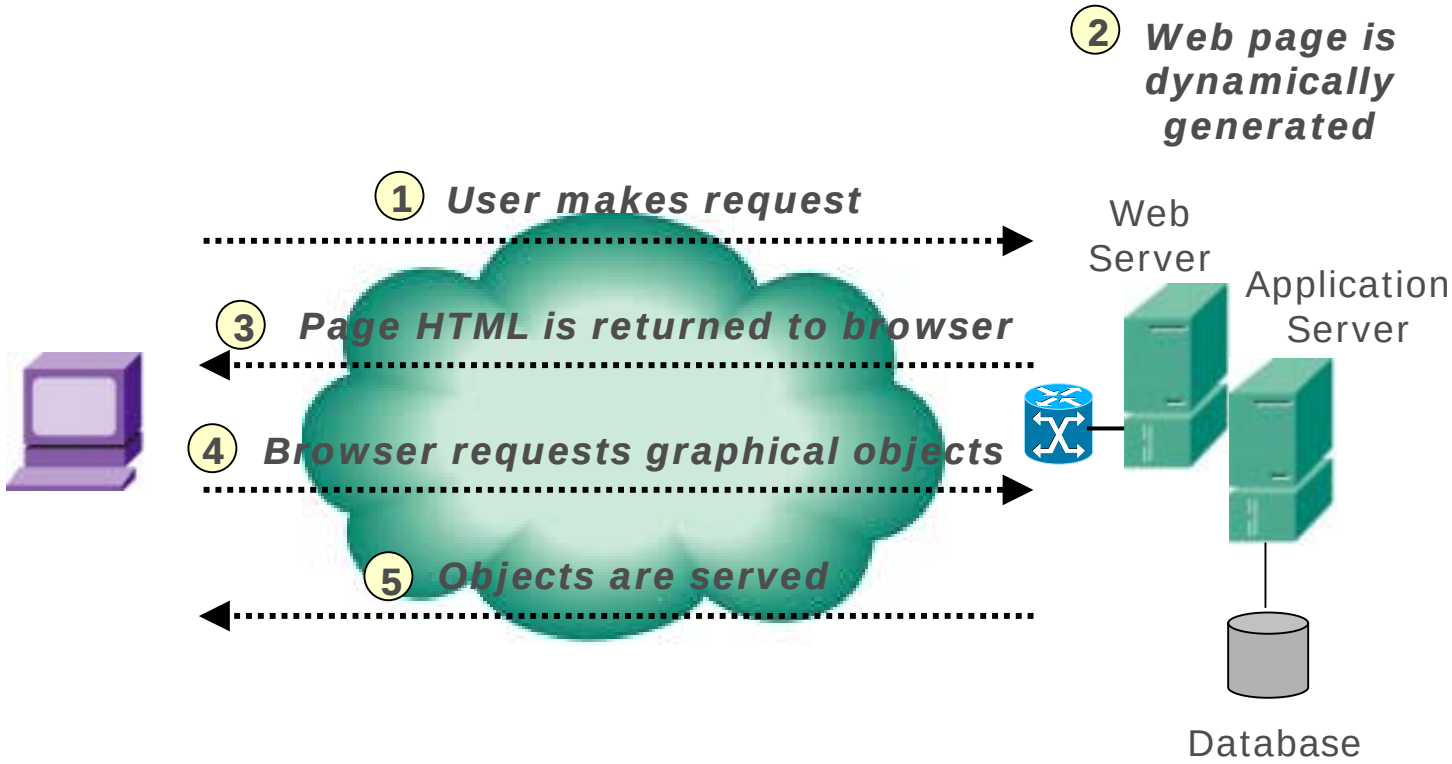
Objectives

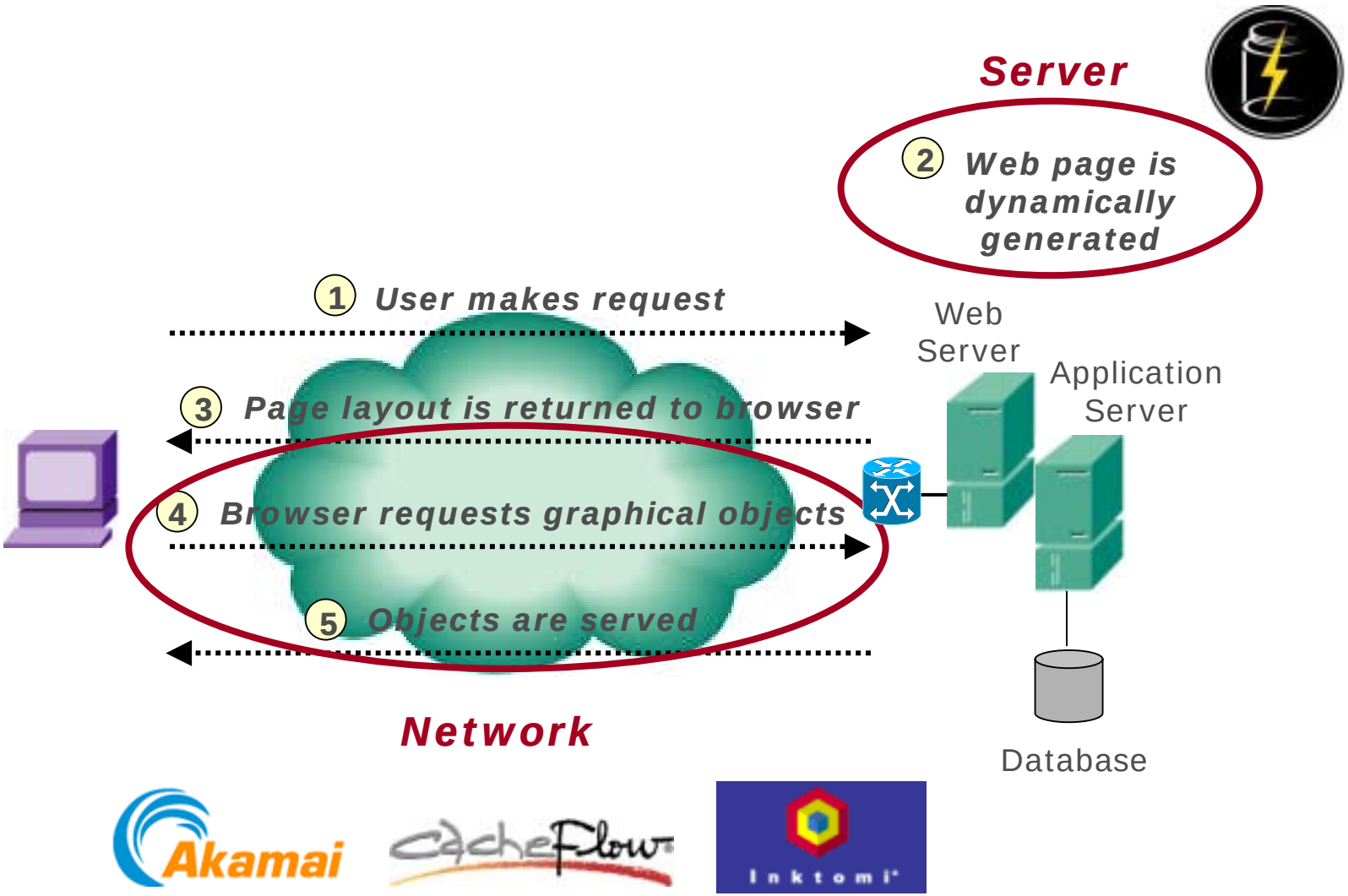
- Review how Web pages are created and delivered to users
- Highlight the major bottlenecks in the process
- Focus on the server-side issues associated with dynamic page generation
- Describe an emerging solution space known as *Dynamic Content Acceleration*

How a Web Page is Delivered



All of this occurs over a complex network of routers, switches, etc.

Two Major Classes of Web Performance Bottleneck



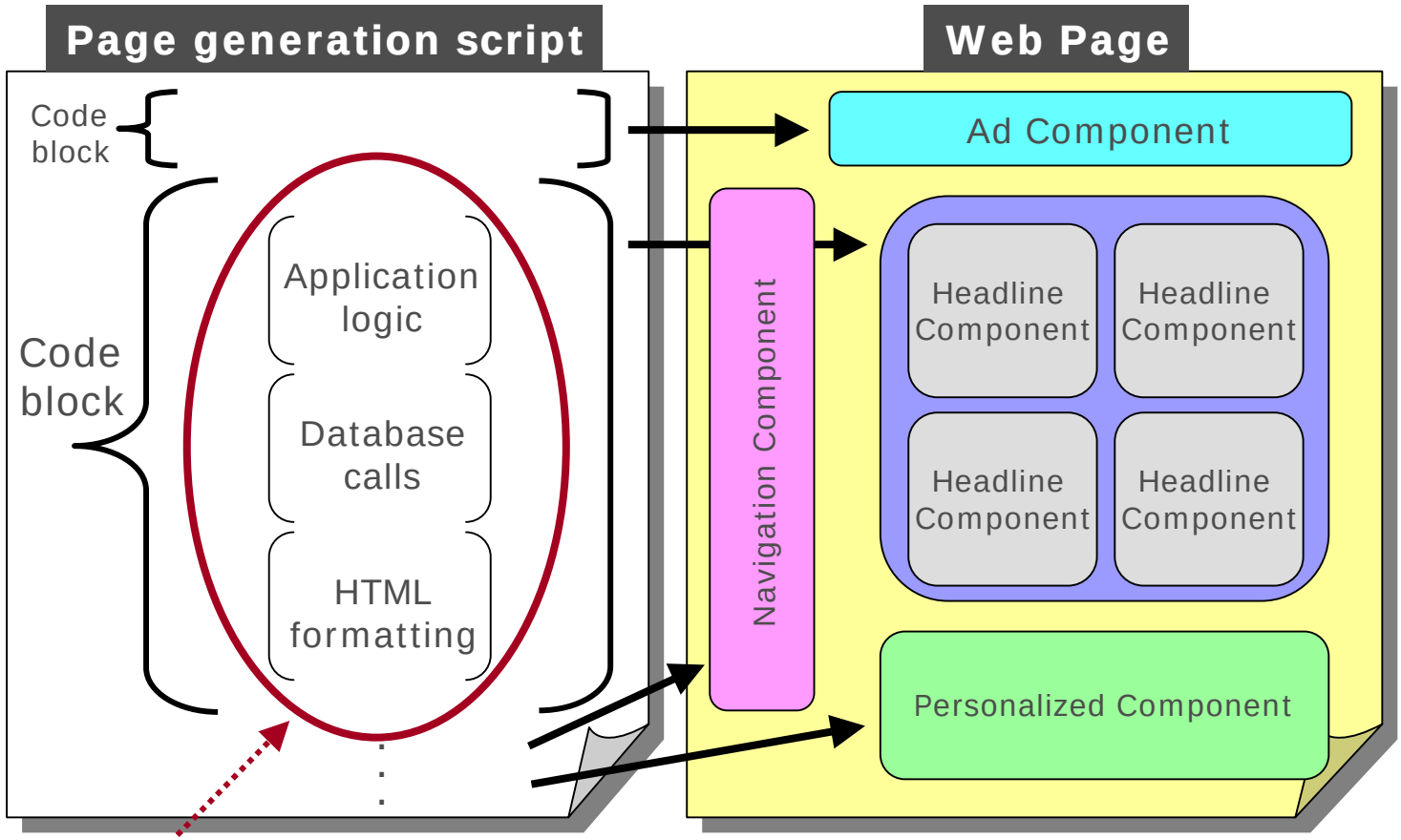
Dynamic Page Generation

- The newest performance bottleneck
- Caused by the increased use of dynamic content within E-business sites
  - Scripts (e.g., ASP, JSP, servlets) generate HTML content “on the fly” to enable personalization and interactivity, resulting in state-cognizant and data-driven pages
  - However, scripting technologies also increase the load on application servers due to the additional processing required for each page request
- This step must occur before static content is delivered from CDNs or network caches

Specific Page Generation Latencies

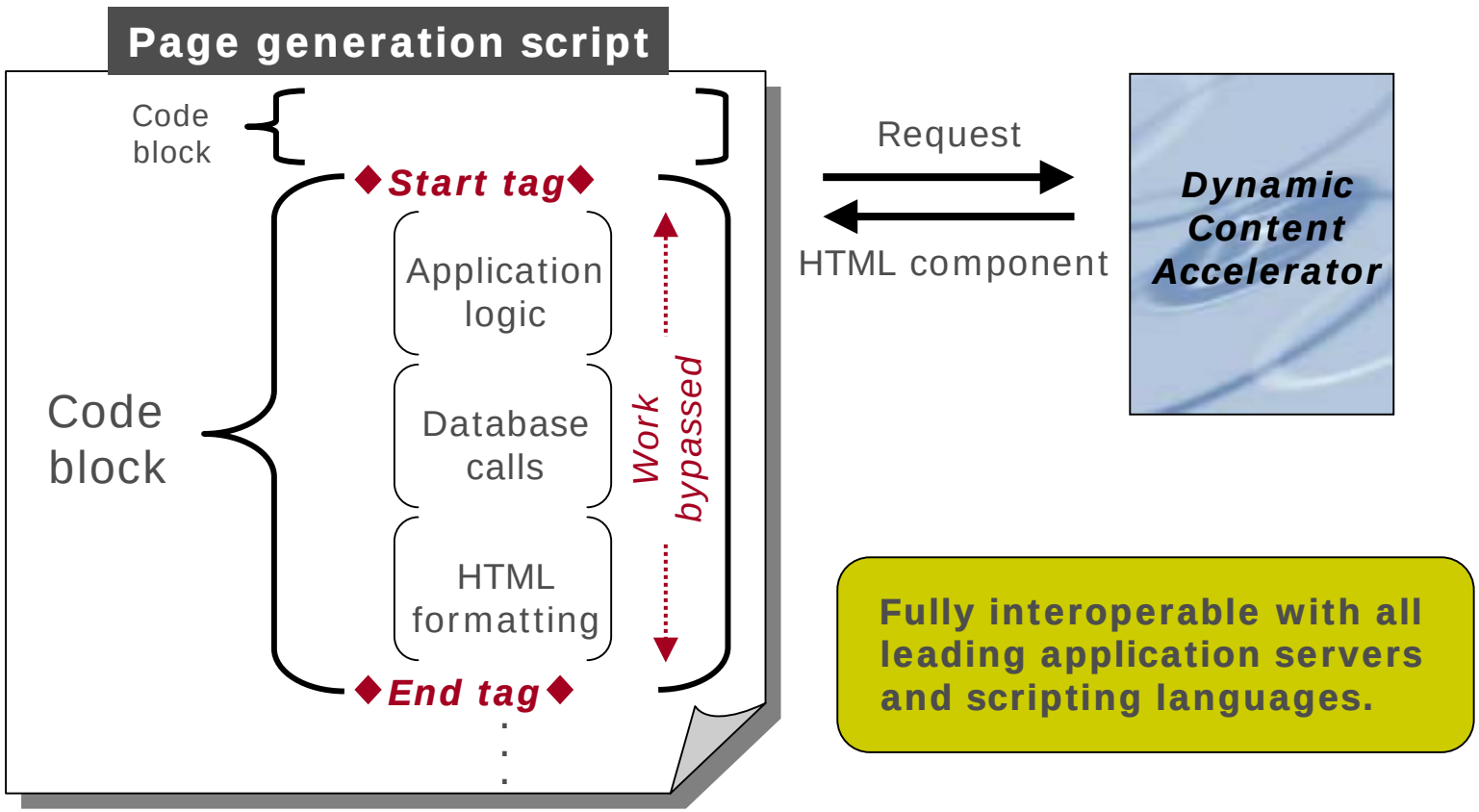
- Processing overhead of executing the script logic
- I/O load due to intensive database queries
- Database connection pool limitations
- Network delays when connecting to remote resources, such as legacy systems, databases and data feeds
- Data formatting and transformation, such as XML -> HTML

A Closer Look at Page Generation



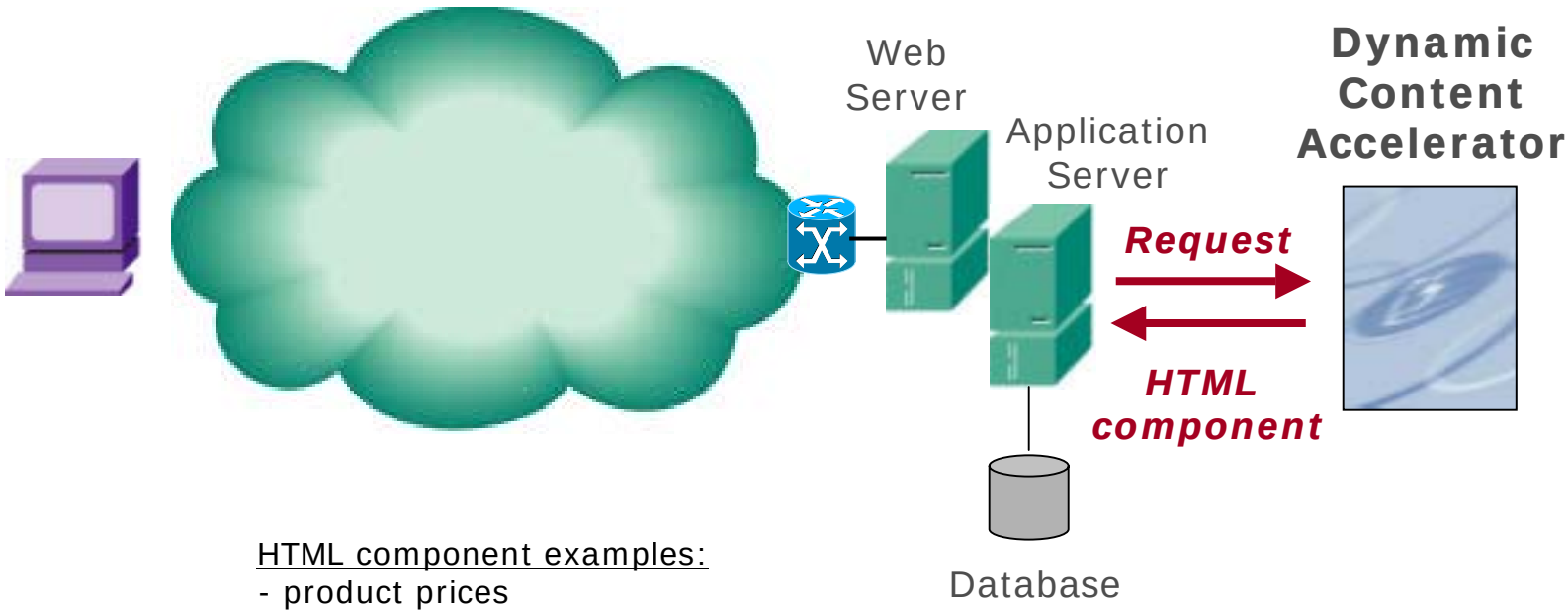
Sources of server latency

Dynamic Content Acceleration



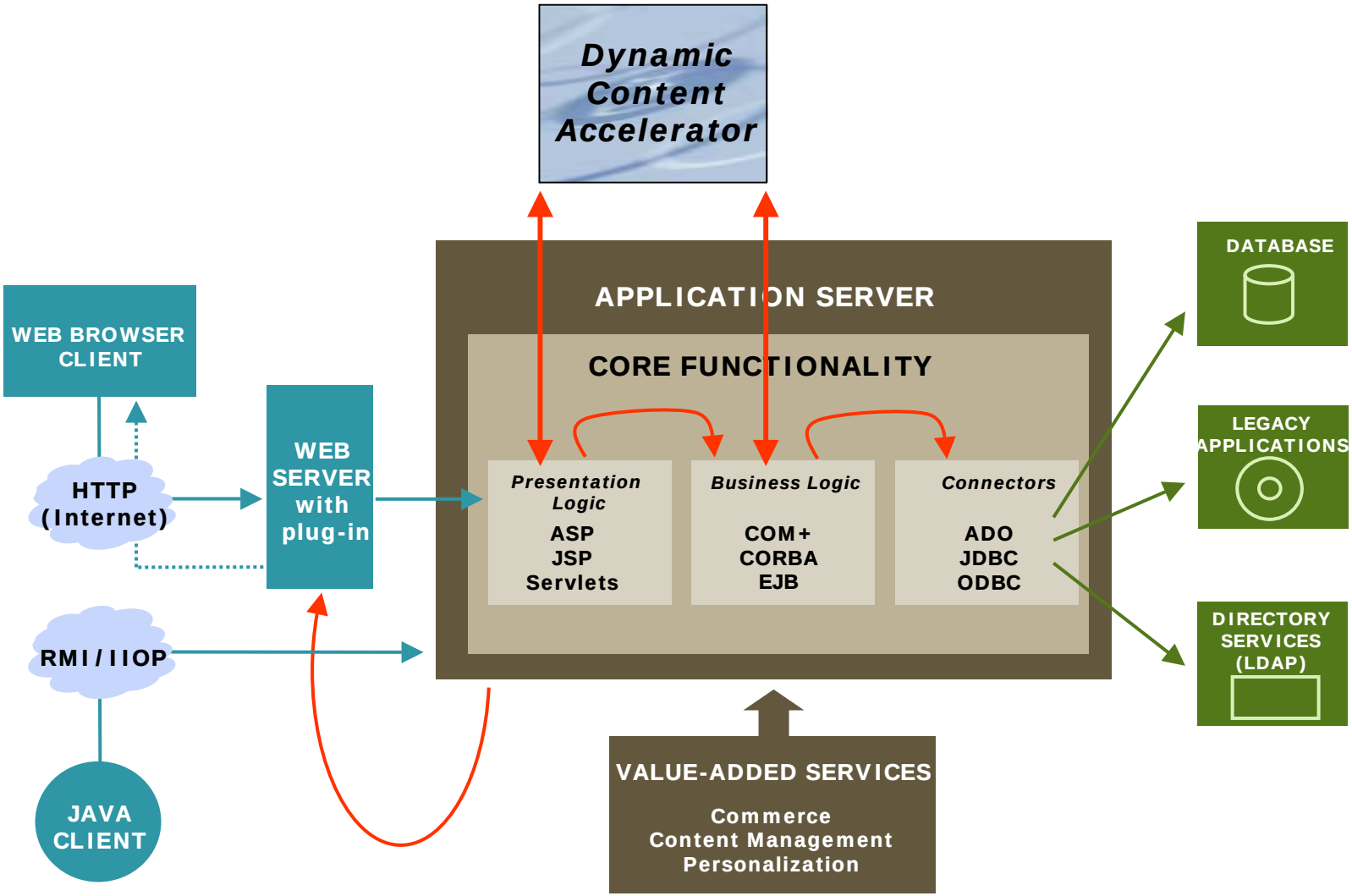
Solution Overview

A Dynamic Content Accelerator stores and serves dynamic page components that are re-usable across multiple user sessions, obviating significant work for the application server. The application server retains full control of the page creation process.



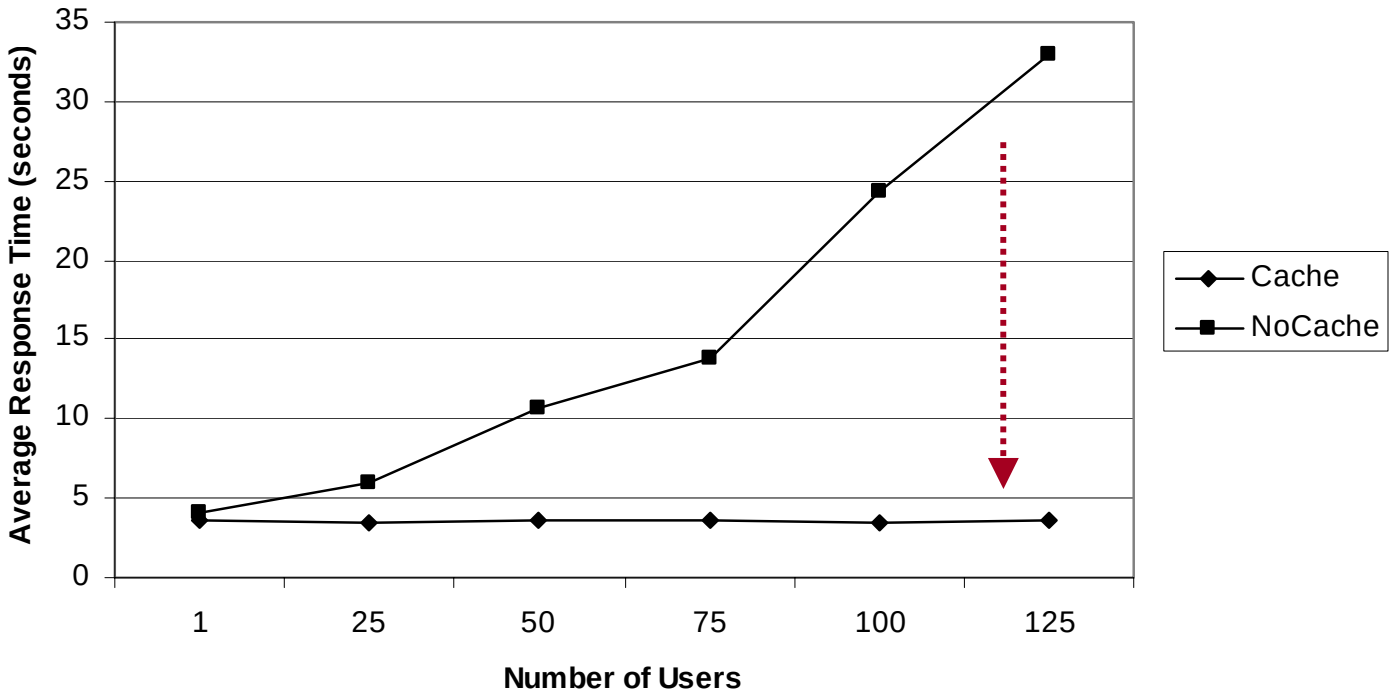
HTML component examples:
- product prices
- product descriptions
- top news stories
- stock quotes

Inside the Application Layer



Performance Impact

Up to 90% faster response times through the existing site infrastructure.



Source: Fortune 100 financial institution

Features and Functionality

- Cache Invalidation (ensuring data freshness):
  - Common methods include:
    - Time-based (TTL)
    - Event-based (database update)
    - Observation-based (user action)
    - On-demand (per operator instruction)
- Cache Replacement (ensuring high hit rates):
  - Keeping items in cache that have the highest probability of future access
- Cache Management and Monitoring Tools

Summary

- Performance and scalability are vital to every E-business initiative
- The newest Web bottleneck has been exposed by the almost-universal adoption of dynamic page generation technologies
- Dynamic Content Acceleration is a potent solution to this problem, and is fully complementary with CDNs and network caching
- Chutney Technologies is the pioneer and leader of this space