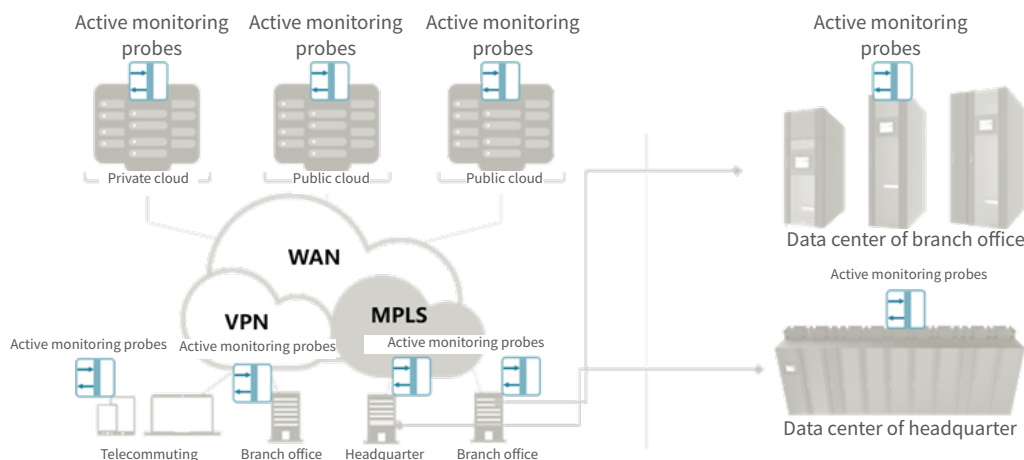


IP Network Active Monitoring System (X-Vision)

Introduction

The X-Vision IP network active monitoring system generates network traffic to measure end-to-end network and application quality, providing 24/7 real-time testing data. It reports real-time critical network metrics for all links, such as packet loss, latency, jitter, and out-of-order packets, and supports real-time alerts via email, SMS, and WeChat. This enables enterprise or telecom IT team to perform IP network performance test and evaluation, network quality SLA analysis and alerts, network optimization, equipment selection evaluation, and network troubleshooting and resolution.

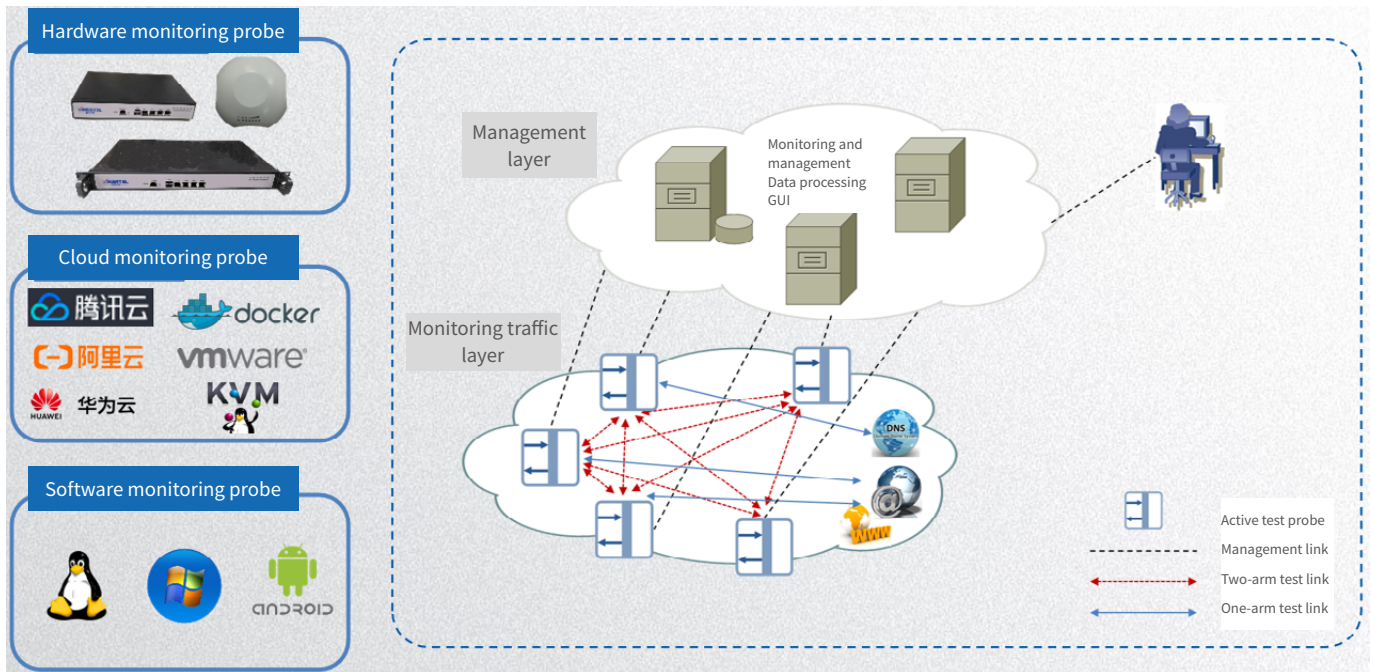
The X-Vision monitoring system features a software architecture based on a distributed design with a layered functional structure, consisting of a presentation layer, a business logic layer, and a data processing layer. Each layer can be scaled through server expansion to meet the demands of large-scale monitoring.



System

X-Vision consists of console and active monitoring probe:

- The X-Vision console can be deployed on a Cloud VPC, ESXi Linux, or a physical Linux host, which is accessible via a browser.
- Active monitoring probes: hardware probes, software probes, or cloud probes.



Active monitoring test type

The X-Vision network active monitoring system supports two-arm monitoring and one-arm monitoring.

◆ Two-arm test

The active monitoring probes at both ends of the link generate traffic (such as UDP, HTTP, FTP, or audio and video streams) to evaluate the network quality. The test scenarios are as follows:

- (1) Network forwarding performance test: latency, jitter, out-of-order, packet loss ratio, etc., and support customized network test topology and test cases;
- (2) Throughput test: supports UDP/TCP throughput test;
- (3) Voice and video bearing quality test: support voice and video stream simulation, and test latency, jitter, out-of-order, packet loss ratio.

◆ One-arm test

Through an active monitoring probe at one side of the link, real application traffic such as HTTP and DNS is simulated to conduct real-time network quality assessments of real services in the network, such as WEB and DNS servers. The test scenarios are as follows:

- (1) HTTP/HTTPS application test: support DNS resolution, TCP connection/s, first byte and last byte time, and download rate test;
- (2) Internet VPN access test: access quality of different types of websites;
- (3) Server performance test: DNS server, mail server, DHCP server test;
- (4) Network node accessibility: Traceroute

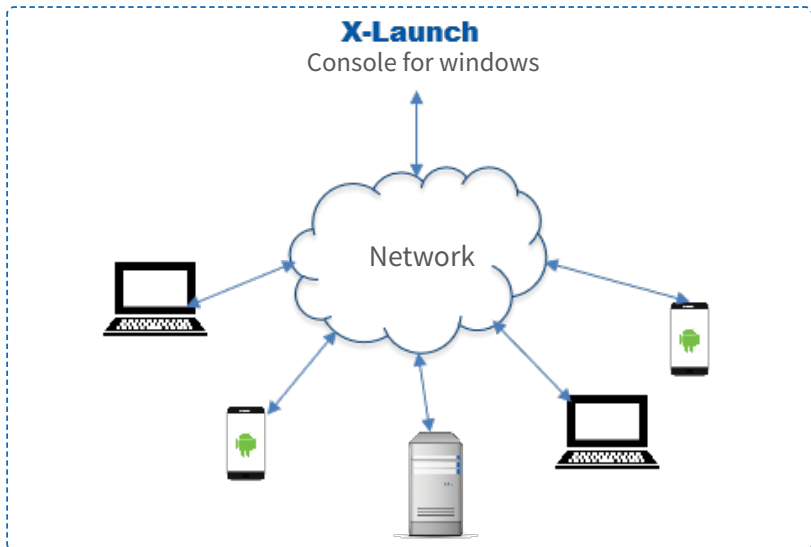
IP network performance test tool (X-Launch)

Introduction

The X-Launch tests the end-to-end performance of the network and the application quality of service by simulating real network traffic.

X-Launch supports comprehensive network performance evaluation and device test by simulating real application protocols on hundreds of endpoints

X-Launch can also evaluate the performance of wired or wireless networks; Support REST API to facilitate automated testing; Support PDF report and detailed test results; Support U-Key mode license.



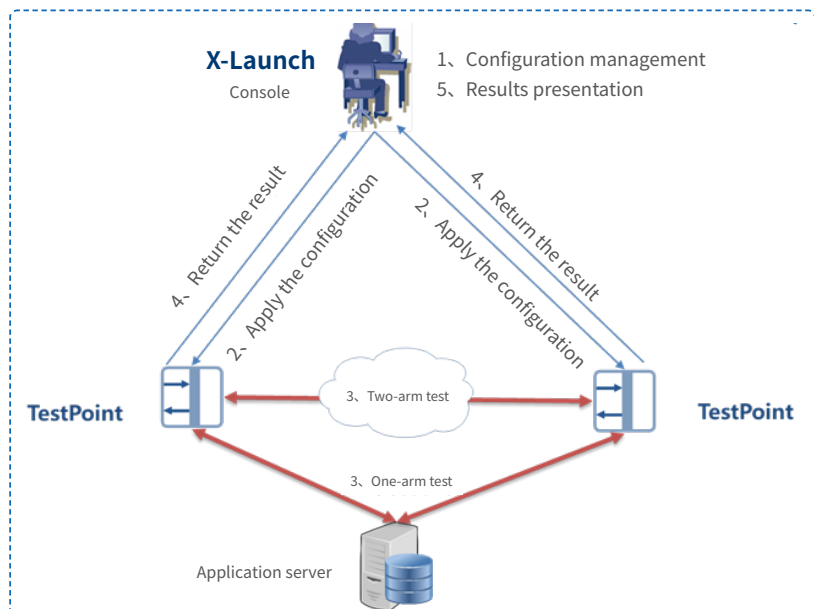
System

X-Launch consists of the control end (TestConsole) and the test endpoint (TestPoint):

- The X-Launch console software is installed in Windows 7/10 (64 bit), CentOS or Ubuntu. PC requirement : 4-core CPU, 8 GB memory or above, and 150 GB hard disk or above
- The test endpoint supports Linux, Windows, Android, IOS, VxWorks.

Test process

After activation, the test endpoints proactively register with the X-Launch console. Then the users can configure test cases and parameters, which are applied to the test endpoints. The test endpoints conduct tests based on these configurations and return the results.



◆ Protocol

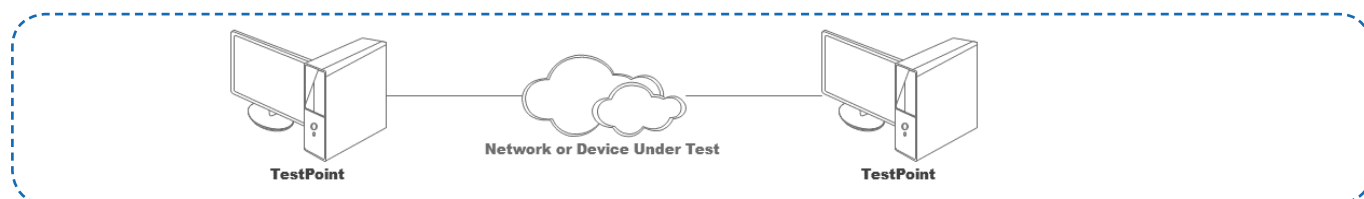
Application	Protocol	Metric
TCP service	TCP_TP TCP_RR TCP_CRR	TCP connection establishment time, throughput, transaction rate, transaction time
UDP service	UDP_TP UDP_STREAM UDP_RR	One way delay, jitter, out-of order, throughput, transaction rate, transaction time
Internet data service	HTTP, FTP, POP3, SMTP	TCP connection establishment time, user login time, service response time, TTFB, TTLB, and application layer throughput
Voice service	VOICE	Session establishment time, call success ratio, R value, MOS
DNS service	DNS	Resolution response time
Video service	RTSP	Delay, jitter, packet loss ratio
ICMP	PING Trace route	Response time, loss rate

I Test topology

X-Launch supports two types of test: two-arm test and one-arm test.

◆ Two-arm Test

Both sides of the NUT/DUT are X-Launch test endpoints, which generate real traffic between test endpoints to test the performance of NUT/DUT.



◆ One-arm test

The test endpoint initiates an application session to test a real server (such as a website). In the test topology, one side acts as the test initiator, while the other side is the real server being tested.

