



An Industry Standard Benchmark Consortium

Networking Version 2.0

Benchmark Name: Route Lookup

Highlights

▪ Benchmarks Potential Performance of Routers

Application	This benchmark is a distillation of the fundamental operation of IP datagram routers: receiving and forwarding IP datagrams.
Benchmark Description	<p>All IP routers keep a table that allows it to lookup IP addresses and determine to which port an incoming IP datagram should be forwarded. This benchmark implements an IP lookup mechanism based on a Patricia Tree (or trie). The Patricia tree data structure is a type of binary, compact tree that allows fast and efficient searches with long or unbounded length strings. The number of search steps is bounded by the length of the search key e.g. 32-bit IPv4 addresses.</p> <p>The benchmark builds a tree from the IP address data supplied in <i>route.txt</i> (200 routes). After the tree is initialized, the benchmark calls the function <i>pat_search()</i> for each IP address in <i>lookups.txt</i> (2000 lookups). One pass through this data is regarded as a single iteration.</p>
Analysis of Computing Resources	The benchmark repeatedly walks through the trie. Consequently, a processor's load-use latency and its ability to efficiently handle frequent CTI (control transfer instructions) operations are an important factor in this benchmark.