---

title: Data structures and encoding description: An overview of the fundamental Ethereum data structures. lang: en sidebarDepth: 2

Ethereum creates, stores and transfers large volumes of data. This data must get formatted in standardized and memory-efficient ways to allow anyone to run a node on relatively modest consumer-grade hardware. To achieve this, several specific data structures are used on the Ethereum stack.

Prerequisites {#prerequisites}

You should understand the fundamentals of Ethereum andclient software. Familiarity with the networking layer andthe Ethereum whitepaper is recommended.

Data structures {#data-structures}

Patricia merkle tries {#patricia-merkle-tries}

Patricia Merkle Tries are structures that encode key-value pairs into a deterministic and cryptographically authenticated trie. These are used extensively across Ethereum's execution layer.

More on Patricia Merkle Tries

Recursive Length Prefix {#recursive-length-prefix}

Recursive Length Prefix (RLP) is a serialization method used extensively across Ethereum's execution layer.

More on RLP

Simple Serialize {#simple-serialize}

Simple Serialize (SSZ) is the dominant serialization format on Ethereum's consensus layer because of its compatibility with merklelization.

More on SSZ