

# Network Emulators

## CATALOG



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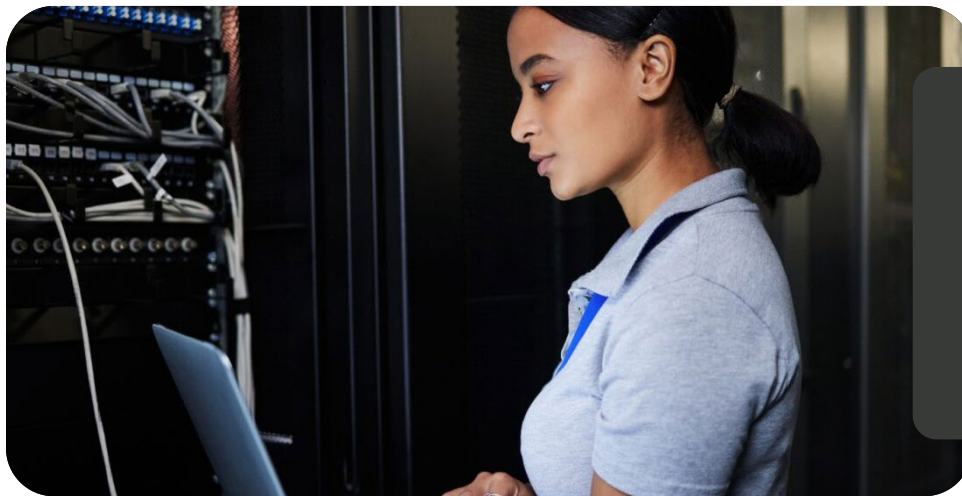
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# Introduction

## Network emulators — from interoperability testing to end-to-end network validation

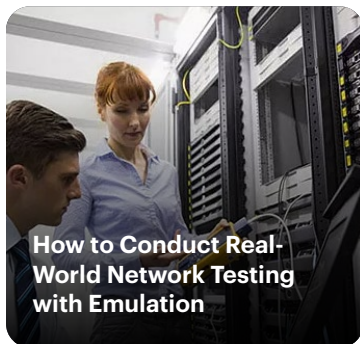
Explore our wide range of network emulators designed to validate performance, resilience, and reliability across the entire network stack. Whether you need to emulate real-world scenarios with dynamic network conditions, perform interoperability testing, or stress-test your entire network, understanding which network emulator capabilities best suit your application needs can help you make informed decisions and get the most from you network emulator solution. That's why we offer a comprehensive library of [network emulator resources](#).



### Test in the lab with real-world conditions

Network emulators enable you to test applications, protocols, and hardware with real-world impairments prior to deployment. You need a network emulation solution that ensures reliable performance validation across a wide range of network environments. Keysight resources will help you develop a deeper understanding of network emulators so you can confidently validate your applications and networks.

Here are a few examples of the resources you will find to help you select the network emulator that is right for you:



**How to Conduct Real-World Network Testing with Emulation**



**Explore High-Speed Network Emulation Testing**



**Enable 5G Success with Network Test Emulation**

# Network Emulators

Keysight network emulators enable you to confidently validate your devices, applications, and networks before deployment, knowing they will perform reliably in the real world. You can recreate real-world conditions in the lab, from everyday congestion to worst-case delays, jitter, and outages, so you can uncover issues early, ensure interoperability, and fine-tune performance. Select the network emulator you need based on the number of ports and interface speed. Explore our network emulators enabling mixed-speed testing to 10GE or high-speed validation up to 100GE.



**Network Emulator 2**



**Network Emulator 3**

Ports	<b>2 or 8</b>	<b>2 or 4</b>
Interface speed modes	<b>100 MbE, 1GE, 10GE</b>	<b>10GE, 25GE, 40GE, 50GE, 100GE</b>
Form factor	<b>Appliance, software</b>	<b>Appliance, software</b>

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# Network Emulator 2

## Real-world network emulation up to 10GE

Keysight Network Emulator 2 solutions offer precision Ethernet test for 100 MbE, 1GE, and 10GE impairment emulation, ideal for validating applications, protocols, and hardware under realistic and worst-case network conditions. Built on an 8-port FPGA hardware architecture, this emulator delivers line-rate performance and flexible resource management that lets you mix and match speeds on the same device to test mixed-speed configurations simultaneously. Pair your network emulator with [related software](#) to emulate realistic network conditions, application traffic, and security threats to form a full test environment and tackle complex performance, interoperability, and disaster recovery scenarios with confidence. Request a quote for one of our popular configurations today.

[> Learn more about our Network Emulator 2 solutions](#)

### Real-world impairments

Precisely injects delays, jitter, packet loss, errors, drops, duplication, reordering, and IP fragmentation to stress systems and validate fail-over, application robustness, and operational behavior in the lab.

### Multispeed, mixed-mode

Emulates mixed-speed configurations from 100 MbE to 10GE, applied per port or per flow, on a single platform — eliminating the need for multiple devices or test setups.

### Compact and lightweight

Supports desktop or rack-mount configurations with scalable port counts to accommodate various testing environments such as predeployment, QA labs, and SD-WAN development.

### Flexible resource management

Allows manual or automatic allocation of bandwidth and memory per port or per bank, enabling optimized performance for both high-throughput and parallel multi-port test scenarios.



Ports	2, 8
Interface speed modes	100 MbE, 1GE, 10GE
Form factor	Appliance, software

[View popular configurations](#)

# Network Emulator 3

## High-performance network emulation up to 100GE

Keysight Network Emulator 3 solutions offer high-speed Ethernet testing that support speeds from 10GE to 100GE. Building on the Network Emulator 2, these models deliver full line-rate performance at higher speeds, with flexible resource allocation, enabling simultaneous mixed-speed configurations across a single chassis. They also emulate real-world conditions at ultra-fast link rates with precise control of latency, jitter, packet loss, and other impairments, making them the ideal choice for emulating network impairment scenarios for data center, transport, and disaster recovery testing. Rack-mountable and enterprise-grade, they support thousands of concurrent sessions, dynamic topology changes, and network slicing scenarios, ensuring repeatable large-scale emulation. Request a quote for one of our popular configurations today.

[Learn more about our Network Emulator 3 solutions](#)

### High-speed, multirate impairments

Process and impairs bidirectional network traffic at maximum throughput up to 100GE without dropping packets or slowing down, enabling realistic network condition testing.

### Test automation and API access

A built-in RESTful web API with Python and TCL support enables full automation of test workflows, while integrated packet capture and replay streamline troubleshooting.

### Flexible, modular design

Supports one or two impairment cards per chassis, mixed Ethernet speeds, and flexible resource management for memory and throughput to meet diverse lab needs.

### Customizable filter library

Build and reuse proprietary or standards-based Layer 2-7 protocol filters, enabling highly precise traffic selection for targeted and repeatable testing.



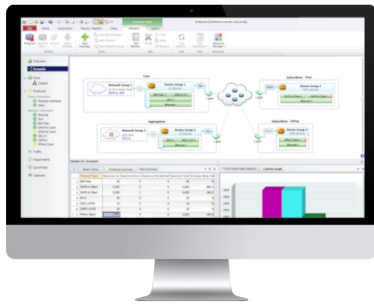
Ports	2, 4
Interface speed modes	10GE, 25GE, 40GE, 50GE, 100GE
Form factor	Appliance, software

[View popular configurations](#)

# Related Network Test Solutions

## Create a complete real-world test environment

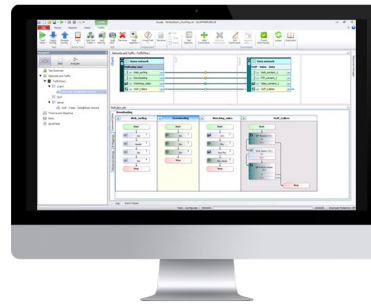
Combine your network emulation solution with our performance, application, and security test systems to create a comprehensive real-world test environment. From high-scale Layer 2/3 traffic and protocol emulation that pushes routers, switches, and SDN environments to their limits, to full-stack application traffic simulation for evaluating user experience and scalability, to large-scale security threat and attack emulation for hardening your defenses — these solutions replicate real-world conditions to ensure your network remains fast, reliable, and resilient. Explore the related network test software below, alongside their corresponding hardware, to find the right solution for your application.



### Layer 2/3 traffic and protocol emulation

Provides high-scale Layer 2/3 traffic and protocol emulation to validate the performance of network infrastructure under real-world conditions. It helps ensure routers, switches, and SDN environments can handle complex topologies, high volumes, and dynamic routing scenarios before deployment.

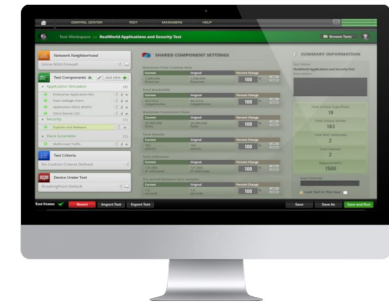
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### Application traffic emulation

Emulates real-world application traffic, including voice, video, web, and data services, to test how networks and services perform under load. It enables full-stack validation of user experience and infrastructure scalability across physical, virtual, and cloud environments.

[Explore](#)



### Security threat emulation

Simulates security threats, malware, and attack traffic at scale to validate the effectiveness of firewalls and other network security solutions. It helps organizations proactively assess their defenses, harden security policies, and ensure network resilience before going live.

[Explore](#)

# Keysight Support Services

## Explore the services that are right for you

Keysight Support Services can reduce your learning curve, enhance your uptime, guarantee the accuracy of your testing equipment, and provide the expertise you require, precisely when and where you need it.

Maximize your instrument uptime, quickly optimize your test measurements, and get the answers you need at our fastest available times. KeysightCare curated support plans bundle critical services with prioritized response and turnaround times. **High-performance instruments include one year of KeysightCare Assured.**

Explore support services



### Calibration

Ensure your test system performs to specification and meets local and global standards.



### Repair

Restore equipment to original functionality and specifications with trained technicians.



### KeysightCare

Innovate at speed with curated support plans and prioritized response and turnaround times.



### Education

Make measurements quickly with eLearning and in-house, instructor-led training.



### Keysight Support

Get 24x7 access to service requests, case management help, and technical articles.



Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at [www.keysight.com](http://www.keysight.com).

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