HyperIP®- Optimized Centera Replication

HyperIP®

NetEx HyperIP is a data replication optimizer (DRO) that significantly increases effective data throughput of Centera Replication over TCP/IP WANs. It specifically addresses and mitigates the harmful throughput effects of network packet loss (BERs, jitter, router buffer overflows and congestion,) TCP latency, variable object sizes, and bi-directional Centera Replication.

Testing at EMC Labs in Hopkinton demonstrated that HyperIP provides exceptionally favorable effects on Centera Replication effective throughput characteristics resulting in consistent and predictable performance. Although actual performance gains produced by HyperIP will vary, Centera prospects and customers who possess the following requirements will realize the greatest benefits:

- Customer wants to leverage their existing TCP/IP WAN network for Centera Replication and needs to improve bandwidth utilization by implementing compression.
- Customer must increase effective Centera Replication throughput in order to meet time window constraints (with or without compression).
- Customer has limited bandwidth and wants to rate limit Centera Replication to a specific level.
- Customer seeks throughput improvements between an application server and a Centera node.
- Customer requires bi-directional replication.
- Customer has variable object sizes.
- Customer experiences packet loss (BER
- s) approaching 0.1% or above.

Test Results

The following test results demonstrate that HyperIP increased the effective throughput rate of Centera Replication between 25% and 72%:

Effects of latency
Native Centera Replication performs well with no network latency in a Metro Area Network (MAN). When latency is increased to 100ms , throughput declines to 83GM/hr. With HyperIP compression enabled with 100 ms of latency, throughput increased to 133GB/hr equal to a 60% increase in performance/hr.
Error Injection or BERs (bit error rate per second)
BERs have an incredibly undesirable effect on Centera Replication effective data throughput. At OC3 (155 Mbps) b/w, 100ms of latency, and 0.0% BERs, Centera Replication achieves 64 GB/hr. BERs at 0.1% decreased throughput to 57 GB/hr, 1.0%, to 33 GB/hr, and 2.0% to 24 GB/hr. HyperIP increased effective data throughput at 1.0% to 63/GB/hr, and at 2.0% to 59 GB/hr. HyperIP mitigated the adverse effects of BERs.
Variable Object Sizes
Native Centera Replication variable object size throughput averaged ~ 7 GB/hr. HyperIP increased the throughput to 12 GB/hr. This represents a 71% overall increase in performance.
Bi-directional Centera Replication
Native Centera Replication w/100ms latency, 1Gbps b/w, and 1.0% BERs, achieved 36 GB/hr of effective throughput. HyperIP increased throughput to 62 GB/hour, representing a 72% increase.

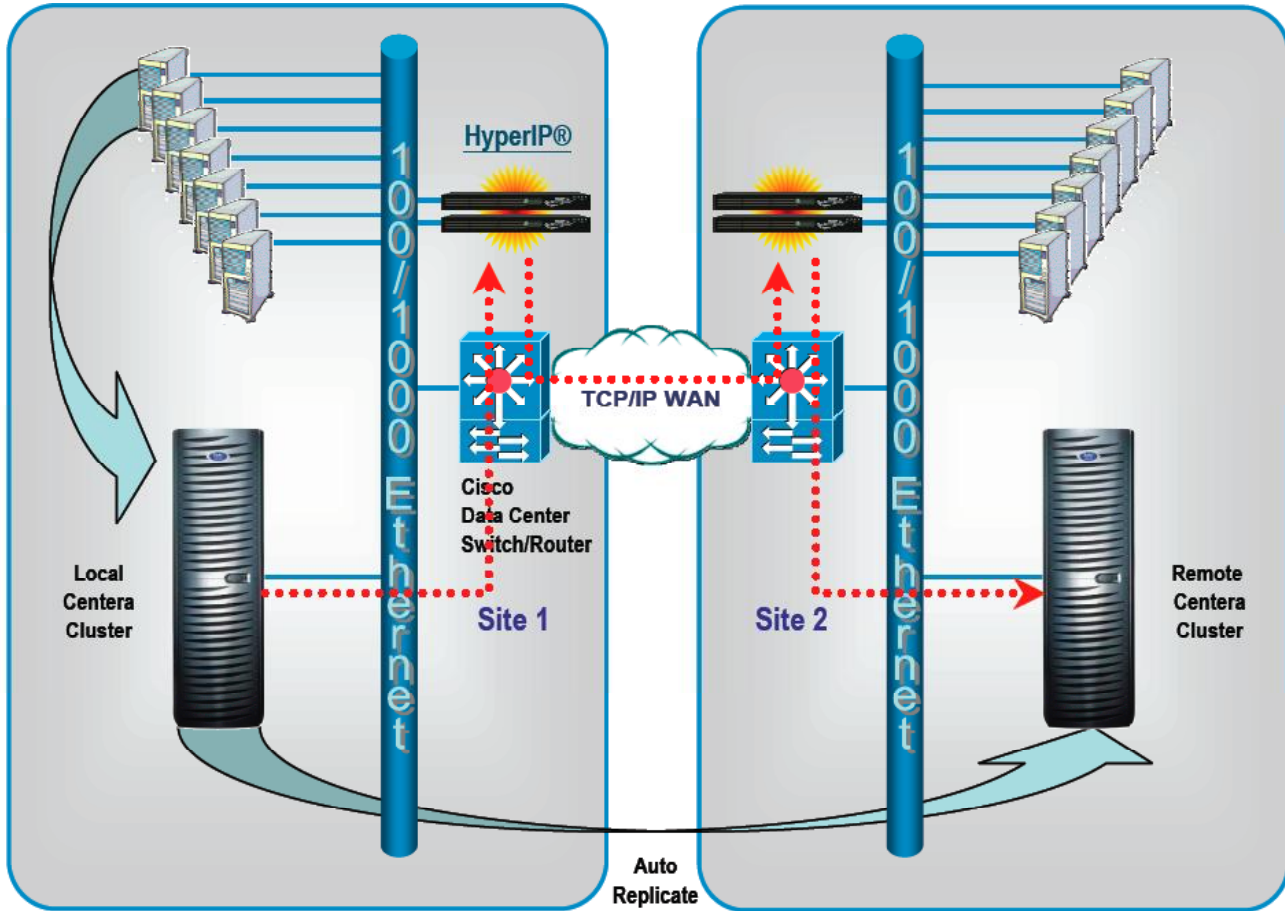| Application server to Centera nodes |
|---|
| At 100 ms of latency, 1 Gbps b/w, and 1.0% BERs, throughput between the app servers and the Centera nodes is 90 GB/hr. HyperIP increased throughput to 113 GB/hour, resulting in a 25% improvement. |
| **Compression** |
| Centera Replication benefits significantly from HyperIP compression. Higher effective data throughput rates are achieved using minimal amounts of bandwidth. Tests ranged up to a 37:1 compression ratio although users can reasonably expect 2:1 to 3:1 ratios. |

Figure 1. Centera Replication with HyperIP