

Ultimate X Data Migration

Enabling predictable performance across any distance

EXECUTIVE SUMMARY

Challenge:

- Demonstrate ULT X's performance advantage for data migration application compared to conventional TCP/IP methods
- Benchmark Vcinity's data migration capabilities over a range of distances, bandwidths and file sizes

Solution:

ULT X solution provides remote access to or moves any data, anytime, anywhere thus enabling an effective data migration solution. It seamlessly fits into existing enterprise environments to move large amounts of data across global distances.

Results:

ULT X solution migrated a variety of datasets and provided significant improvement compared to existing TCP/IP-based network scenarios tested. In static and dynamic data migrations, ULT X consistently provided exceptional reductions (2 - >66 times compared to TCP/IP) in the time required to move a variety of datasets across extended distances up to 8000km.

Migrating to the cloud, relocating a data center, or upgrading a hardware IT platform all face a significant challenge: how to migrate an enterprise's data in a timely manner without disrupting business or suffering data loss. Ultimate X™ (ULT X) from Vcinity™ is a purpose-built enterprise solution that allows access to or movement of data at much faster speeds than ever before. Using ULT X, Vcinity recently performed successful, predictable data migrations executed within far fewer maintenance windows while accounting for both static (data that does not change during transfer) and dynamic (data that is continually being updated) data through a single solution.

Environment

Using the configuration shown in Figure 1, a variety of datasets including single and multiple files of sizes varying from 100MB to 100GB were used for data migration tests across distances with effective latencies ranging from 15 to 80ms (translating to 1500 to 8000km).

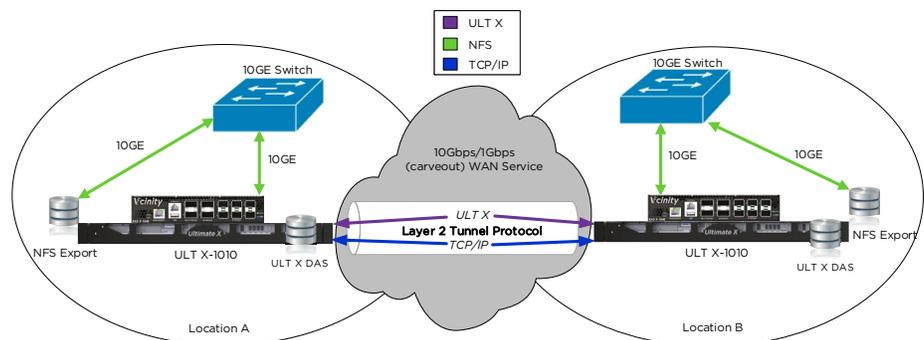


Figure 1. Environment and Network Layout

Two data migration scenarios are tested using this configuration and file synchronization capabilities of Access X™. Scenario 1 uses static data which does not change during the data transfer. For example, archived content such as game footage and geographic maps with geographic latitudes and longitudes are static. Scenario 2 uses dynamic data which changes during the migration process and represents of most of today's production data. The dynamic data used here experiences a 3% change in the data between migration windows. As much of the source data as possible is moved during the first migration window. During the second window, the changed data (3% of what was previously moved) is moved first, and then as much of the source data as possible is moved during the rest of the window. The third window has even more changed data: 3% of what was moved during the first two windows. Migration windows used in this testing are 8Hr. time periods during which large amounts of data is moved.

Results

Results of migrating both static and dynamic data over distance are listed below to illustrate the significant impact of having the right solution to perform an enterprise-class migration.

Scenario 1: Migration of Static Data

Table 1 details the dramatic reduction in single window transfer times and shows a tremendous reduction in the number of windows (4-12x compared to TCP/IP) required to move the data for multi-window migrations. TCP/IP tests were extended only to latencies of 40ms as the performance continued to degrade rapidly after that, whereas the ULT X solution was tested to 80ms demonstrating a predictable performance as latency increased.

Table 1. Static Data Transfer Scenarios

	Static Data			
	Using TCP/IP		Using ULT X	
	@15ms	@40ms	@15ms	@80ms
Single Window Time 100TB@10Gbps	110Hrs.	283Hrs.	22.9Hrs.	23.1Hrs.
Single Window Time 20TB@1Gbps	220Hrs.	566Hrs.	45.9Hrs.	46.3Hrs.
Number of 8Hr. Windows 100TB@10Gbps	14	36	3	3
Number of 8Hr. Windows 20TB@1Gbps	28	71	6	6

Static data migration is not always possible as coordinating lengthy windows of time in which the data must remain static causes logistic difficulties. Hence understanding ULT X's performance for dynamic data migration is equally important.

Scenario 2: Migration of Dynamic Data

Table 2 shows the number of windows required to move dynamic data using 8 hour windows. The last session is typically not a full session as only the changed data plus whatever source data remains are moved.

With its predictable, distance-independent performance, ULT X provides dramatic improvement (anywhere from 2x to >66x) for dynamic data migration compared to TCP/IP. As shown in Table 2 there is effectively no difference between moving the data over 15ms or 80ms circuits using ULT X, whereas there are vast differences between 15ms and 40ms tests using TCP/IP-based transfers. Again TCP/IP was not tested at 80ms as the results likely would have been >200 windows for all tests.

Table 2. Dynamic Data Migration

	Dynamic Data w/3% Change Rate			
	Using TCP/IP		Using ULT X	
10Gbps	15ms	40ms	15ms	80ms
# of 8Hr. Windows 100TB	18	>200	3	3
# of 8Hr. Windows 50TB	8	25	2	2
# of 8Hr. Windows 20TB	3	8	1	1
1Gbps	15ms	40ms	15ms	80ms
# of 8Hr. Windows 20TB	56	>200	7	7
# of 8Hr. Windows 10TB	18	>200	3	3
# of 8Hr. Windows 1TB	2	4	1	1

Summary

For efficient, predictable enterprise-class data migrations, ULT X clearly demonstrates the following benefits over TCP/IP:

- Dramatically reduces time to migrate a given dataset
- Transfers data in a predictable and consistent manner regardless of distance
- Significantly improves WAN utilization, which reduces the need to acquire additional expensive bandwidth
- Minimizes lengthy, repeated interruptions to routine work schedules to accommodate data migrations
- Reduces operational costs with shorter and fewer sessions for moving the same amount of data.



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