Zipkin is an open-source distributed tracing system that helps developers gather, visualize, and analyze trace data from microservices and distributed applications. It was originally developed by Twitter and is now part of the Cloud Native Computing Foundation (CNCF).

The primary goal of Zipkin is to provide insight into the performance and behavior of microservices by tracing the flow of requests as they propagate through the system. It helps identify bottlenecks, latency issues, and dependencies between different services.

Key features of Zipkin include:

1. Distributed Tracing: Zipkin traces requests as they move through multiple microservices, recording information such as request and response times and service dependencies.
2. Service Graph Visualization: Zipkin provides a visual representation of the services and their dependencies, helping developers understand the overall architecture and interactions.
3. Annotations: Developers can add custom annotations to trace data to provide additional context about specific events or stages in the request lifecycle.
4. Sampling: Zipkin allows you to control the volume of trace data collected by sampling a percentage of requests, reducing the performance overhead of tracing.
5. Storage and Backends: Zipkin supports various storage backends, including in-memory, MySQL, Cassandra, Elasticsearch, and others.
6. Integration with Multiple Languages and Frameworks: Zipkin provides client libraries and integrations for popular programming languages and frameworks, making it easy to instrument microservices.

How Zipkin works:

1. Instrumentation: Microservices are instrumented with Zipkin client libraries, which generate trace data and send it to the Zipkin server.
2. Zipkin Server: The Zipkin server collects and stores the trace data.
3. Data Query and Visualization: Developers can use the Zipkin UI or API to query and visualize the trace data, exploring the flow of requests across microservices.
4. Distributed Context Propagation: Zipkin uses trace context propagation (e.g., HTTP headers) to link and correlate related requests as they travel through multiple services.

Zipkin is a valuable tool for understanding and diagnosing issues in microservices architectures, especially in complex, distributed systems. It provides observability into the interactions and performance of services, helping developers identify and resolve problems more effectively.