

# Cisco Wide Area Application Services

## Help ensure user quality of experience and maximize your existing bandwidth

Application performance, bandwidth allocation, and users' quality of experience while using applications across the WAN or from the cloud can suffer from many problems that can cause poor performance and lead to network bottlenecks, excessive bandwidth costs, and user productivity concerns. These concerns include high network latency, constrained bandwidth, poor link usage, and packet loss.

Cisco Software-Defined WAN (SD-WAN) greatly improves performance with real-time application optimization to increase application quality of experience with intent-based dynamic path control to optimize network and application performance, but does not directly address latency, jitter, and packet loss introduced over the WAN.

Cisco WAAS minimizes enterprise bandwidth usage and accelerates application performance, and you can use WAAS to make optimum use of your existing bandwidth, while helping ensure that each application gets the resources it needs to deliver high-quality user experiences across the WAN.

Using a combination of TCP optimization techniques and application acceleration features, WAAS overcomes the most common challenges associated with transporting traffic over a WAN. By applying per-application protocol acceleration and caching techniques to WAN traffic flows, WAAS makes sure your apps operate properly so that networks are application-optimized and employees stay engaged and productive. Apps will now operate over the WAN as well as they do over the LAN, despite the latency, jitter, and packet loss introduced by the greater geographical distances. Table 1 lists the problems that WAAS addresses.

## Benefits

Benefits of Cisco® Wide Area Application Services (WAAS) follow:

- **Improve performance** of applications by addressing performance and reliability concerns such as constrained bandwidth, high network latency, and higher rates of packet loss.
- **Help ensure user quality of experience** and provide branch-office employees with LAN-like access to information and applications across a geographically distributed WAN network.
- **Save costs** by minimizing unnecessary WAN bandwidth consumption using advanced compression algorithms, caching, and application optimization.

## Defer investments by reducing WAN traffic loads

Reduce traffic loads across your WAN with techniques such as data compression, data redundancy elimination, and TCP/User Datagram Protocol (TCP/UDP) packet flow optimization. Along with quality of service and traffic shaping features, Cisco WAAS reduces WAN traffic volumes while helping ensure optimal application performance.

Cisco WAAS enables you to:

- Defer investments in additional bandwidth by using existing capacity more efficiently
- Run applications over the WAN with the same performance over the LAN
- Help ensure employees remain engaged and productive with responsive applications regardless of geographic distance.

Unlike other competitive WAN optimization solutions, the full suite of capabilities is available in many form factors that you can centrally manage. So you can match the right solution to the budget and power requirements for each of your sites.

## Ensuring optimal application performance

You can get WAAS integrated right inside your Cisco router—and in other form factors, too—with centralized management. When you turn on WAAS, your WAN traffic loads shrink by as much as 100-fold, thanks to data compression, data redundancy elimination, and TCP packet flow optimization.

Figure 1

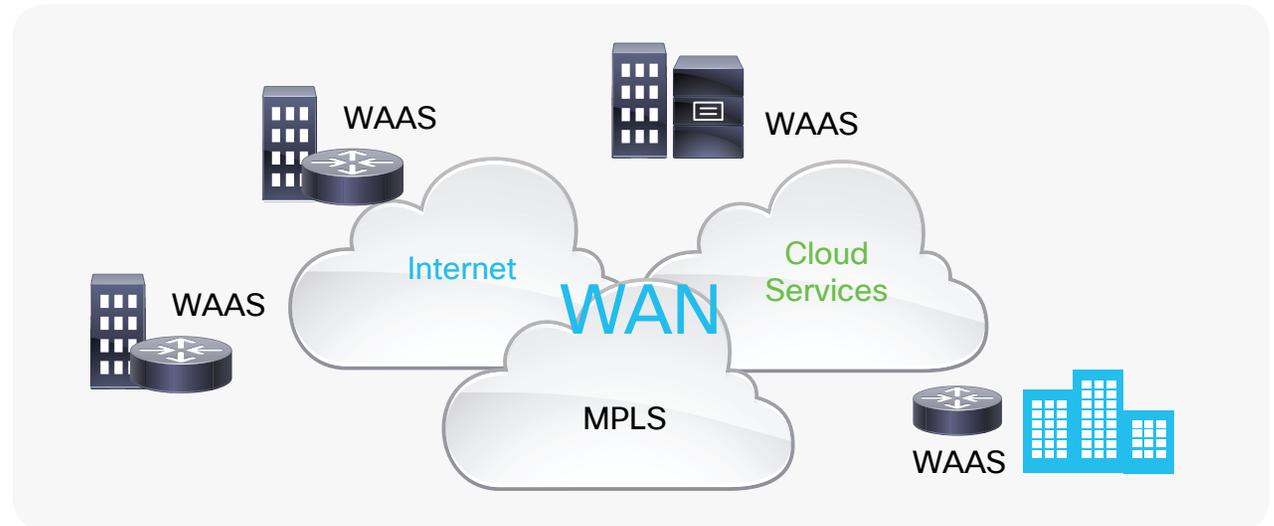


Table 1 Problems WAAS addresses

WAN problem	WAAS solution
High network latency	Intelligent protocol adapters reduce the number of roundtrip responses common with chatty application protocols.
Constrained bandwidth	Data caching provided with the file services feature and data compression reduce the amount of data sent over the WAN, thereby increasing data-transfer rates. These solutions improve application response time on congested links by reducing the amount of data sent across the WAN.
Poor link usage	TCP optimization features improve network throughput by reducing the number of TCP errors sent over the WAN and maximizing the TCP window size that determines the amount of data that a client can receive at one time.
Packet loss	Optimized TCP stack in WAAS overcomes the problems associated with high packet loss and protects communicating endpoints from the state of the WAN.