

# PTC Pro/ENGINEER and Windchill with Cisco ANS Solutions

## Test Summary

- Pro/ENGINEER operations are 11 to 25 times faster over the WAN using Cisco WAAS and Cisco WAAS Mobile.
- Windchill content operations are 41 to 95 times faster over the WAN using Cisco WAAS and Cisco WAAS Mobile.

## Test Methodology

The optimization tests were performed on a full working copy of PTC Windchill, Oracle database, and web servers. A full data center implementation and remote engineering site were configured, using Cisco ACE, Cisco WAAS, and Cisco WAAS Mobile devices, to provide the proper connectivity.

A series of tests were performed to simulate PTC Windchill and Pro/ENGINEER users during a typical working day. The testing included HTTP operations, HTTP content operations, and folder browsing operations in Windchill, as well as model upload and download in Pro/ENGINEER, all using both SSL encrypted and unencrypted data.

For complete details of the testing, see: [http://www.cisco.com/en/US/docs/solutions/Verticals/Distributed\\_RD/dist\\_rd.html](http://www.cisco.com/en/US/docs/solutions/Verticals/Distributed_RD/dist_rd.html)

## Overview

Manufacturers are increasingly expanding their R&D by implementing distributed product development centers. At the same time, they are centralizing data and applications. Centralization enables significant savings, improved security, and more flexible deployments, but also creates problems with global product lifecycle management (PLM) deployments, including:

- Higher bandwidth utilization and poor end user experience in remote sites
- Greater business risk due to security breaches in distributed deployments
- Need for high levels of availability with centralized business-critical applications
- Challenges associated with cost-effective delivery of high application performance, availability, and security to global users

If not properly addressed, these challenges can result in high cost of deployment, reduced productivity, and lower utilization of global PLM deployments.

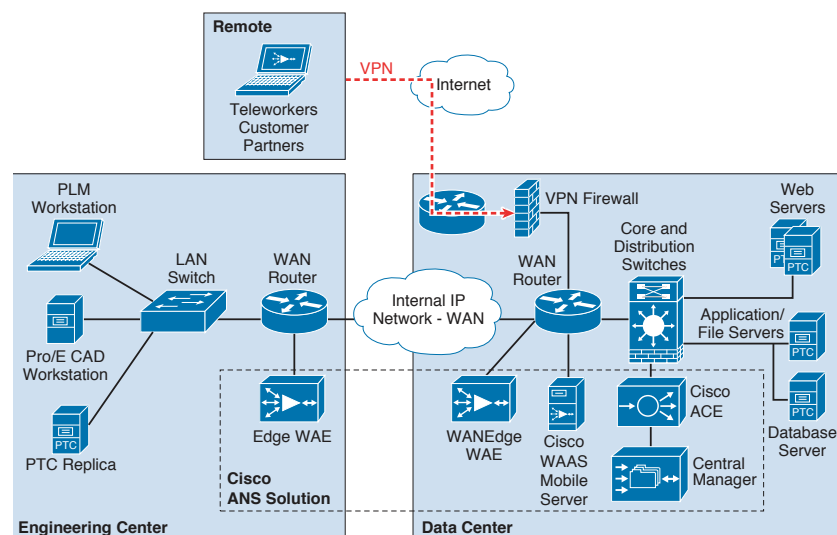
Cisco has worked closely with Parametric Technology Corporation (PTC) to validate the Cisco® Distributed R&D solution architecture with PTC's Windchill and Pro/ENGINEER applications to address these challenges. This solution architecture utilizes Cisco Application Networking Services (ANS) to optimize the performance of PTC applications across a WAN.

## Implementation

The Cisco Distributed R&D solution incorporates Cisco ANS technologies to optimize application performance and data center resources. The ANS solution includes the Cisco Wide Area Application Services (WAAS) and Cisco Application Control Engine (ACE) technologies. Cisco WAAS resides in both the data center and the R&D remote sites or, in the case of remote users, on the user's computer, to offer a secure WAN optimization service through the use of intelligent caching, compression, and protocol optimization.

The Cisco ACE is deployed in the data center and provides application optimization services for PTC Windchill and other enterprise applications. The Cisco ACE uses a full range of Cisco application switching technologies to improve availability, performance, and security of applications while facilitating data center infrastructure consolidation (Figure 1).

Figure 1 Cisco Distributed R&D with PTC solution architecture



## Test Results

Tests were performed using Cisco ANS technologies with multiple WAN configurations. These test scenarios and associated test results are explained in detail in the Distributed R&D Solution Deployment Guide for PTC Windchill. A sample of the results is shown in Table 1 (results shown for WAAS, the WAAS mobile test results are also included in the Deployment Guide).

**Table 1 Sample Test Results**

Cisco WAAS Unencrypted	Improvement Range	x Times Faster
HTTP operations	8–92%	6
HTTP content operations	69–99%	41
Folder browsing testing	33–90%	5
Pro/ENGINEER operations	90–92%	11
Cisco WAAS SSL Encryption	Improvement Range	x Times Faster
HTTP operations	6–91%	4
HTTP content operations	65–98%	27
Folder browsing testing	47–86%	4
Pro/ENGINEER operations	88–90%	9

## Cisco ANS Features for Distributed R&D with PTC

Cisco WAAS is a comprehensive application acceleration and WAN optimization solution for branch offices that optimizes performance of any TCP-based application across a WAN. Cisco WAAS integrates transparently with the network, preserving TCP information to maintain functions such as security, QoS, visibility, and monitoring.

Its application acceleration and WAN optimization techniques include:

- **Application acceleration:** Latency and bandwidth reduction through advanced protocol optimizations such as read-ahead, prediction, suppression, and sophisticated caching techniques mitigate application latency. Application-specific acceleration including Common Internet File System (CIFS), Common Internet File System (MAPI), Secure Sockets Layer (SSL), HTTP, print, and Network File System (NFS).
- **WAN optimization:** Bandwidth and throughput improvement utilizing features such as Data Redundancy Elimination (DRE) which improves efficiency and mitigates unnecessary bandwidth consumption, and Transport Flow Optimization (TFO), which optimizes TCP to enable better performance and efficiency in WAN environments.

- **Integration:** Transparent integration with existing infrastructure through dynamic autodiscovery of endpoints for efficient deployment and end-to-end visibility and compatibility with NetQoS for application response time monitoring and other functions such as QoS, firewall security, and Cisco NetFlow monitoring.

The Cisco Application Control Engine (ACE) product family, a comprehensive application delivery solution, helps ensure application availability, accelerate application performance, and protect applications while simultaneously reducing data center costs. Some of the benefits of the Cisco ACE family products include:

- **Greater application availability:** Helps ensure business continuity and the best service to end users through highly scalable Layer 4 load balancing and Layer 7 content switching.
- **Accelerated application performance:** Accelerates performance of web-based applications by using patented acceleration technologies and highly efficient data compression, while improving server performance by offloading and caching SSL, TCP, and XML.
- **Comprehensive application security:** Acts as a last line of server defense with features such as deep packet inspection, network and protocol security, and highly scalable access control capabilities.
- **Lower total cost of ownership:** Minimizes costs by reducing the number of required servers and load balancers; lowers power and cooling requirements, increases IT productivity, and provides faster application deployments by taking advantage of a virtualized architecture.

The combination of PTC Windchill and Pro/ENGINEER with the Cisco Distributed R&D solution helps to address the business and technical challenges associated with globally distributed product development environments. The validated architecture is built on Cisco's widely used ANS technologies and helps manufacturers optimize application performance and reduce the cost and complexity of PLM and CAD data management.

## For more information:

[www.cisco.com/go/manufacturing](http://www.cisco.com/go/manufacturing)



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