# Q&A for WAAS Replication Accelerator Mode

**Q. What is WAAS Replication Accelerator Mode**

**A.** Replication Accelerator mode is configuration mode for Cisco WAAS that is dedicated for Data Center to Data Center replication known as Replication Accelerator mode (RA).

**Q. Which WAAS version is RA mode available in?**

**A.** At this time WAAS RA mode is available in WAAS 4.019.

**Q. Is there a mode of WAAS for Branch Office to Data Center optimization?**

**A.** Yes the standard version of WAAS is designed for Branch Office to Data Center optimization and is called Application Accelerator (AA) mode.

**Q. What is different about WAAS RA mode?**

**A.** WAAS RA mode is optimized for High Speed Links, Low Connection Counts, and Low Fan-outs, mainly for point to point connections between data centers or from a data center to a remote storage site.

**Q. What kind of backup and replication tasks challenges can WAAS RA mode address?**

**A.** The major challenges are that WAAS RA can address are when data replication and back-up traffic is taking longer to process than the available backup window and when the storage systems can not efficiently use the WAN link due to latency/packet loss issues which means that even when sufficient bandwidth is available it can not be fully utilized.

**Q. What kind of links is WAAS RA mode designed to optimize?**

**A.** The WAAS replication accelerator mode is designed to optimize WAN links over 20 Mbps and up to OC-12 (622 Mbps). For data center storage replication over small WAN links, the WAAS application accelerator mode would work just as well

**Q. How does WAAS Replication Accelerator mode over come these challenges?**

**A.** WAAS Replication Accelerator mode provides increased performance for data replication traffic by providing low latency processing for Data Redundancy Elimination (DRE) as well as further improving TCP Flow Acceleration (TFO) in WAAS.

**Q. What are the major benefits of WAAS RA?**

**A.** WAAS RA provides the following benefits:

- Complete data center storage replication jobs into existing or shorter replication windows
- Maximize investment in WAN bandwidth for data center storage replication
- Meet more stringent recovery point objectives (RPO) at a lower cost
- Extend the distance between disaster recovery sites

**Q. Why are these major benefits important?**

**A.** Customers can avoid the cost of a bandwidth increase, they can replicate data to sites that are out of the local disaster risk zone for storage, or closer to customers for eCommerce and they can keep their data center in sync and keep their data backed up so that they can meet their uptime, recovery time and recovery point objectives.

**Q. Why is a dedicated mode for DC to DC replication needed?**

**A.** High volumes of data replication traffic should not impact application traffic. If data replication traffic were on the same devices as application traffic it would over write the cache and reduce the performance of application traffic.

**Q. Can data backup be done on WAAS Application Accelerator devices?**

**A.** Yes, WAAS Application Accelerator mode is often also used for Branch Office to Data Center backup as well as for application acceleration and while it could be used for DC to DC replication, due to the unique characteristics of DC to DC traffic Cisco recommends a dedicated mode. The WAAS replication accelerator mode is optimized for WAN links over 20 Mbps and up to OC-12 (622 Mbps). For data center storage replication over small WAN links, the WAAS application accelerator mode is likely to work just as well.

**Q. What are the main advantages of WAAS RA mode?**

**A.** In comparison to other WAN optimization solutions, the Cisco WAAS solution offers these unique benefits when optimizing data center storage replication traffic:

- Lowest TCO & Regulatory compliance
- Ease of deployment through auto-discovery & auto-configuration
- Automatic separation of branch traffic from data center storage replication traffic
- Deployment flexibility into existing network topologies
- Resilient network integration

**Q. What are the benefits of WAAS RA mode?**

**A.** The benefits of WAAS RA mode are:

- Ease of deployment reduces the cost for training and staffing. WAAS does not require any special configuration for Replication Accelerator mode beyond specifying that mode upon installation.
- Automatic separation of application traffic from data replication traffic means that in cases where application traffic reaches the RA it is passed through and only replication traffic is processed by the RA mode device, while the application traffic is processed the Branch Office to DC devices.
- Deployment flexibility means that WAAS can be deployed transparently with no changes required to the network topology in either WCCP V2 redirected mode or inline mode.

**Q. How is data replication traffic different from application traffic?**

**A.** Data Replication Traffic has the following characteristics

- High Volume Traffic with Low Number of Connections
- Connection Longevity and Persistence higher than most Branch-DC applications
- Very High Speed Links with variable latency conditions

**Q. What is the impact of the Data Replication characteristics on the network?**

**A.** Data replication traffic characteristics have the following impacts on networks:

- High traffic volumes can over write the cache on a WAN optimization controller.
- Persistency of connections requires that the WOC should be able to recover the cache for replication tasks that are interrupted.
- Latency on high speed links means that the link can not be filled so TCP acceleration is essential to delivering high performance.

**Q. Has WAAS RA mode been tested with 3rd party data replication solutions?**

**A.** Yes WAAS RA mode has been tested with EMC SRDF/A (EMC e-Labs certification received in March 2009) and with NetApp SnapMirror. The solution does not preclude acceleration of other replication protocols.

**Q. How does WAAS RA mode fit in a data center solution with storage solutions and MDS?**

**A.** WAAS RA mode provides the following support for storage solutions and MDS environment:

- Portchannel support for resiliency in the case of port failure
- The ability to leverage multiple storage devices through the same Cisco MDS switch (aggregates FC traffic)
- Optimize data replication traffic for legacy FC storage (with no IP port support)
- Optimize heterogeneous storage devices

**Q. What is the advantage of Transparency w/ Auto-Discovery?**

**A.** Easier configuration & Non-disruption of Network (L3) services. Customers do not have to invest a lot of time deploying WAAS RA mode as configuration is automatic with Auto-Discovery, unlike competitive implementations where all of the parameters for DC to DC replication must be set manually.

**Q. What is the advantage of Data-Store Persistency across reboots?**

**A.** WAAS can leverage the existing cache upon reboot and continue to provide benefit to replication tasks with out having to relearn data patterns.

**Q. What is the advantage of Low Latency DRE Processing?**

**A.** By processing the DRE in RAM and writing to the disk post processing WAAS mitigates disk-processing latency and provides much faster processing while still providing a persistent cache by writing to disk post processing.

**Q. What is the advantage of automatic isolation of branch-DC traffic from DC-DC traffic (Dedicated Replicator Mode)?**

**A.** Data Center Backup Traffic is very high volumes so it will overrun the cache if both traffic types were running on the same equipment, so application traffic would not benefit from caching in this case. Dedicating optimization resources to DC-DC replication means high performance as there are no compromises in the way the devices are configured and no contention for resources between DC-DC traffic and application traffic.

**Q. What is the advantage of H/W accelerated out-of-path deployment (WCCP V2)?**

**A.** WCCP V2 provides redundancy since WAAS devices can be clustered and it provides High-Availability since in the case of the failure of one device in the cluster the others will continue to operate. This configuration minimizes the need for scheduling downtime as devices can be taken offline with out impacting traffic optimization.

**Q. What is the advantage of the High Throughput of our WAE-7341 & WAE-7371 devices?**

**A.** Cisco's high throughput devices enable deployments with fewer devices, lowering costs for customers.

**Q. How does WAAS RA mode deal with latency on high speed WAN links?**

**A.** WAAS RA mode uses TFO optimization to address TCP issues for high speed WAN links.

**Q. How is DRE optimized on WAAS RA mode?**

**A.** DRE is optimized for low latency processing requirements for DC to DC Replication. It is processed in RAM and then written to disk post processing.

**Q. How does Auto-discovery work and what is the benefit?**

**A.** A WAE device in Replication accelerator mode negotiates optimizations only with like peers configured in Replication Accelerator mode. Only data replication traffic between RA devices is optimized.

**Q. What happens to application traffic that arrives at an RA mode device?**

**A.** In most cases RA mode devices will be deployed point to point between data centers and they won't see application traffic, however in cases where users on a Branch Office to Data Center WAAS configuration are accessing servers in a remote data center and that traffic also passes through the RA mode devices in the DC to DC replication deployment, the application traffic will be passed through by the RA mode devices and optimized by the Branch Office to Data Center devices only.

**Q. How does Auto-configuration work and what is the benefit?**

**A.** Application traffic policies (TFO/DRE services) automatically configure once a WAE device is enabled for Replication Accelerator mode. No additional manual configuration is required, unlike with competitors who require manual configuration for this mode of operation.

**Q. What are the network deployment modes for WAAS RA mode and what are the benefits?**

**A.** WAAS in RA mode may be deployable in Inline or in redirect mode using WCCP V2. Having both modes allows for installation in any network architecture and offers the choice of a simple inline deployment or the resilience and scalability of redirected mode.

**Q. How does WAAS RA mode provide High-availability and scalability?**

**A.** WAAS RA mode provides High-availability through N+1 device clustering in WCCP V2 redirect mode.

**Q. What is the benefit of Data-Store Persistence across reboots?**

**A.** Data-Store Persistence provides for quick recovery and continuation of in process replication in operations by maintaining the cache on the disk.

**Q. What equipment does WAAS Replication Accelerator run on?**

**A.** WAAS RA mode runs on the high end WAE-7341 & WAE-7371 platforms.

**Q. Does WAAS RA Mode require a dedicated WAAS Central Manager (CM)?**

**A.** No, Branch/DC and DC/DC can be managed from same WAAS Central Manager (CM)

**Q. Do WAAS RA mode devices interoperate with Application Accelerator (AA) mode devices?**

**A.** WAAS RA mode devices only negotiate optimizations with like peers. They pass through traffic from AA mode devices.

**Q. Is WAAS RA Mode also a branch backup solution?**

**A.** No, branch backup is handled by the WAAS Application Accelerator mode.

**Q. What software release supports the WAAS RA mode?**

**A.** WAAS RA mode is a feature in WAAS 4.0.19. It is not yet a feature in WAAS 4.1

**Q. Can a WAAS 4.1 CM managed WAAS 4.0 devices?**

**A.** Yes, a WAAS 4.1 Central Manager can manage all WAAS 4.0 devices including WAAS RA mode devices.

**Q. Can WAAS RA mode be managed from the same Central Manger as Branch to DC mode?**

**A.** Yes, Branch to DC and DC to DC devices can be managed from same WAAS Central Manager (CM).

**Q. Where can I get more information on WAAS RA mode?**

**A.** Additional collateral is available at http://www.cisco.com/go/waas.

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