



# Case Studies

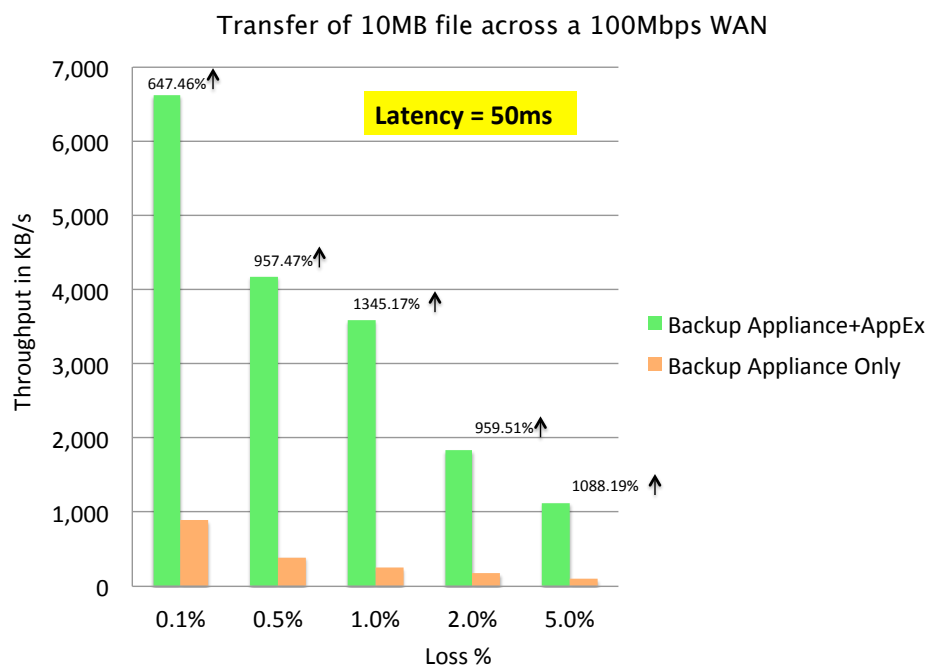
Storage & Backup Acceleration

The exponential growth of data and the resources needed to store, secure and manage this data is putting extreme pressure on IT staff today. This is why Purpose-built backup appliances (PBBAs) are becoming more and more popular: storage and safety of data is critical to a companies' business continuity and recovery strategy.

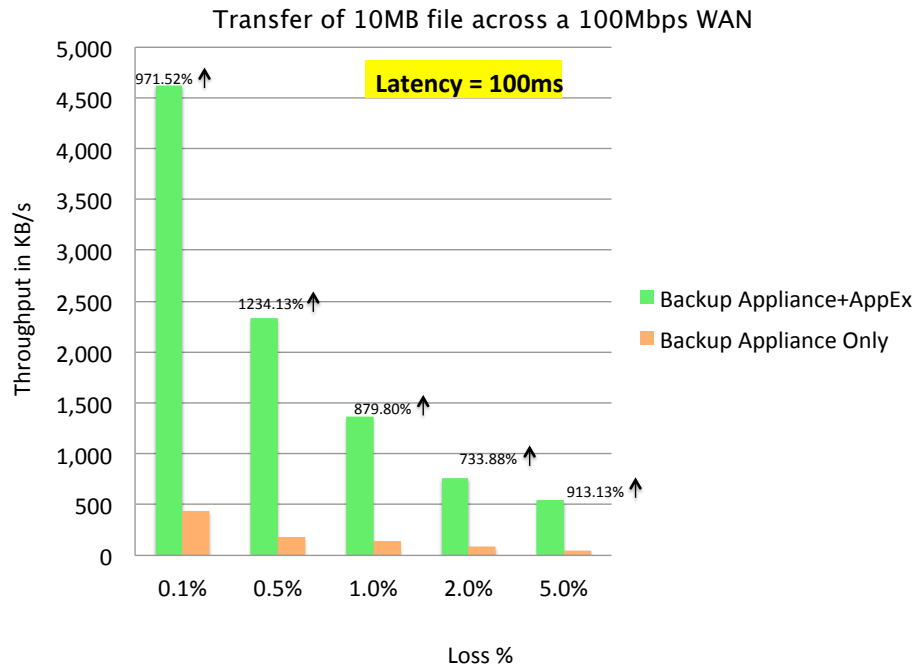
In January 2016, a leading backup and recovery provider released its new version of backup appliances equipped with AppEx LotServer Acceleration software. With pre-installed AppEx acceleration software, the appliance delivers a significantly higher network transfer rate along with deduplication/backup restore performance compared to that of the previous products.

The following data shows some of the improvements that were recorded during the testing for the new products. Many different scenarios were tested by the appliance provider, with varying network conditions.

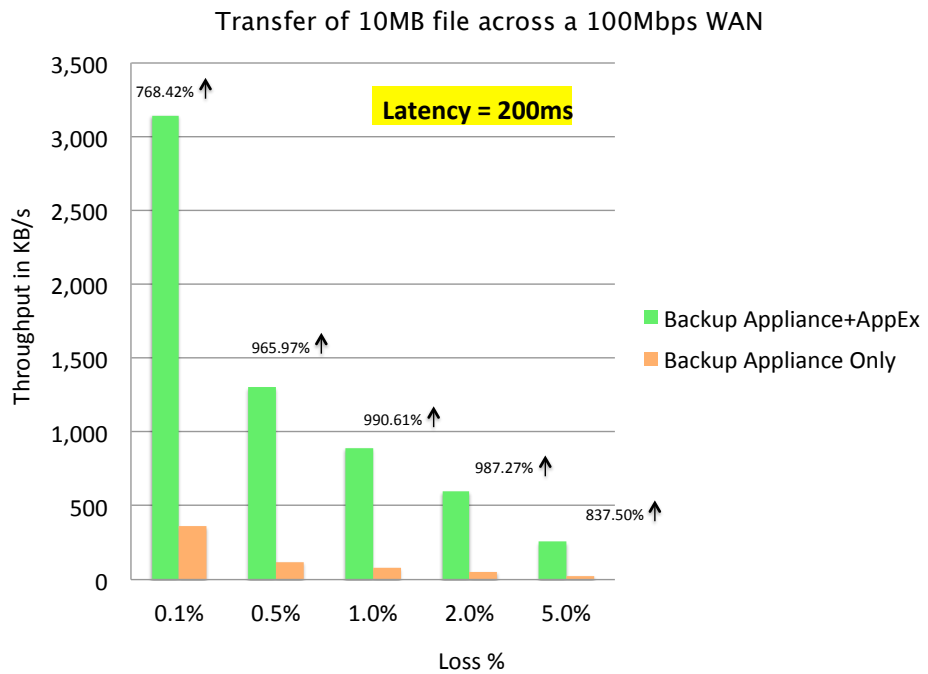
### Test Scenario # 1: Acceleration with a single Ethernet Interface



**Figure 1 - Single Ethernet Interface**

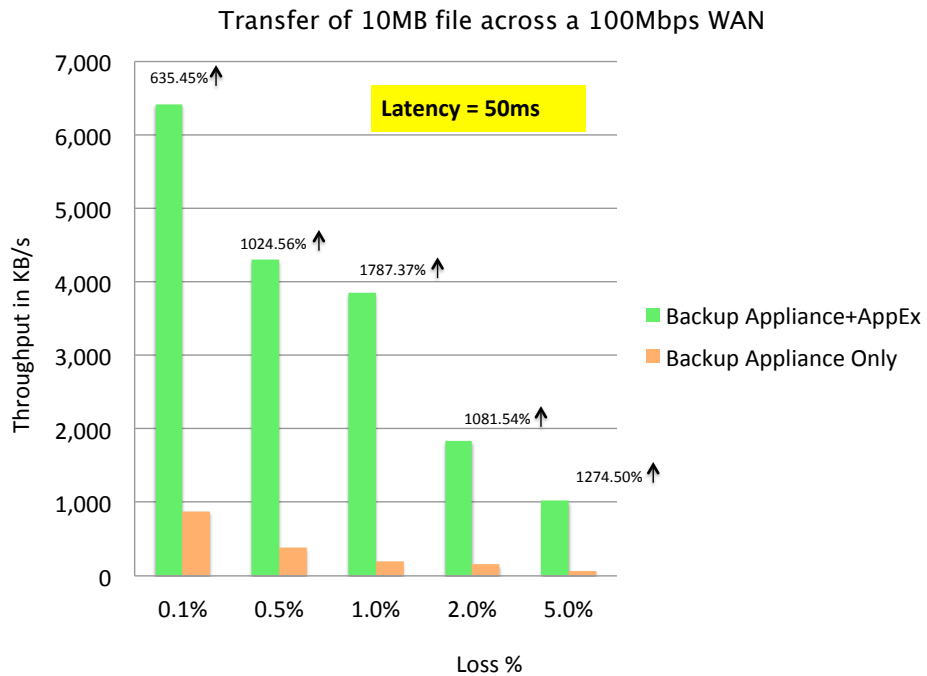


**Figure 2 - Single Ethernet Interface**

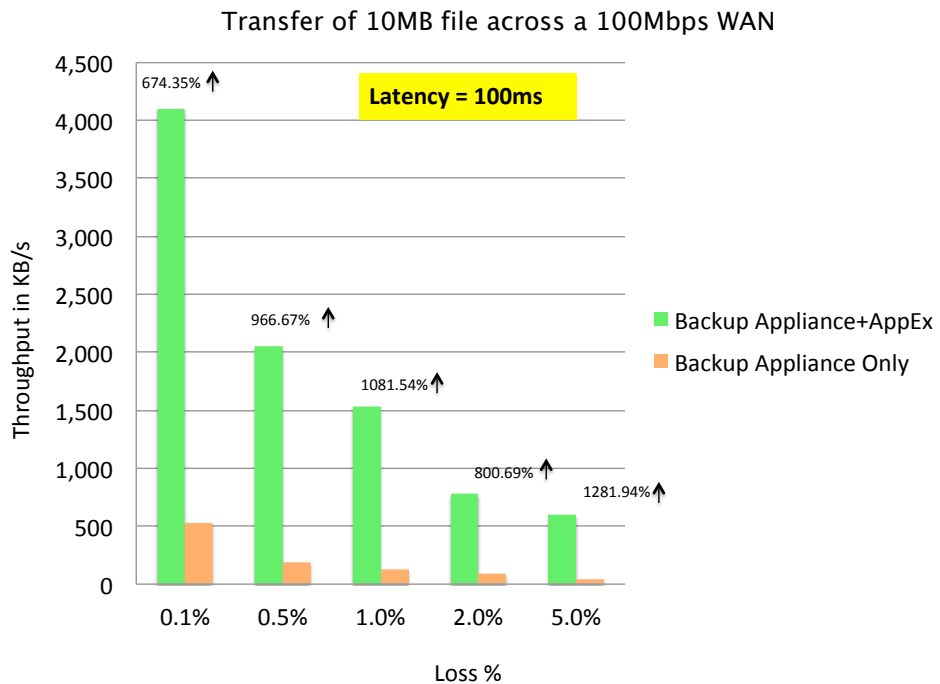


**Figure 3 - Single Ethernet Interface**

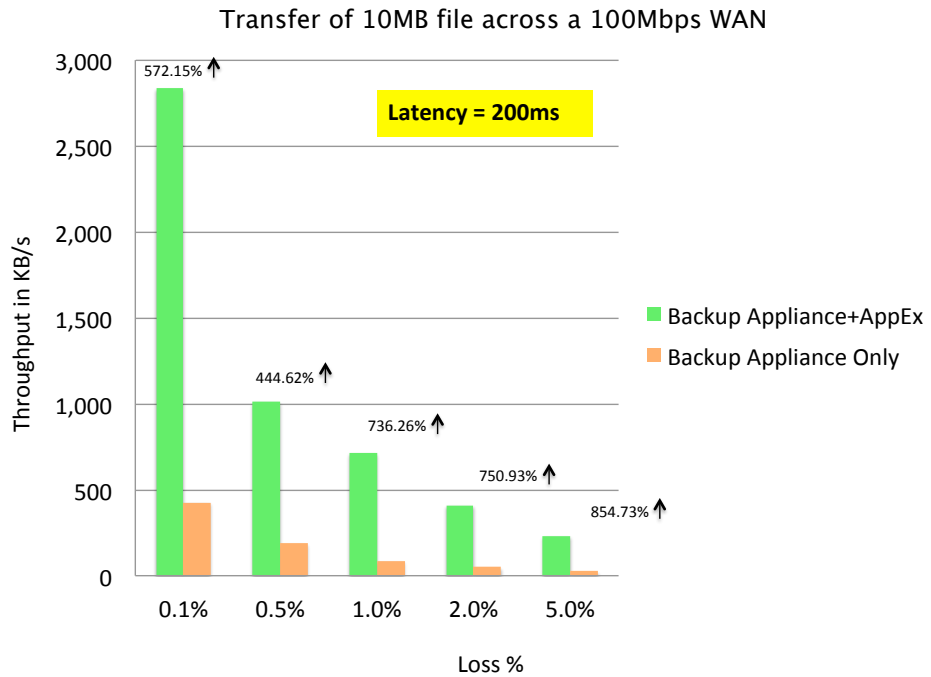
## Test Scenario # 2: Acceleration benefit with bonded Ethernet Interfaces



**Figure 4 - Bonded Ethernet interface acceleration**

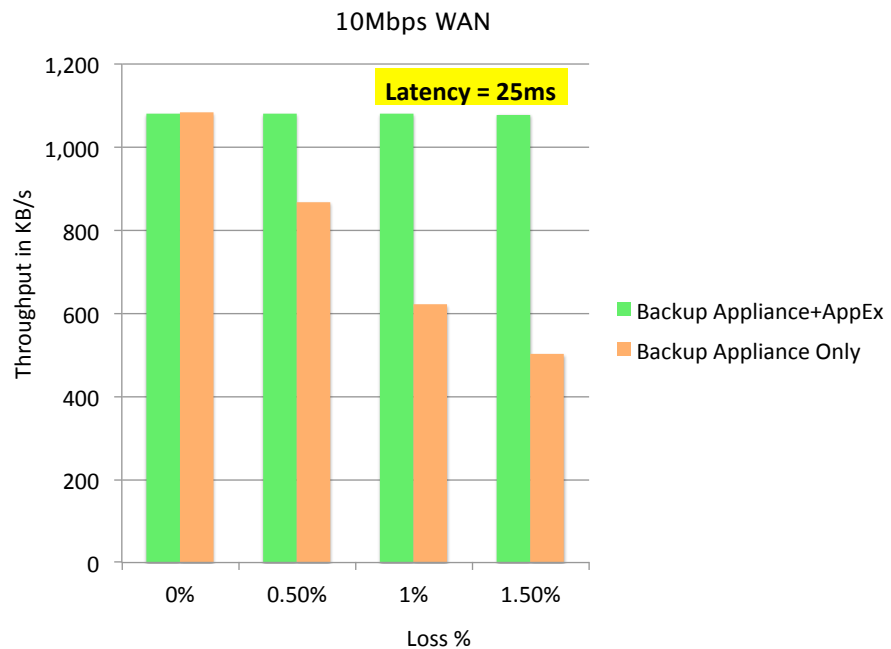


**Figure 5 - Bonded Ethernet interface acceleration**

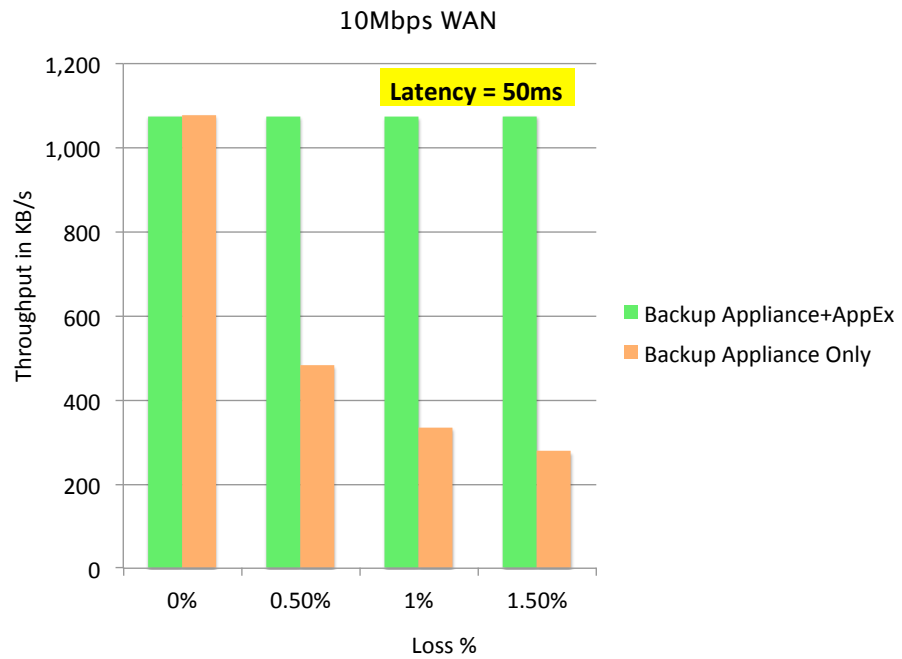


**Figure 6 - Bonded Ethernet interface acceleration**

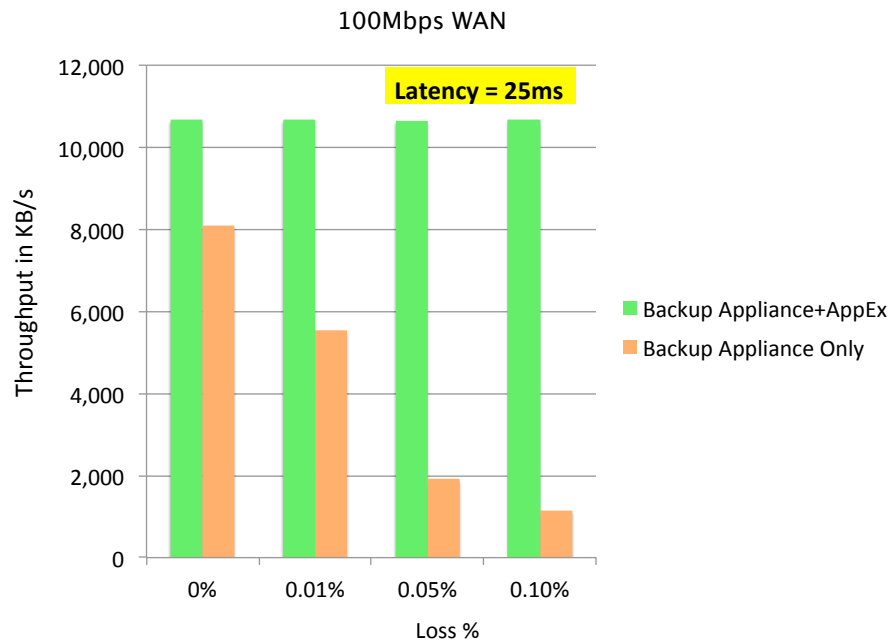
**Test Scenario # 3: Optimized Deduplication Performance**



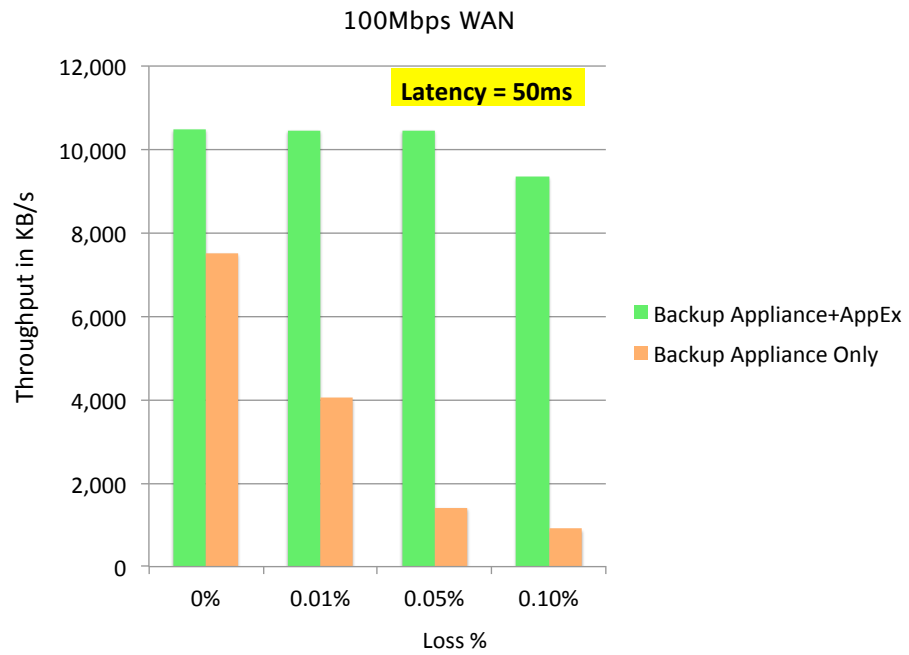
**Figure 7 - Deduplication throughput comparisons for 10Mbps WAN**



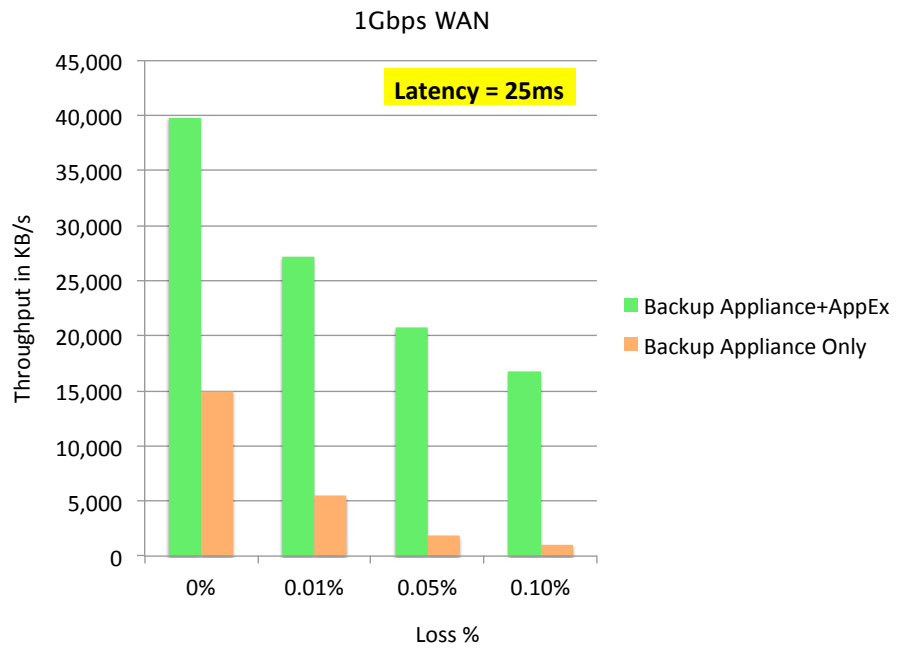
**Figure 8** - Deduplication throughput comparisons for 10Mbps WAN



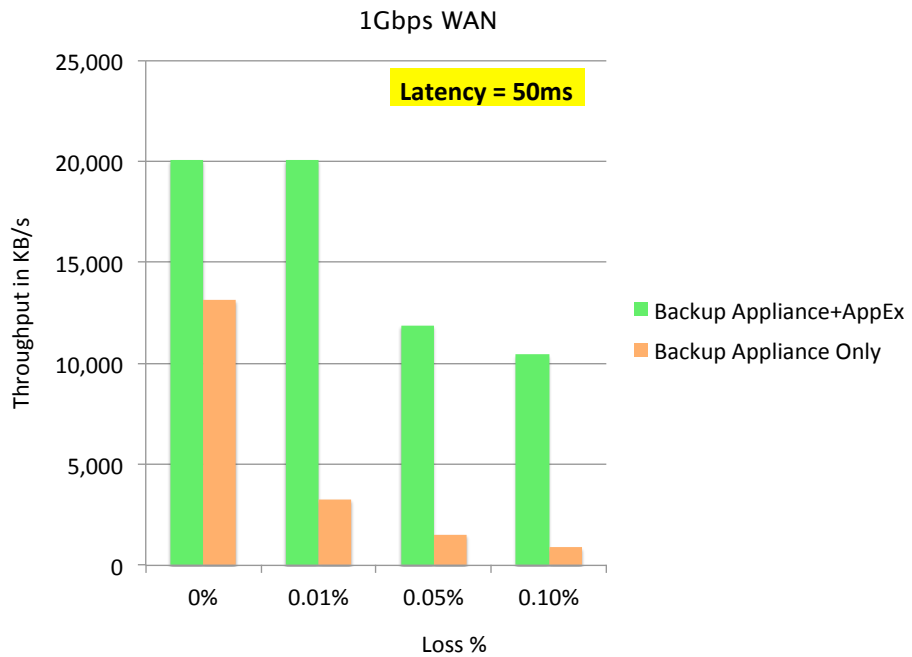
**Figure 9** - Deduplication throughput comparisons for 100Mbps WAN



**Figure 10** - Deduplication throughput comparisons for 100Mbps WAN



**Figure 11** - Deduplication throughput comparisons for 1Gbps WAN



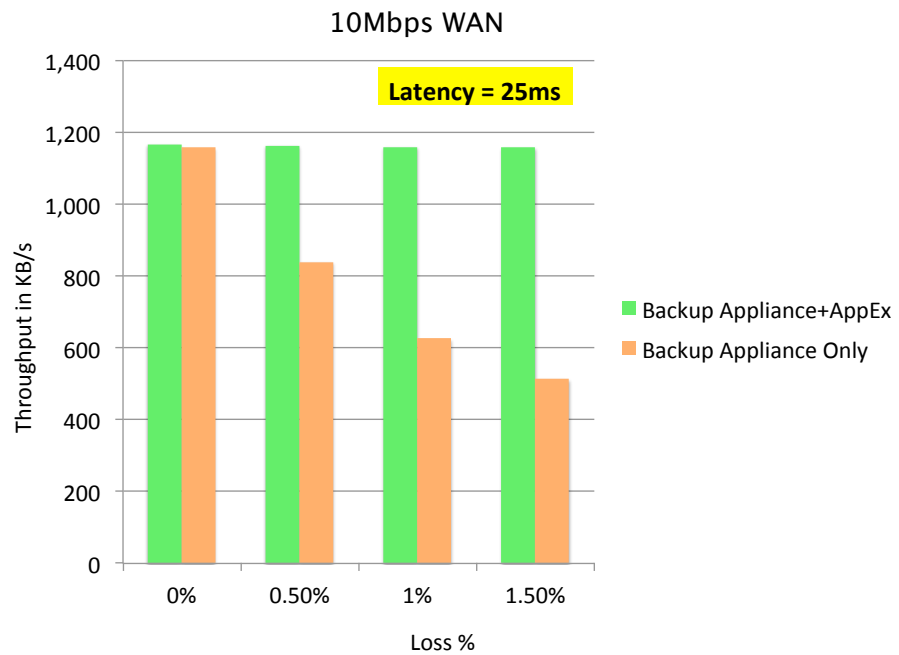
**Figure 12 - Deduplication throughput comparisons for 1Gbps WAN**

Test Scenario	Workload	WAN Bandwidth	WAN Quality (Loss rate% x Latency)	Improvement with AppEx
Opt-Dedup	1 stream @0%dedup	10Mbps	Loss = 0%, 0.5%, 1%, 1.5% Latency = 0, 25, 50, 75, 150, 300, 500ms	<b>Up to 9X improvement</b>
Opt-Dedup	1, 2, 4 streams @0%dedup	100Mbps	Loss = 0%, 0.01%, 0.05%, 0.1% Latency = 25, 50ms	<b>Up to 10X improvement</b>
Opt-Dedup	1, 2, 4 streams @0%dedup	1Gbps	Loss = 0%, 0.01%, 0.05%, 0.1% Latency = 25, 50ms	<b>Up to 15X improvement</b>

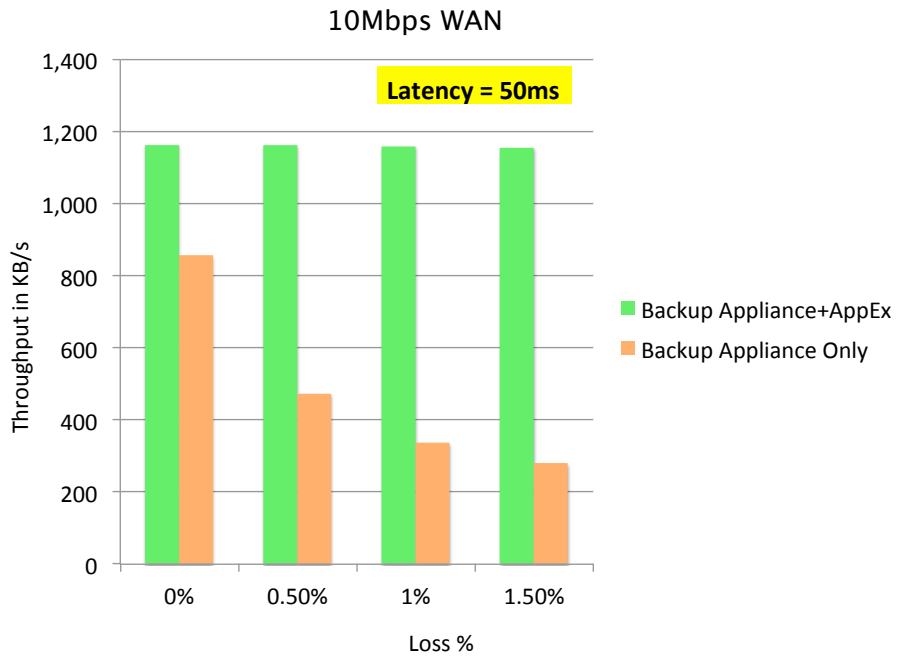
**Figure 13 - Summary of deduplication test results**



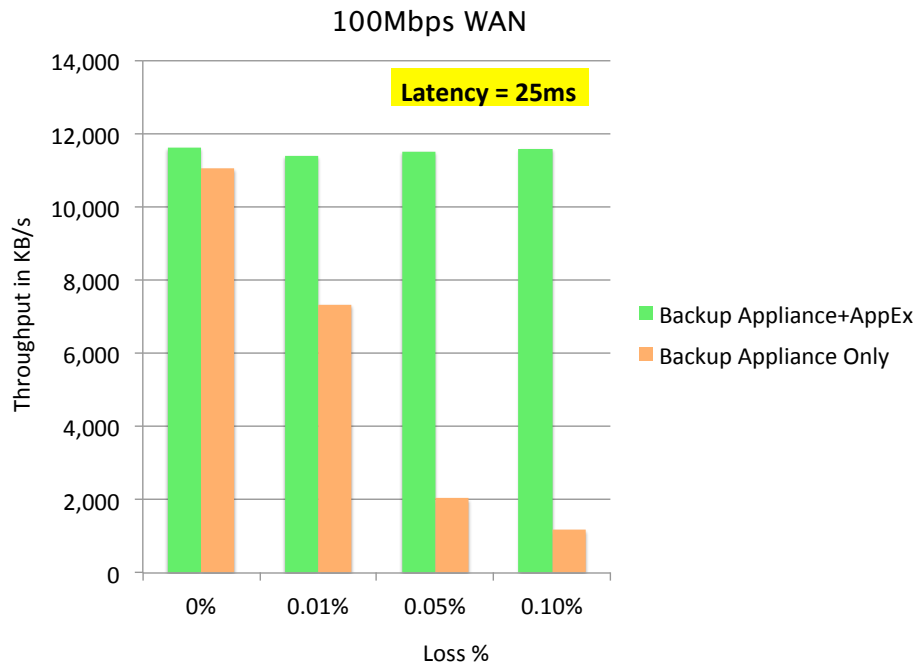
### Test Scenario # 4: Backup Restore Performance Comparison



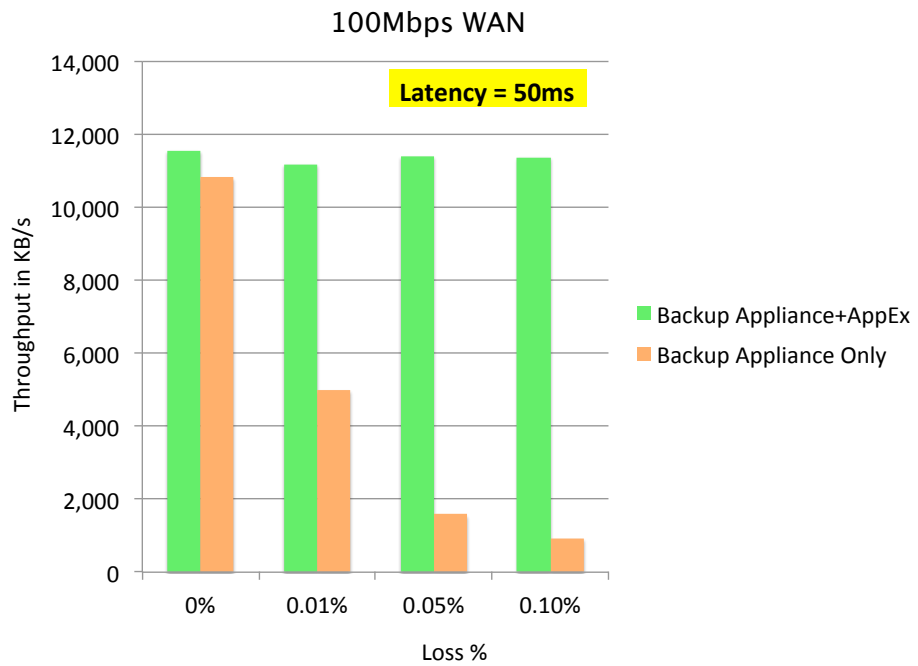
**Figure 14** - Backup Restore throughput comparisons for 10Mbps WAN



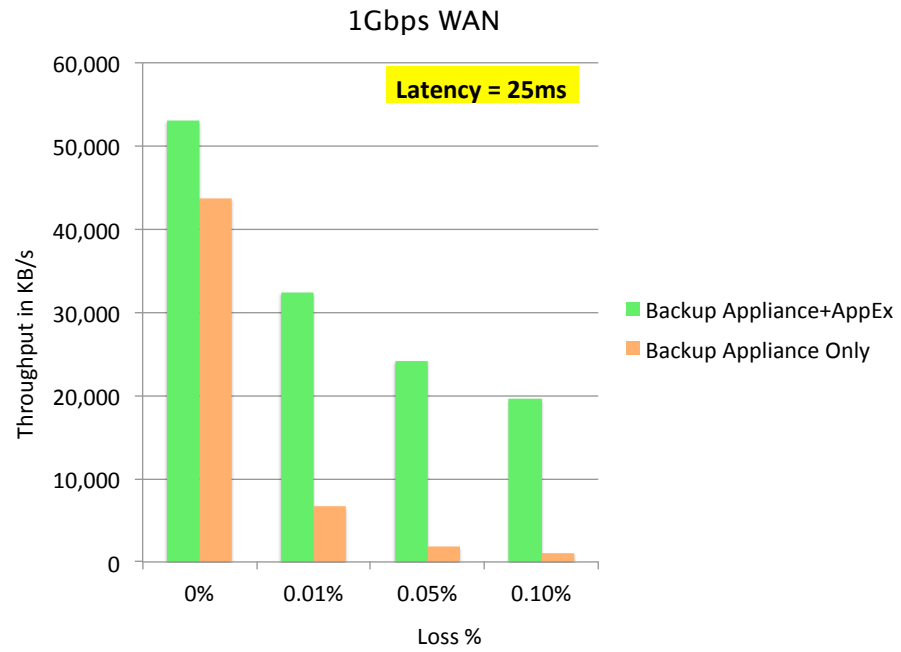
**Figure 15** - Backup Restore throughput comparisons for 10Mbps WAN



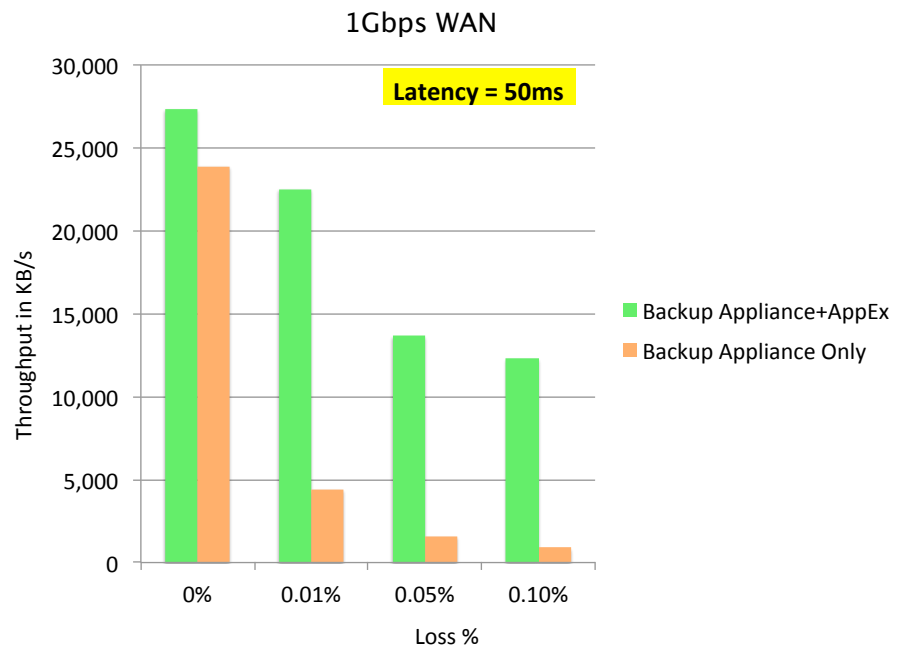
**Figure 16** - Backup Restore throughput comparisons for 100Mbps WAN



**Figure 17** - Backup Restore throughput comparisons for 100Mbps WAN



**Figure 18 - Backup Restore throughput comparisons for 1Gbps WAN**



**Figure 19 - Backup Restore throughput comparisons for 1Gbps WAN**

Test Scenario	Workload	WAN Bandwidth	WAN Quality (Loss rate% x Latency)	Improvement with AppEx
Restore	1 stream @0%dedup	10Mbps	Loss = 0%, 0.5%, 1%, 1.5% Latency = 0, 25, 50, 75, 150, 300, 500ms	<b>Up to 13X improvement</b>
Restore	1, 2 streams @0%dedup	100Mbps	Loss = 0%, 0.01%, 0.05%, 0.1% Latency = 25, 50ms	<b>Up to 12X improvement</b>
Restore	1, 2 streams @0%dedup	1Gbps	Loss = 0%, 0.01%, 0.05%, 0.1% Latency = 25, 50ms	<b>Up to 17X improvement</b>

**Figure 20 - Summary of Backup Restore performance improvements**

## Summary

The appliance provider is a market leader in storing, managing and protecting enterprise data. AppEx is the leader in the optimization of TCP to increase throughput and speed up data transfers. Combining the two has created the fastest and most efficient backup solution in the market today.



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