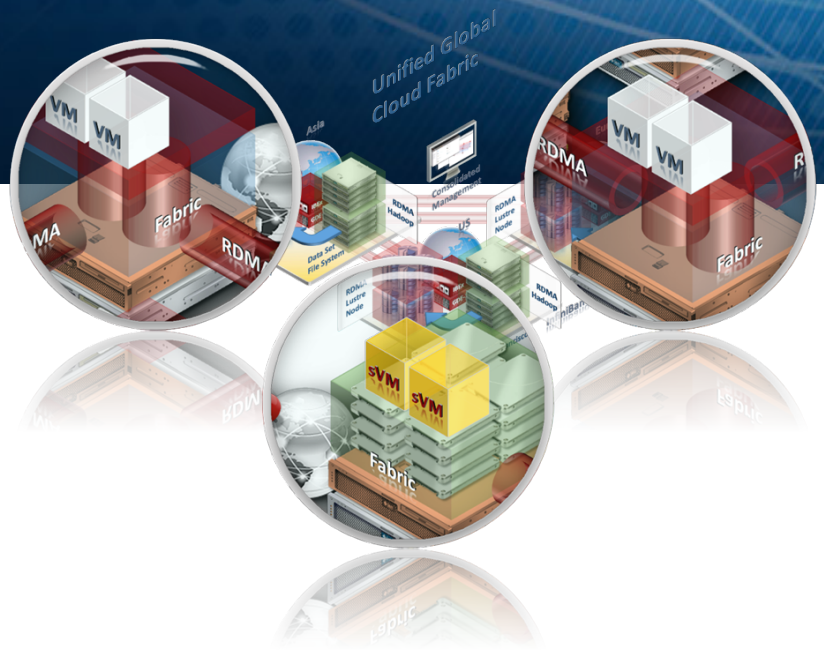
A New Standard in Information Availability

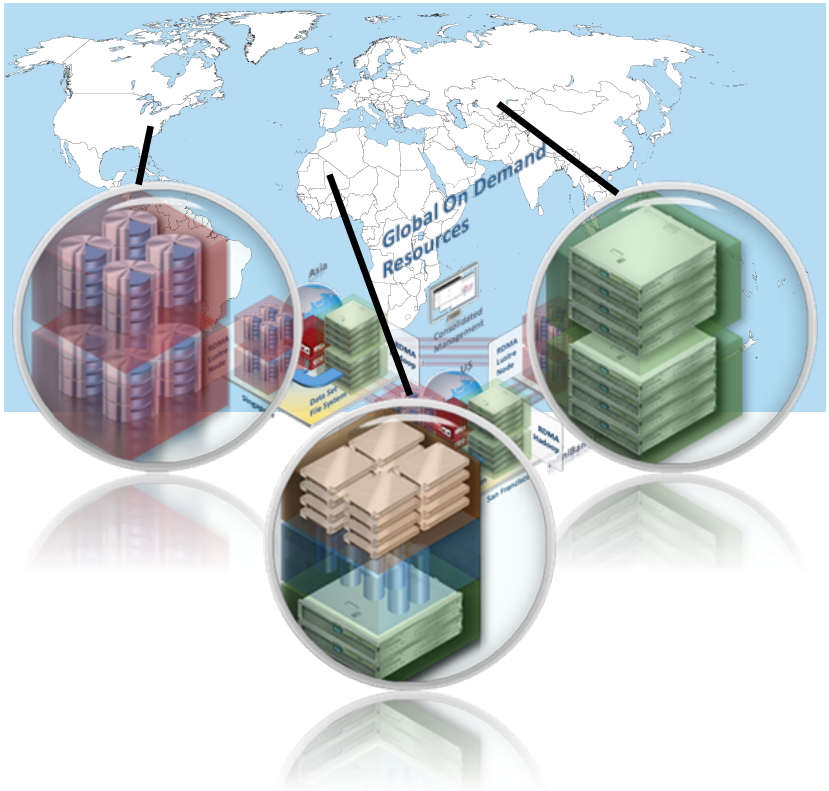


Steve Wallo

Solutions Architect

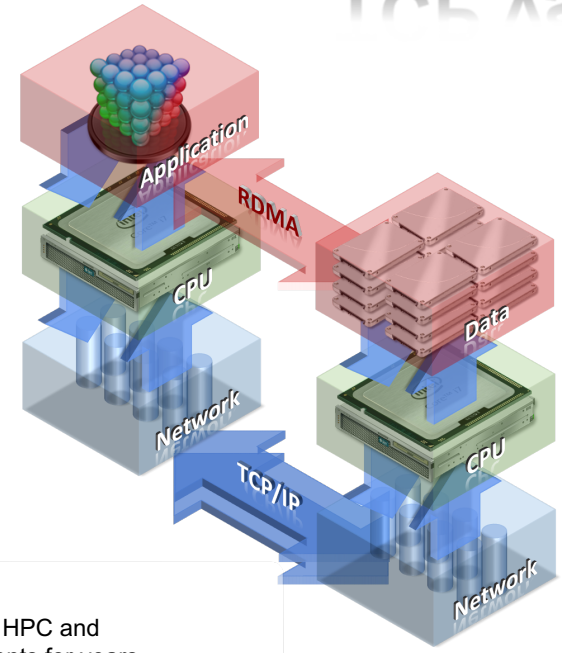
Bay Microsystems™

The Data Evolution Challenge

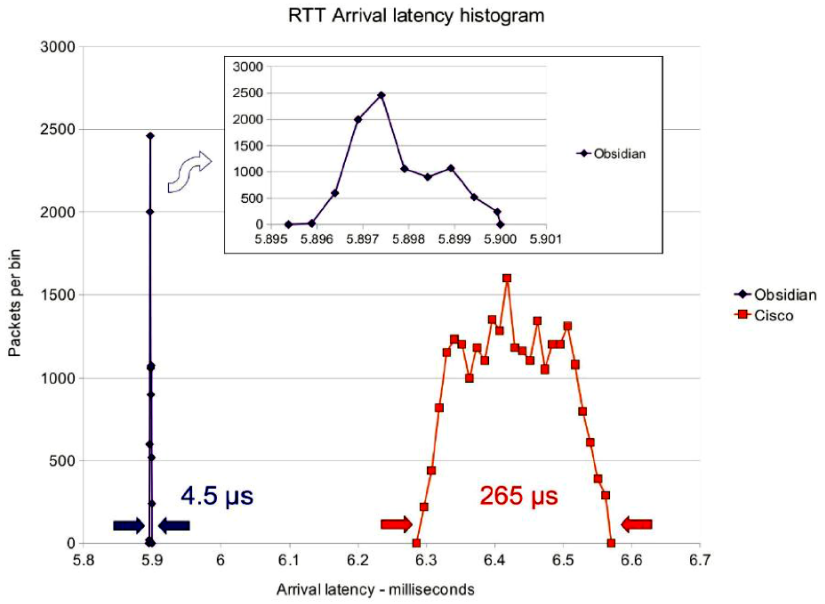


- ✓ More users need more data and need it faster
  - ✓ No longer tolerate making local copies
- ✓ Data is growing exponentially
  - ✓ Why move what could be leveraged in place
- ✓ Automation is key
  - ✓ Only works if using well understood methods

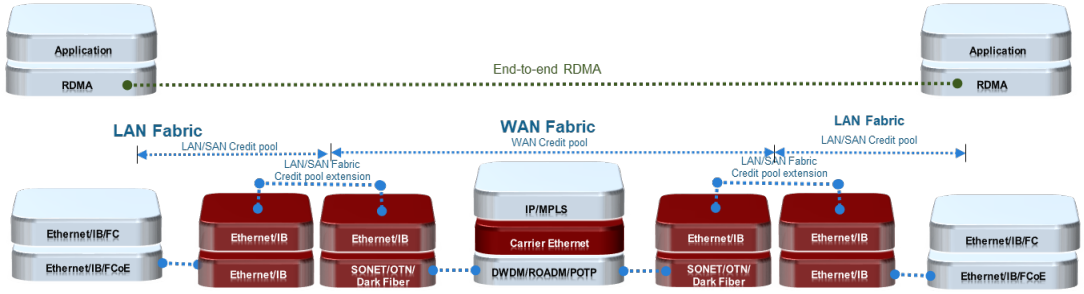
TCP vs. RDMA



- RDMA has been utilized in HPC and Supercomputing environments for years and more recently in Cloud environments like Azure.
- RDMA allows for CPU & O/S bypass by accessing information directly from remote memory locations.
- Allows for Traffic Engineering and Traffic Management for QoS and SLA
- Infiniband has full support for RDMA and RoCE supports most RDMA capabilities but benefits from use of Ethernet



Combining the Best of Existing Protocols



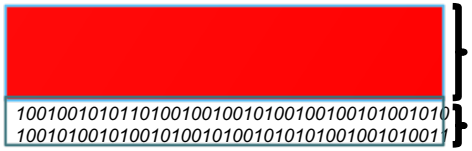
- WAN Remote Direct Memory Access (RDMA as a foundation)
- Fibre Channel Based Buffer Credits Technology for Lossless Data Transfer
- TCP Inspired Enhanced Data Recovery Mechanisms
- Packet Based Forward Error Correction

Leveraging hardware performance to natively extend network and storage fabrics across the WAN at line speeds

Network Connections – Efficiency Comparison

Traditional TCP

Bandwidth Utilization



Overhead > 70%

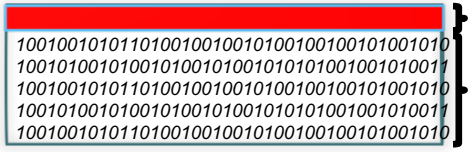
Throughput < 30%

- Limited local visibility for congestion (hop to hop)
- CPU and memory overhead consumption
- Packet drops / inefficient recovery protocol
- Retransmissions delays
- Network failover doesn't account for data "in-flight"

Reduce Overhead
Increase Data Flow

Bay Microsystems Network

Bandwidth Utilization



Overhead < 5%

Throughput > 95%

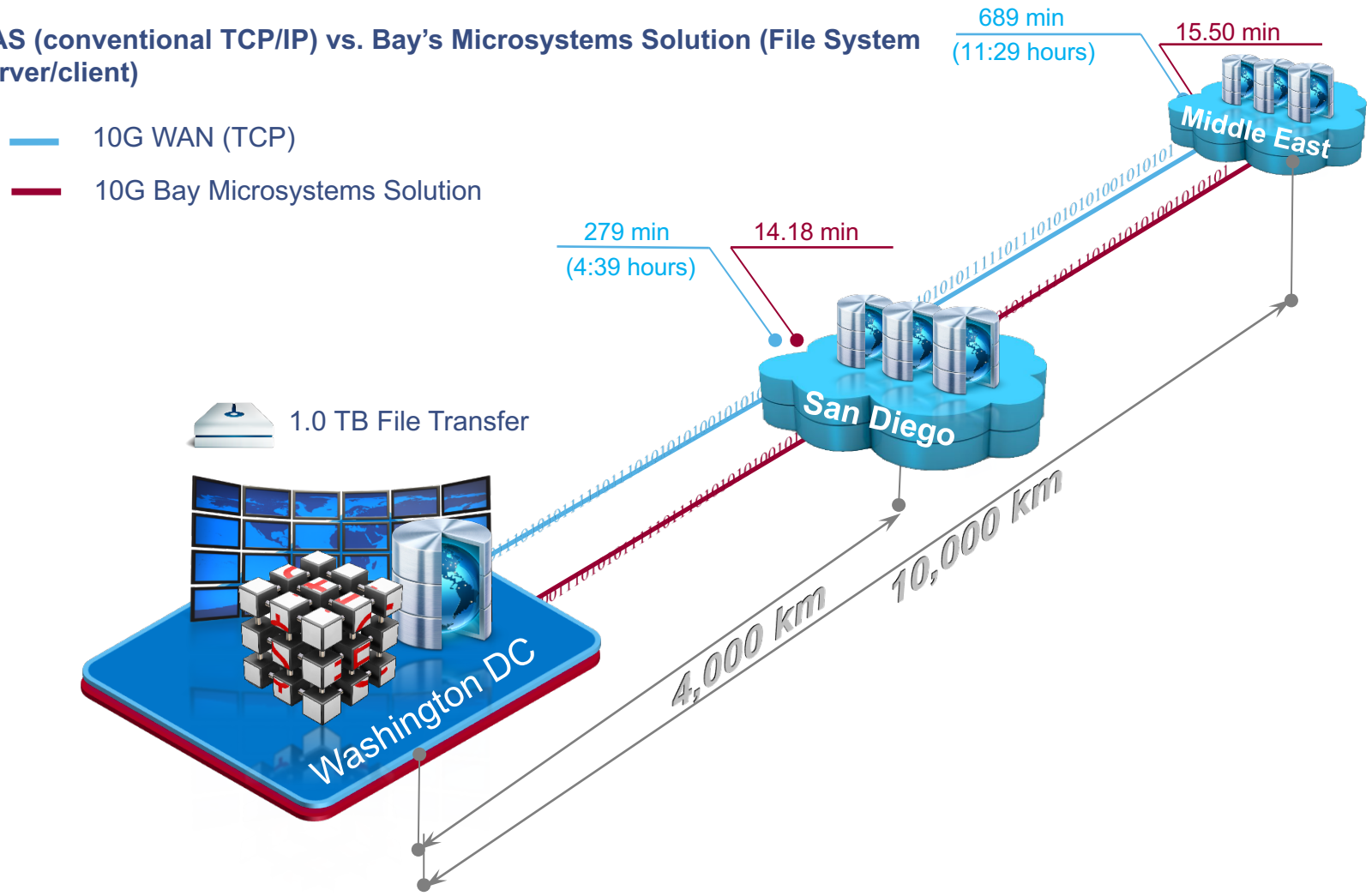
- End to end congestion visibility
- No direct CPU consumption
- Lossless protocol
- Deterministic throughput
- Manage all data "in-flight" up to global distances

Mainting Data Integrity

- No Data is modified or compressed

Local Performance on a Global Scale

NAS (conventional TCP/IP) vs. Bay's Microsystems Solution (File System server/client)



The net result can fundamentally drive a change in the business model

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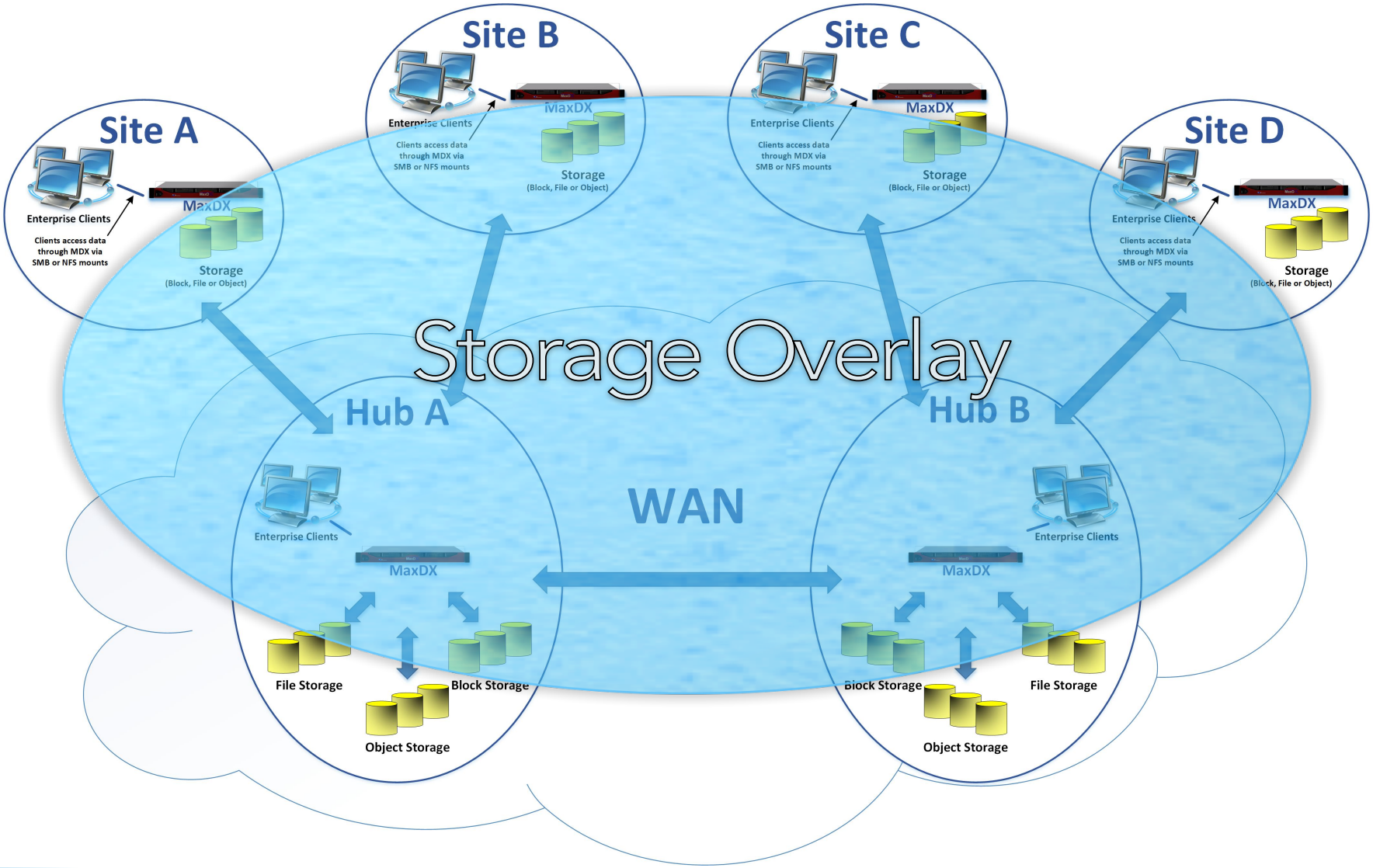
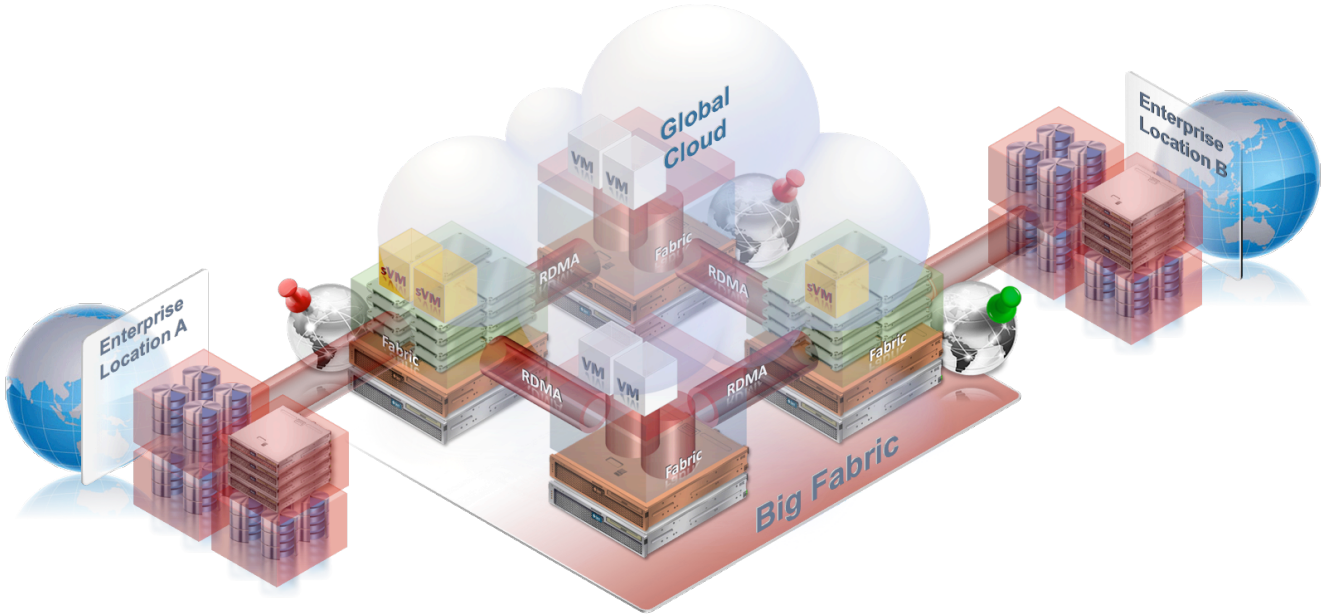
A Unique Approach To Distributing Information



Integrated Geo-Dispersed Assets



- ✓ Create a true Global Fabric of resources
  - ✓ Move what you need, read/edit/write what you don't
  - ✓ Only possible if accessing strategies using High Performance Protocols (RDMA)
  - ✓ Present a High Speed Storage Overlay
- ✓ Leverage common methods for integrating into user workflows
  - ✓ Folders/shares/paths. Enable the ability of automation benefits of simplification

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