Data models in NoSQL and NewSQL databases

Designers classify NoSQL and NewSQL database types by their structure or data model. Key-value stores, for example, consist of a very simple data model: keys and values.

Databases can include one or more data models. Hybrids have a primary data model (such as key-value or document) and at least one overlay (such as relational or graph).

The data models shown in this illustration vary from the simple (top) to the more complex (bottom). The more complex models (such as relational and graph) allow end users to perform more sophisticated querying directly.

Key-value or row store

Key-value stores offer very high speed via the least complicated data model—anything can be stored as a value, as long as each value is associated with a key or name.

Wide-column

Wide-column stores are also fast and are nearly as simple as key-value stores. They include a primary key, an optional secondary key, and anything stored as a value.

Relational NewSQL store

Relational NewSQL stores are designed for web-scale applications, both SQL and NoSQL. They include columns, primary keys, and foreign keys that allow for joins and table management that can be labor intensive.

Document

Document stores contain data objects that are inherently hierarchical, tree-like structures.

Property graph

In a property graph store, each node or edge consists of a key plus a value, called a property.

RDF graph

For semantic clarity and ease of integration, RDF graphs use unique web-style addresses for both nodes and edges.

Dynamic graph

Dynamic graphs monitor changing nodes and interactions between the nodes, and interpret those interactions as edges.


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