



RTU-300+

Centralized Modular Test Platform

The RTU-300+ platform is a Multi-Service, Multi-User, rack-mounted centralized test solution specially designed for service turn-up and maintenance for Access, Edge, Metro, Core networks. Whether it is testing links between nodes or serving end-to-end test traffic to up to 128 field test sets, this Remote Test unit covers it all.

Key Platform/Software Features

- Optimized for centralized testing
- Up to two factory-installed test modules provide support for up to four independent tests, from 10M to 100GE
- Rugged 1U, 19" rack mount profile
- Ideal platform for testing at the different service life cycles; service provisioning, service activation, and service assurance
- One way latency with optional built-in GNSS receiver option
- Connectivity via RJ45 Ethernet management interface
- Flexible powering options: -48V or redundant dual 15V
- Standalone operation with web browser and VNC access
- Can be integrated into VeSion® cloud-based system and operated from it
- Supports independent and simultaneous measurements
- Multi-user remote access and control
- USB port to perform upgrades

Supported Modules Combinations

Slot 2	Slot 1
Empty	RTU-340
RTU-340	RTU-340
Empty	RTU-600x
RTU-340	RTU-600x
RTU-600x	RTU-600x

Test Modes: VeSion® vs Standalone

Test Modes	
VeSion® ¹ Cloud	Standalone (Web Browser ²)
<ul style="list-style-type: none"> • Cloud Based System • Optimized for Centralized Testing • Significantly reduces network troubleshooting and problem resolution time 	<ul style="list-style-type: none"> • Web Browser and VNC Access • Optimized for Centralized Testing • Remote Multiple User Access

¹Planned

²Web browser based Standalone mode offered in initial release.

RTU-340 Test Module Option

Multi-service Testing from 64k to 2x16G: Ethernet, Fibre Channel, EoOTN, OTN, SDH, SONET, PDH, DSn, IEEE C37.94. Supports up to four independent tests.

RTU-600x Test Module Option

Multi-service Testing from 25G to 112G: Ethernet, Fibre Channel, EoOTN, OTN. Supports up to two independent tests.

*Refer to the modules' datasheet for further information.

System Architecture

Hardware Overview

The Remote Test Unit (RTU) is a self-contained, scalable 1U rack mount solution offering Plug-and-Play operation. The RTU can be configured with single or dual test modules.



Powering and Connectivity Capabilities

The RTU can be configured with dual, redundant external 15V AC/DC adaptors or -48V DC power supplies and optional GNSS receiver. The unit is equipped with a LAN port which can be used to provide communication between the RTU and the Server or individual users. The console port allows low level control of the RTU via use of a serial cable. The USB port allows the user to perform a software upgrade when a valid software image is stored on the USB flash drive.



VeSion Server

Depending on network complexity, larger organizations may prefer to deploy RTUs at strategic points throughout their network and have a central server store and manage system information. VeEX's VeSion server architecture is perfectly optimized for such applications. VeSion significantly reduces network troubleshooting and problem resolution time.

Cloud-Based One System Platform



Results from anywhere, anytime, at any location

Multi-User Remote Access & Operation

The architecture allows simultaneous users (up to 4) to share the platform and run independent tests, maximizing the use of resources.

Module 1:RTU340SM (right)

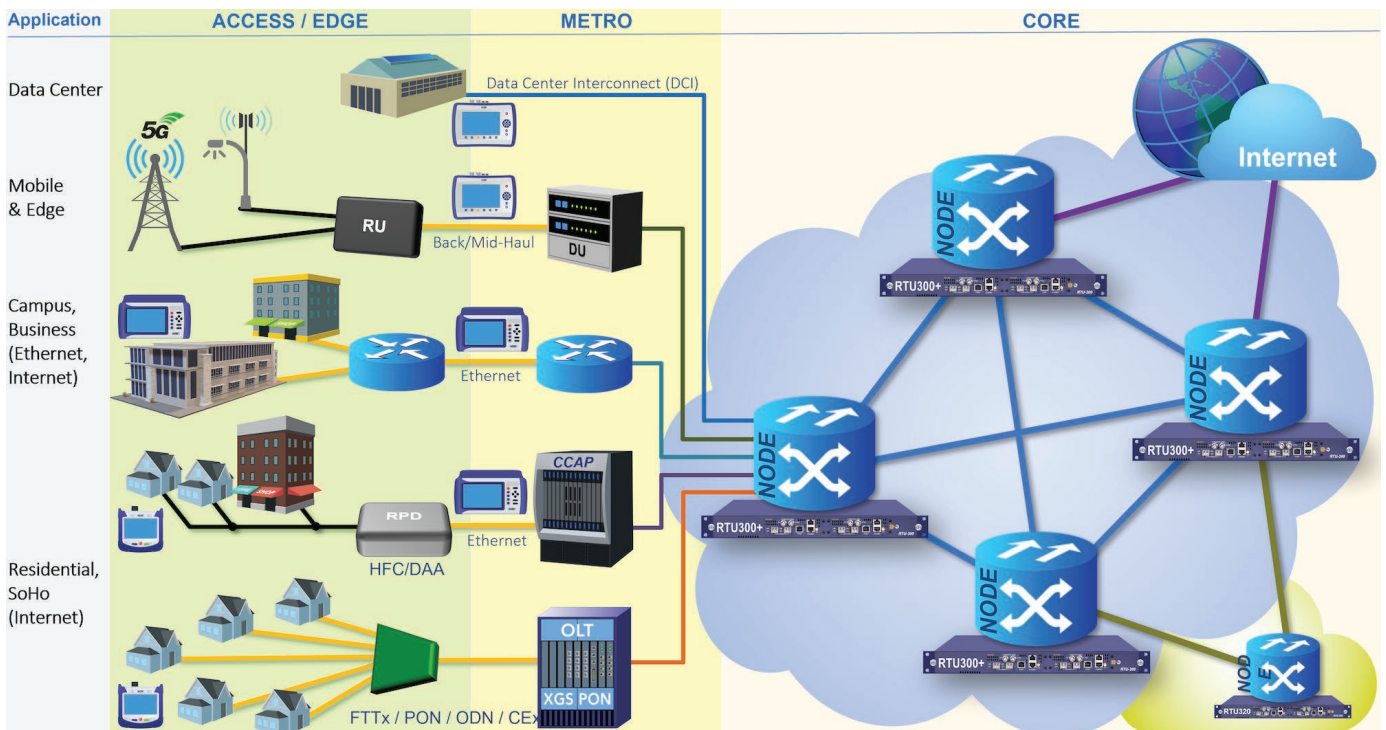
<p>MIP1 -- 1G Ethernet Testing</p> <p>Module: RTU340SM</p> <p>Running: 1G Ethernet Testing</p> <p>User: admin</p> <p>View</p>	<p>MIP2 -- 10G Ethernet Testing</p> <p>Module: RTU340SM</p> <p>Running: 10G Ethernet Testing</p> <p>User: user1</p> <p>View</p>
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Module 2:RTU340SM (left)

<p>M2P1 -- Copper SFP</p> <p>Module: RTU340SM</p> <p>Running: Copper SFP</p> <p>User: user2</p> <p>View</p>	<p>M2P2 -- 1GE Layer4 Testing</p> <p>Module: RTU340SM</p> <p>Running: 1GE Layer4 Testing</p> <p>User: user3</p> <p>View</p> <p>Release</p>
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Multi-Gigabit Services Verification

The RTU300+ modular test platform in conjunction with portable field units like the TX340s, MTTplus, and RXT-1200 products are an ideal solution for Broadband Service applications. In a typical broadband service delivery scenario several types of tests are carried out. A Layer 2/3 throughput test is carried out to verify the Committed Information Rate (CIR) and key performance metrics such as round-trip delay, one way delay, packet delay variation, frame loss and bandwidth rates. An additional stateful TCP test (V-PERF) is carried from the customer premise to the service provider's edge routers/servers to the internet to verify the true Quality of Experience (QoE) from the point of view of the user. In this service turn-up scenario, the RTU-340/600x, sitting at different locations of the service provider network, will act as a Layer 4 stateful TCP server, while the portable units in the field will be the clients testing to the RTU-340/600x. After the service is delivered, network maintenance and troubleshooting tests can be done between the different RTU-340 distributed in the service provider network. This is done periodically by the service provider for service assurance purposes.



Scalability and Connectivity

VeSion scales easily reducing cost of ownership. The system can start out with a few RTUs to monitor critical links and later expand to monitor entire large national networks. The system is accessible anytime, anywhere, using a common web browser or mobile apps. A user can review uploaded test results, system alarms, live traces, and be able to perform on demand tests as required.

The screenshot shows the VeSion web interface for configuring services. The left sidebar lists ports and their status. The main area shows the 'Services' configuration for 'Port 1 (Slot 2)'. The 'General' tab is active, showing a table of service configurations.

Service #	Service Name	CIR(Mbps)	EIR(Mbps)	Traffic Policing	CBS(KB)	EBS(KB)	Frame Size	FLR(%)	FTD(ms)	IFDV(ms)	AVAIL(per)
ON	Service 1	98.700	0.000	Yes	-	-	1518	0.100	0.01	-	-
ON	Service 2	98.700	0.000	Yes	-	-	1518	0.100	0.01	-	-
ON	Service 3	98.700	0.000	Yes	-	-	1518	0.100	0.01	-	-

Y.1564 V-SAM Test

VeEX's V-SAM test suite is fully compliant with ITU-T Y.1564 and offers an efficient method to qualify and troubleshoot Ethernet Services. V-SAM addresses some of RCF2544 limitations by testing multiple services at once and providing simultaneous measurements of key SLA parameters.

With the Service Configuration test, services running on the same line are tested one by one to verify the correct service profile provisioning. With the Service Performance test, the services running on the same line are tested simultaneously over an extended period of time, to verify network robustness.

This test suite was designed with the end user in mind and allows for quick provisioning, execution, and analysis of the test results, even without prior detailed knowledge of the standard.

The screenshot shows the VeSion web interface for configuring service attributes. The left sidebar lists ports and their status. The main area shows the 'Service Attributes' configuration for 'Port 1 (Slot 2)'. The 'General' tab is active, showing a table of service attributes.

Header	Service Attributes	Summary
General	MAC	RX Filter
Service Layer	Layer2	Service Name: Service 1
Frame Type	Ethernet II(DIX)	Frame Size Type: FIXED
VLAN	Off	Frame Size: 1518
MPLS	Off	Encapsulation Type: None

RFC6349 V-PERF TCP Test

A common source of customer complaints come from file transfer speeds not matching the throughput rates guaranteed in the SLA. While many factors affect TCP applications performance, including customer's operating system hardware performance and settings (TCP window size), carriers need to prove SLA with a test tool that can show TCP performance independent of Operating System or Server limitations and present repeatable reliable results.

The test set V-PERF feature uses RFC6349 test methodology and metrics for qualifying network TCP performance. It offers a full line rate stateful TCP test with configurable window sizes, client and server modes as well as compatibility with iPerf servers.

The screenshot shows the VeEX VeSion software interface. The top navigation bar includes 'Welcome, Lidial', 'Log Out', 'Main Menu', 'Dashboard', and 'My VeSion'. The main area is titled 'Server: 0 Location: Device: 234 Location:'. Below this, there are tabs for 'Setup' and 'Result'. The 'Setup' tab is active, showing a configuration table for a V-PERF TCP test. The table includes fields for Mode (Client), Compatibility (Iperf3), Transfer Direction (Client to Server), Protocol (TCP), Parallel Streams (Manual, 1), Server IP (0.0.0.0), TCP Port (9000), MTU Search (Disable), MTU Size (Bytes) (64), Round Trip Time Search (Disable), Round Trip Time (10 ms), Bottleneck Bandwidth/CIR (10000 Mbps), TCP Window Size (Auto), TCP Throughput Test Mode (FileSize), FileSize (1000 MB), and Threshold Monitoring (Disabled).

General

Dimensions	Rack mounted, 1U 19" wide 4.4 x 48.26 x 30 cm (HxWxD) 1.75 x 19 x 11.8 inch	Rack's 48V Management Interfaces	-48 VDC, 4.17A
Weight	2x RTU-340 module 3.62 kg (8 lb) 1x RTU-340 modules 3.92 kg (8.63 lb)	Ethernet USB Serial/Console	RJ45 10/100BASE-T FDX USB 2.0 Type-A RS232A
Power Consumption	RTU-300+ chassis 10W RTU-340 module 20W RTU-600x 100G module 60W	Data Storage	16GB Flash USB Memory sticks up to 64 GB R-Server, VeSion, VeExpress, and EZ Remote
Power Supplies	Two options available AC/DC adapter Input: 100 to 240 VAC, 50/60 Hz, 1.5A Output: 15 VDC, 13.4A Redundant configuration	Cloud	GPS/GNSS Receivers (optional)
ROHS compliant and Lead Free per Directive 2002/95/EC		Timing Reference Environmental	Operating temp. 0 to 45°C (32 to 113°F) Storage temp. -20 to 70°C (-4 to 158°F) Humidity 5% to 90% relative humidity, non-condensing



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