Apache Tomcat's architecture consists of three primary components that work together to process web requests and serve Java web applications (Vukotic & Goodwill, 2011). Catalina, the core component, serves as Tomcat's servlet container implementation, managing the lifecycle of servlets and providing the runtime environment for Java web applications (Moodie, 2007)[1]. It handles crucial tasks such as class loading, security management, session management, and servlet lifecycle operations according to the Java Servlet Specification. Catalina's architecture follows a hierarchical structure, with Server, Service, Engine, Host, and Context components working together to process requests and manage applications (Hunter & Crawford, 2015).[2]

Coyote, the HTTP connector component, manages all incoming network connections and implements the HTTP protocol, supporting both HTTP/1.1 and HTTP/2 (Brittain & Darwin, 2007). It efficiently handles connection pooling, request processing, and response generation, making it crucial for Tomcat's performance[3]. Coyote can be configured to use different protocols and implementations, including the Native Implementation (APR/native), NIO (Non-blocking I/O), and NIO2 connectors, each optimized for specific use cases and performance requirements (Chopra et al., 2017).[4]

Jasper, the JSP engine, compiles JavaServer Pages (JSP) into servlets, enabling the dynamic generation of web content (Vukotic & Goodwill, 2011). It supports both development and production environments with features like automatic detection of JSP changes, recompilation of modified pages, and optimization of the generated servlet code. Jasper 2, the current implementation, provides enhanced error reporting, better performance through optimized code generation, and support for the latest JSP specifications (Moodie, 2007).[5]

**References**

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