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PRODUCT INTRODUCTION

MT9080 Series IP option

IP Network Connection Check Function

Gigabit Ethernet Upgrade

ANRITSU CORPORATION

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Gigabit Ethernet Upgrade
Product Introduction

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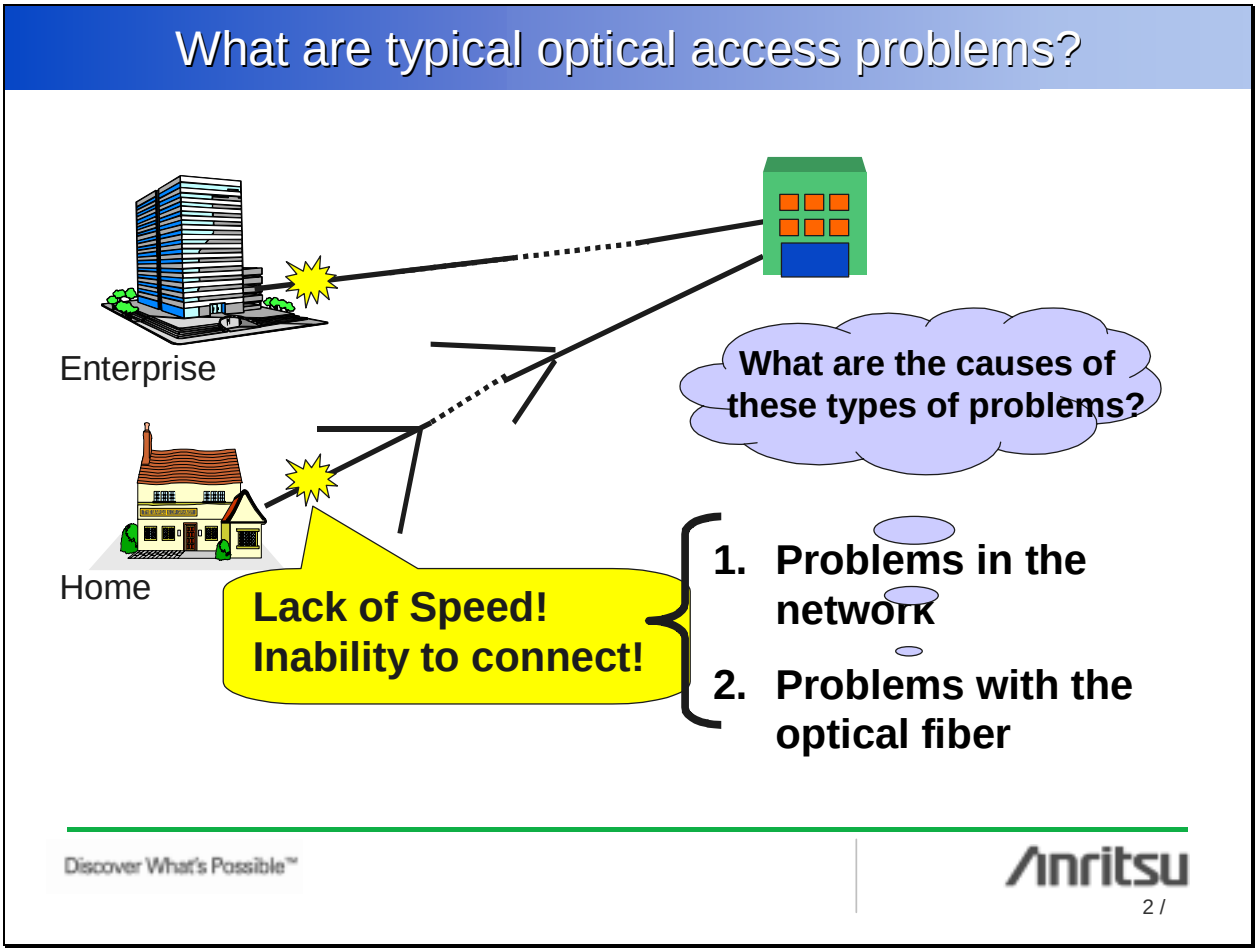
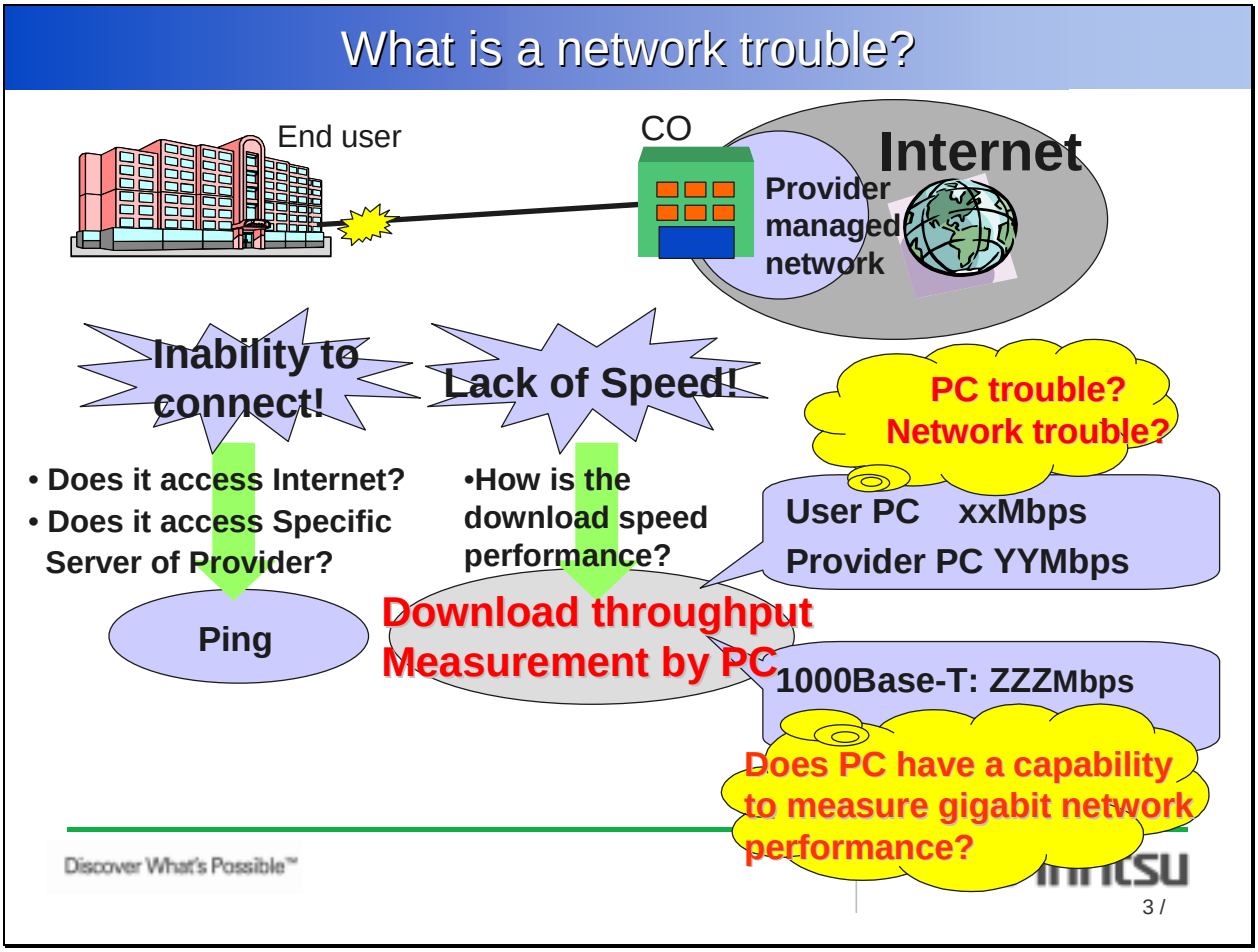


What are typical optical access problems?
At the end user side, the main problems are lack of speed (slow Web page downloads) and inability to connect (unable to surf Web pages).
What are the causes of these types of problems? The causes are broadly classified into the following:

Problems in the network

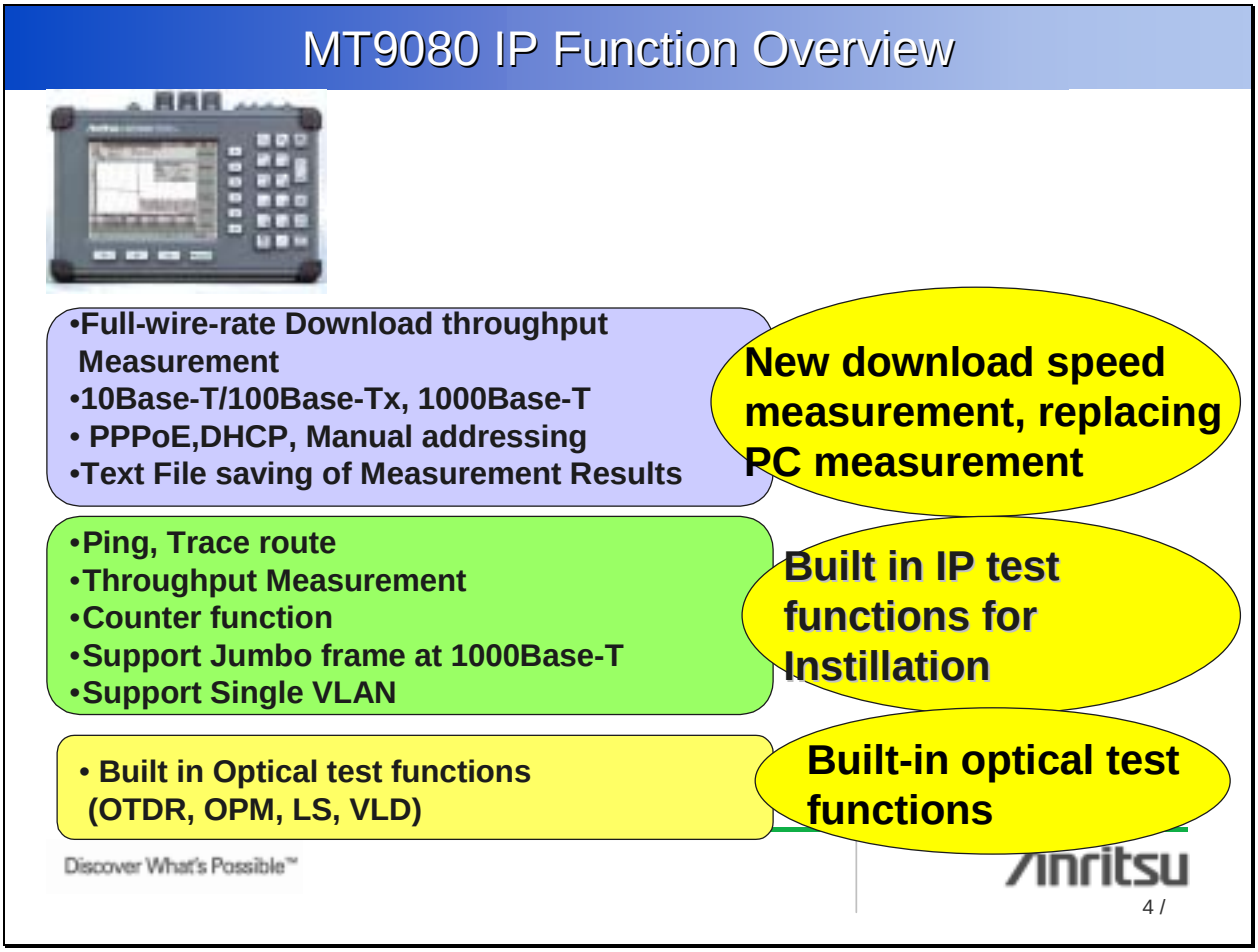
Problems with the optical fiber

Optical fiber problems are located using the power meter and OTDR functions. But what types of problems occur at the network side?



Currently, network faults are isolated using a PC. In concrete terms, a PC connected to the network terminal is used to execute the following:
Ping a specific network server
Measure download speed

But is it really possible to accurately measure download speed using a PC? The end user's PC might achieve XX Mbps while the engineer's faster PC achieves YY Mbps, so the measurement results change according to the PC used to make the measurement. Moreover, will PCs have the required performance to be able to measure download speeds accurately when Gigabit service start? In fact, even with circuits under 1 Gbps, It is regrettable for prvider to promote high speed service to potential user.



The special features of the MT9080 are as follows:

1. New download speed measurement, replacing PC measurement

Network download speed can be measured accurately without any impact of PC performance, making it unnecessary to purchase the latest high-speed PCs. In addition, it is easy to determine whether the fault is at the user's PC or in the network.

2. Built-in IP test function for executing fiber Installation tests

The Access Master can execute tests ranging from Ping tests that were performed by PCs and simple IP testers through to complex send rate tests.

3. Built-in opticdal test functions

A full range of optical measurement functions using the built-in OTDR, optical power meter, fiber light source and visible light source plus IP test functions are built into a single compact cabinet, eliminating the need to carry several measuring instruments on-site. In addition there is no need to change the modules like in a modular design instrument, offering simple and efficient on-site measurement.

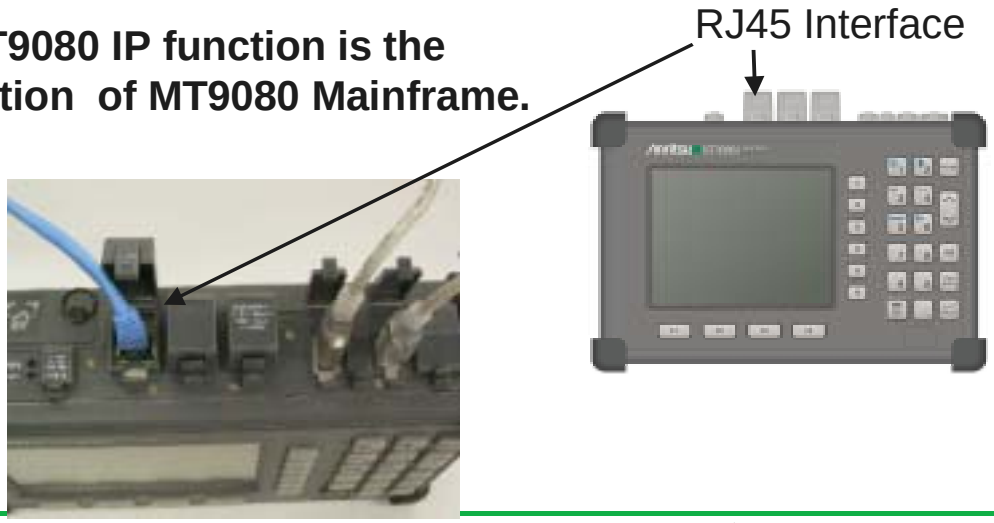
MT9080 IP Option Model and Name

Model	Name
MT9080x-001	IP Network Connection Check Function

MT9080x-011	Gigabit Ethernet Upgrade

X: A to F

MT9080 IP function is the option of MT9080 Mainframe.



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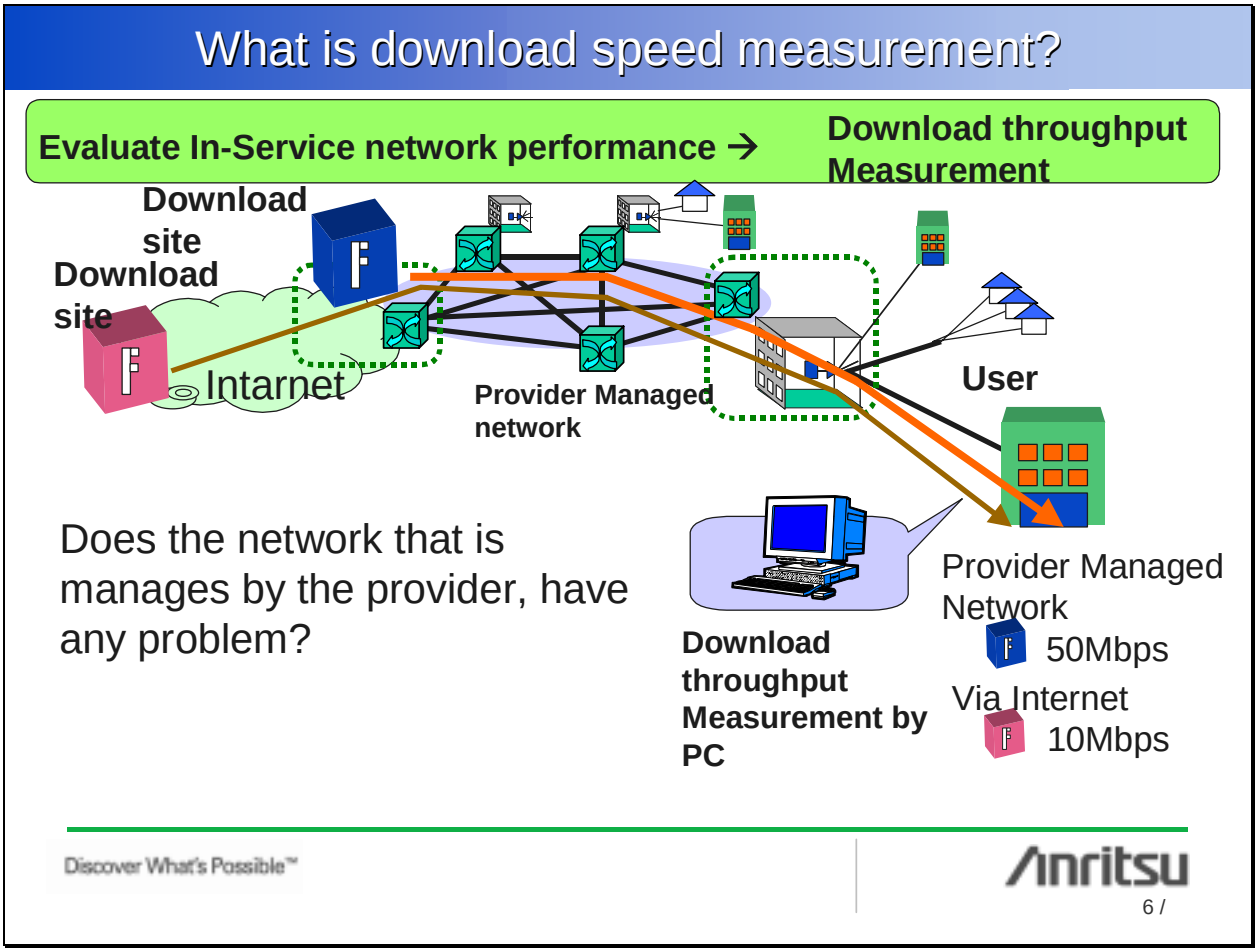
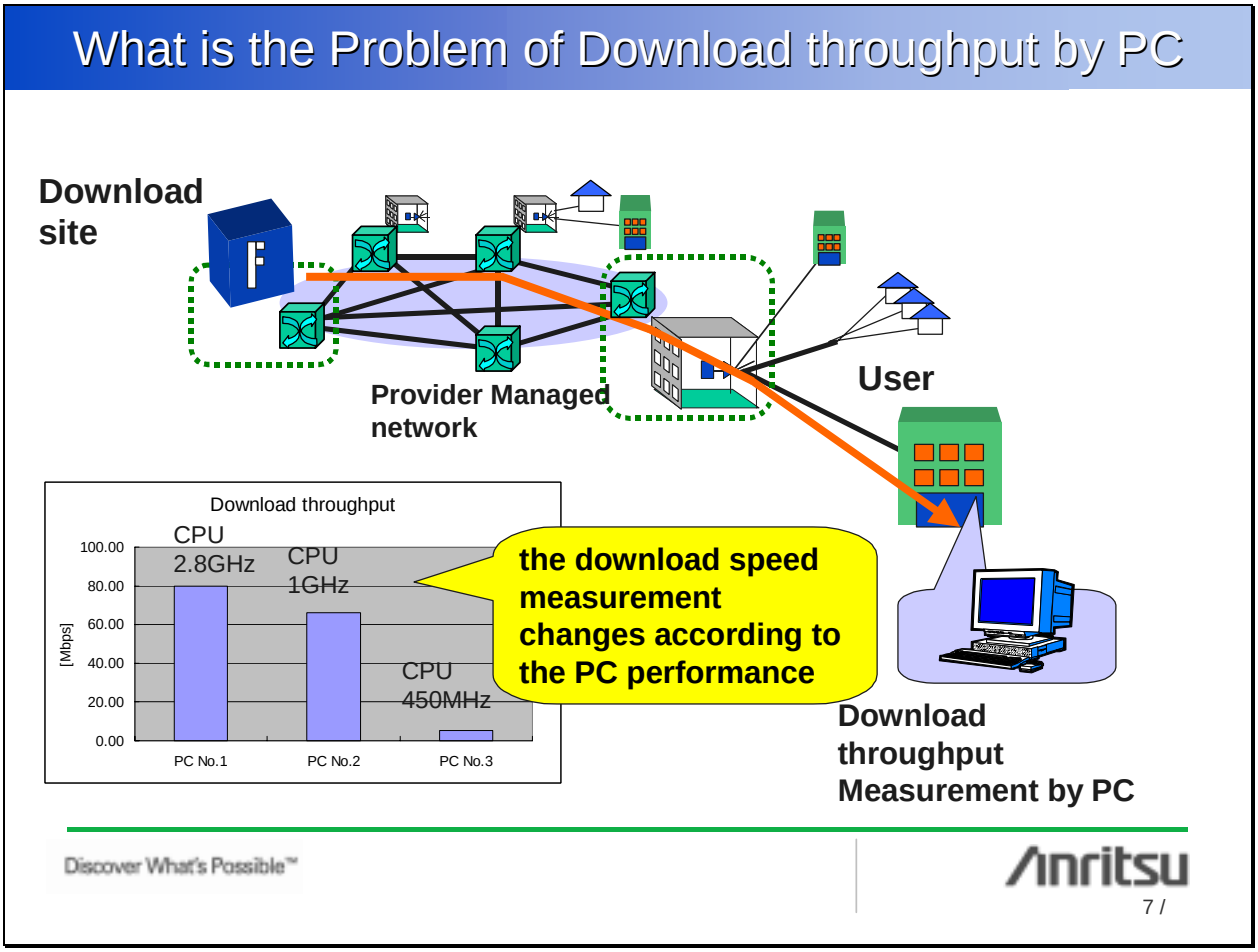
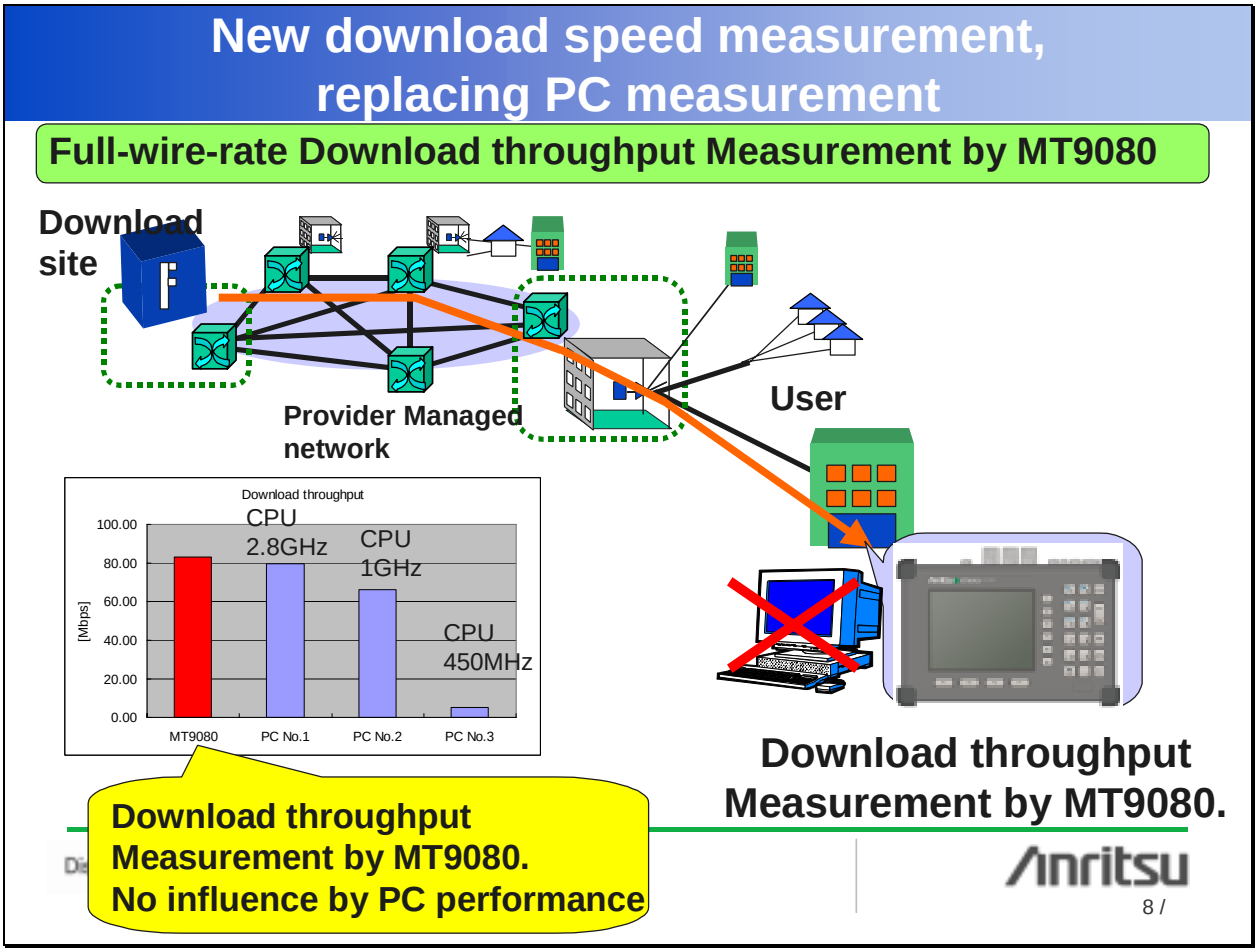
There are two types of IP option.
The MT9080X-001 is the basic option supporting 10MBase-Tx and 100Base-Tx interfaces. In addition, the MT9080X-011 option also supports 1000Base-T interfaces. When both the MT9080-001 and MT9080-011 options are installed at the same time, the MT9080 offers support for all 10Base-T/100Base-Tx/1000MBase-Tx interfaces.
When using the IP test function, a cable is connected to the RJ45 UTP cable connector in the top of the MT9080.



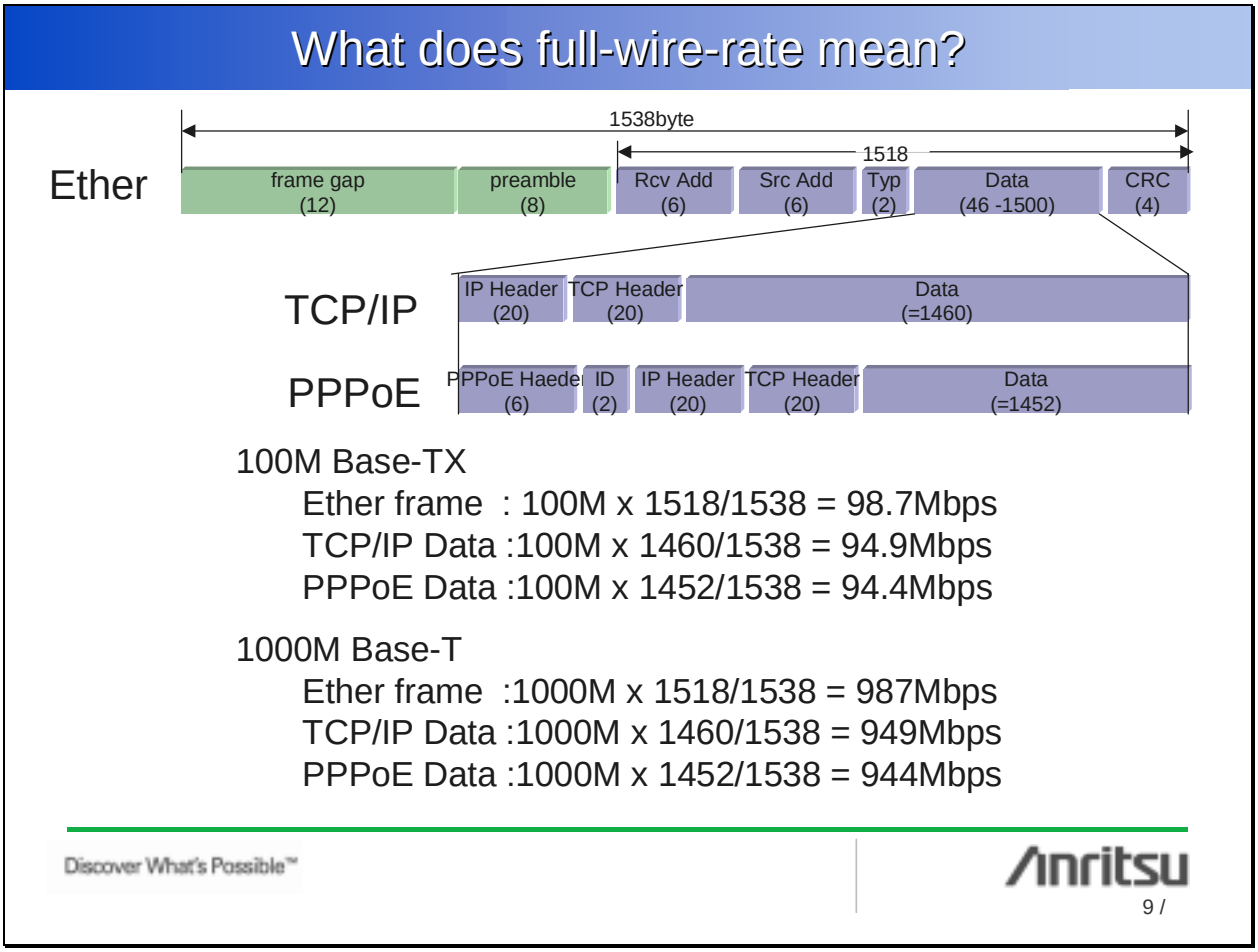
So what is download speed measurement?
Download speed measurement accesses a server on the WAN from a PC connected to the LAN and measures the time required to download a file of known size to calculate the download speed. The download site is either managed by the provider or is a public site on the Internet. The former case is used when evaluating the performance of the provider's network, while the latter case is used when evaluating performance over the Internet including the provider's network.



Currently, the most common way of performing this type of download speed measurement is to use a PC, but what about evaluating network performance accurately? As shown in the graph, the download speed measurement changes according to the PC performance. When a fast PC is used, the download speed is fast, but when measurement is made using a previous-generation PC, the speed evaluation result is inadequate. Correct evaluation of fast download speeds requires use of a new and fast PC.



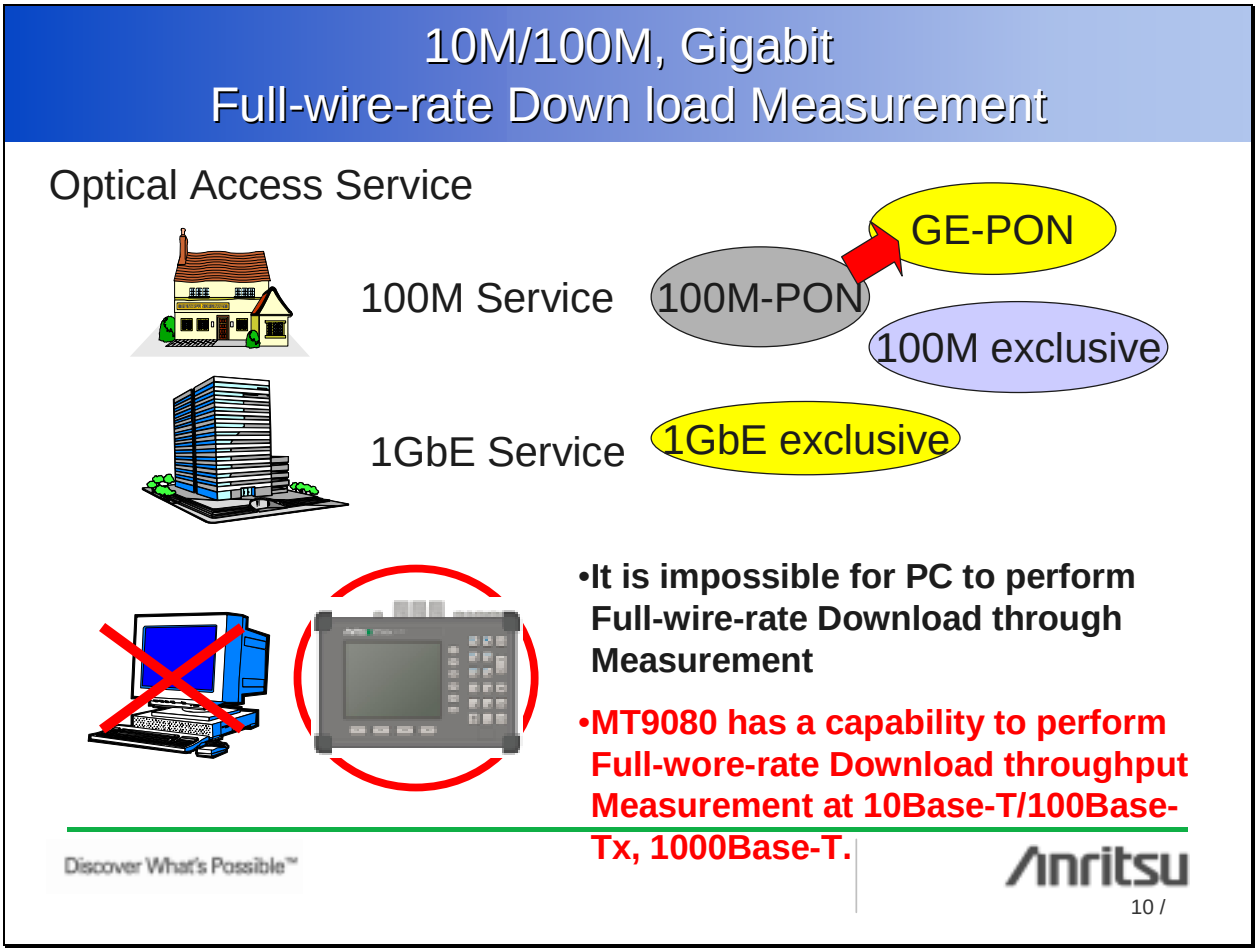
The MT9080 IP option offers a new way of measuring download speed that eliminates the impact of a PC. As shown in the diagram, using the MT9080 IP option, it is possible to measure the download speed of a 100Base-Tx access service with the same accuracy as a high-speed PC and the performance is sufficient to perform full-wire-rate download speed measurement. Moreover, the performance is even good enough to perform full-wire rate download speed measurement of 1000Base-T access services, making the MT9080 IP option future-proof for the coming widespread introduction of Gigabit services and eliminating any need to buy the latest and fastest PC to make measurements.



What does full-wire-rate mean?

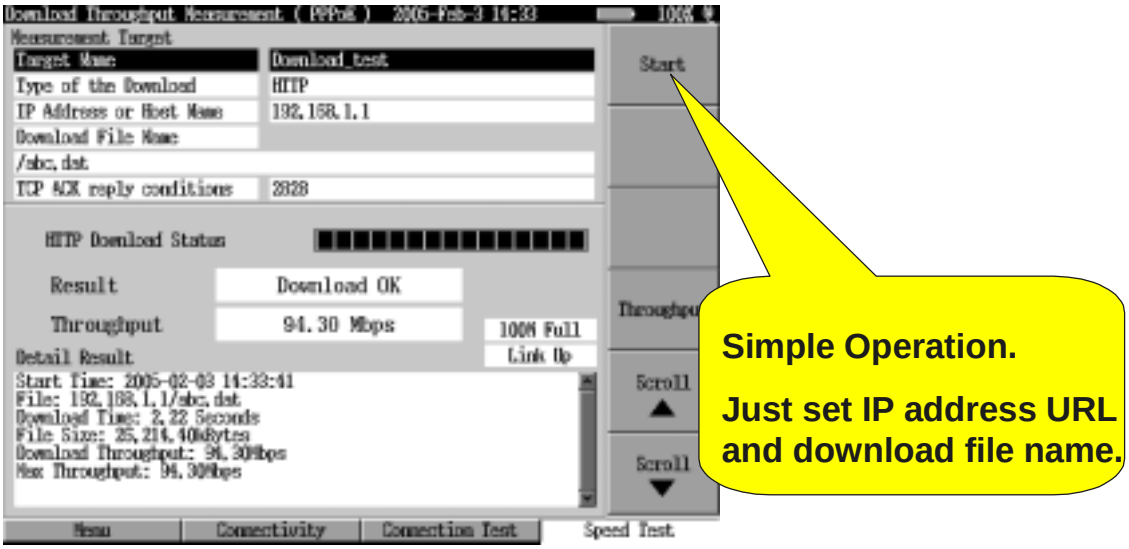
It is the interface communications speed limit. The Ether frame has the structure shown in this diagram. Even though the speed is described as 100 Mbps or 1000 Mbps, the actual data communications speed is slightly slower due to overhead. In the case of the TCP and PPPoE protocols, the actual communications speed is even lower depending on the length of the send frames as shown in the diagram.

In communications using the PPPoE protocol, the logical maximum communications speed over the wire (full wire rate) is actually 94.4 Mbps for 100 MBase-Tx and 944 Mbps for 1000Base-T.

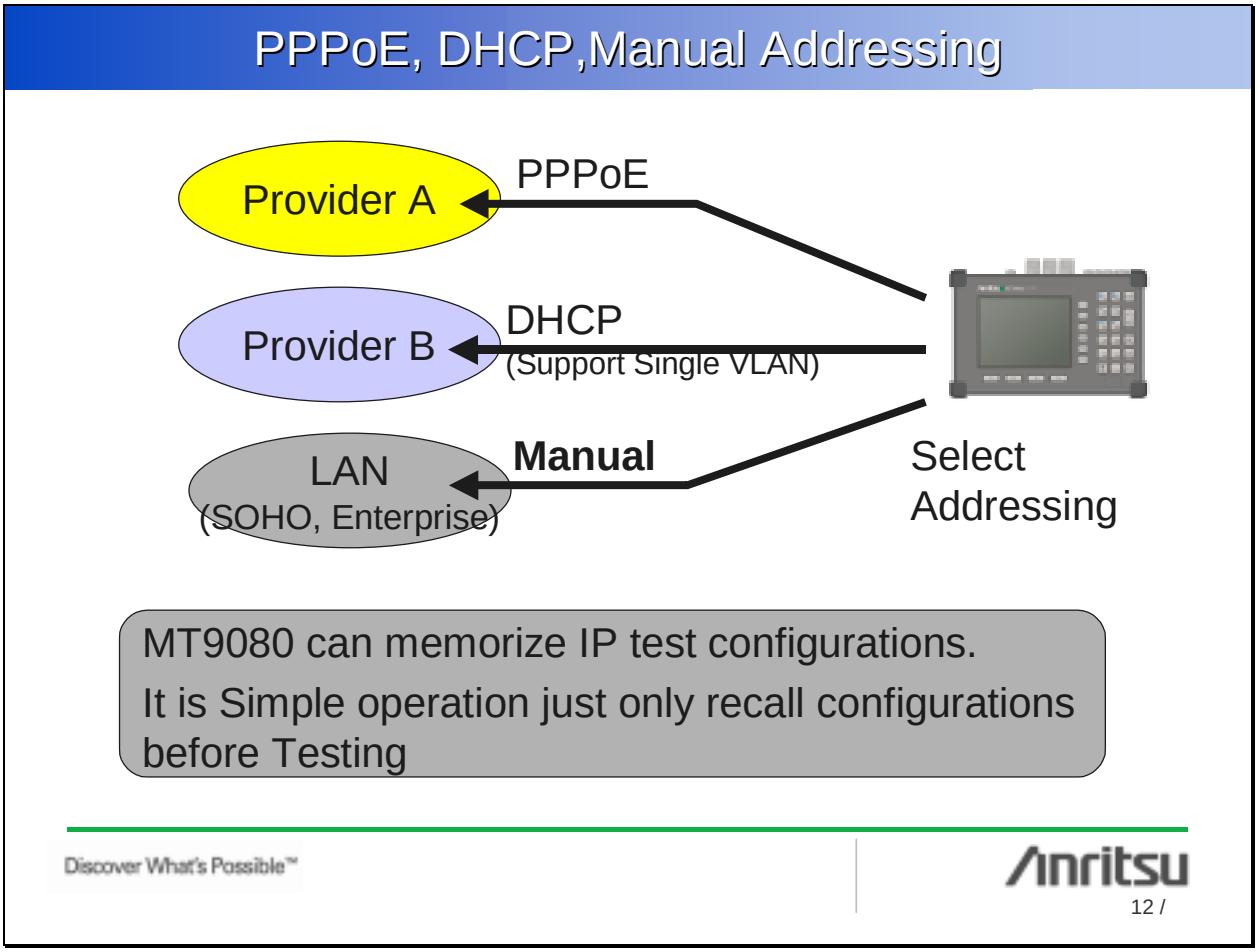


Most current FTTH access services are offering 100 Mbps shared service (PON) or 100 Mbps exclusive service. However, Gigabit shared services (PON) will be starting 2 or 3 year later and we are expecting to see exclusive Gigabit services to both offices and private homes in the near future. With the start of these high-speed services, using the MT9080 IP option, measurement of network performance can be performed without any relationship to the measurement terminal (PC) performance, guaranteeing the value of FTTH services to the end user and increasing the service value. The MT9080 IP option has the performance to measure download speeds of the 10Base-T, 100Base-Tx, and 1000Base-T interfaces at the full wire rate, a measurement that is extremely difficult using a PC by its performance(CPU clock, Memory and Software process).

Measurement Screen



And the MT9080 IP option does not require difficult measurement settings. First, the address of the download site or the host name and download file name are registered and written as a measurement conditions file. Once a measurement conditions file has been created, all subsequent measurements are performed simply under the same conditions as the first measurement just by reading the measurement conditions file.



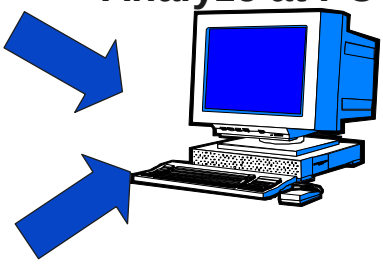
The MT9080 IP option also supports multiple connection methods. Current FTTH services use PPPoE and DHCP but sometimes fixed IP addresses are used for small-scale LANs and in an emergency. The MT9080 IP option supports all these connection methods and the method can be changed easily as necessary. Since DHCP connections are supported for VLANs (L1), the MT9080 can support services configured using private networks over WANs like wide-area Ethernet.

Saving Measurement Results

Save Measurement results at Text file

- Network Connection log
- Download through put
- Ping, Trace route
- Counter results
- Throughput

Printout or Analyze at PC



Save Protocol Dump file

if a connection cannot be success, a protocol dump file can be saved

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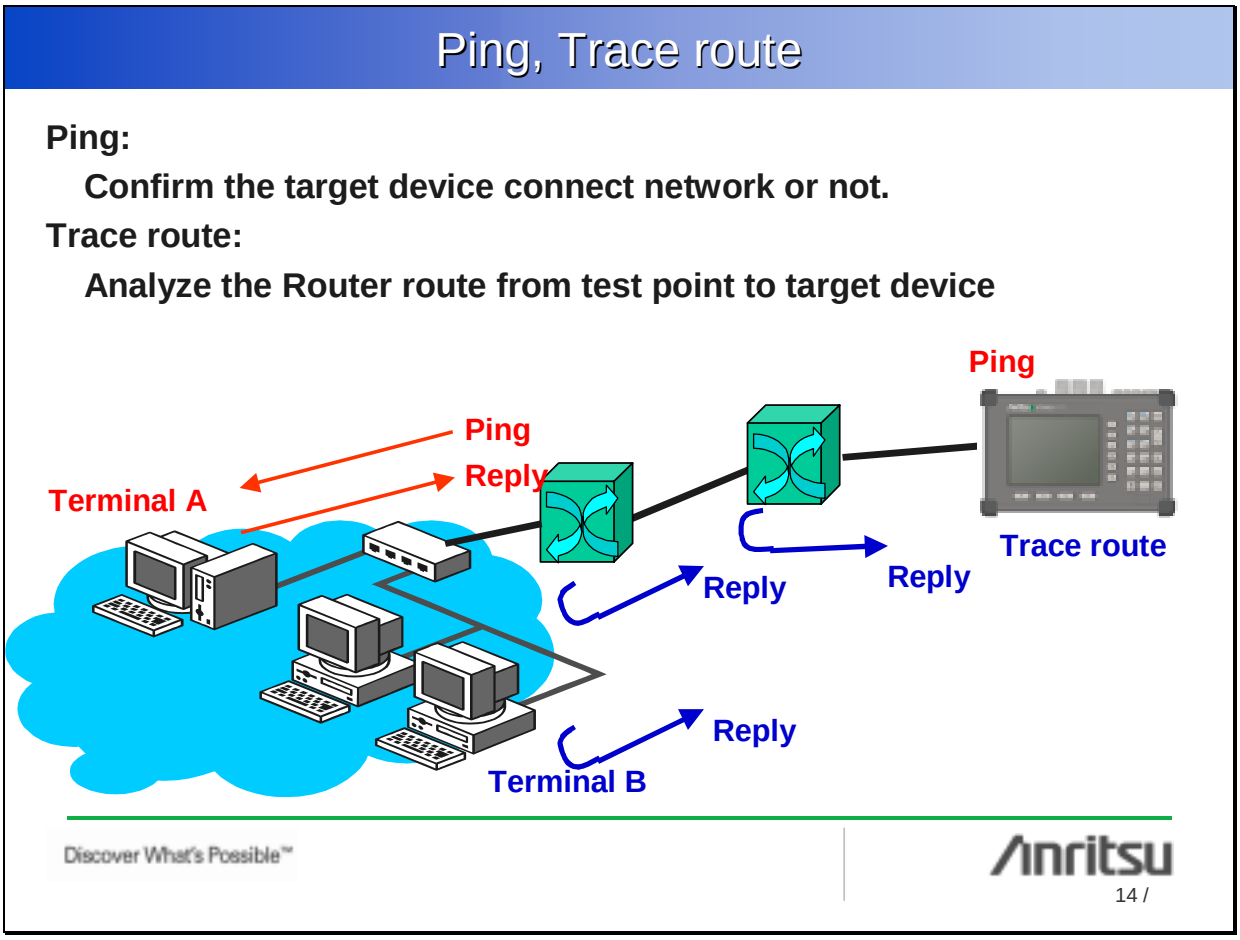
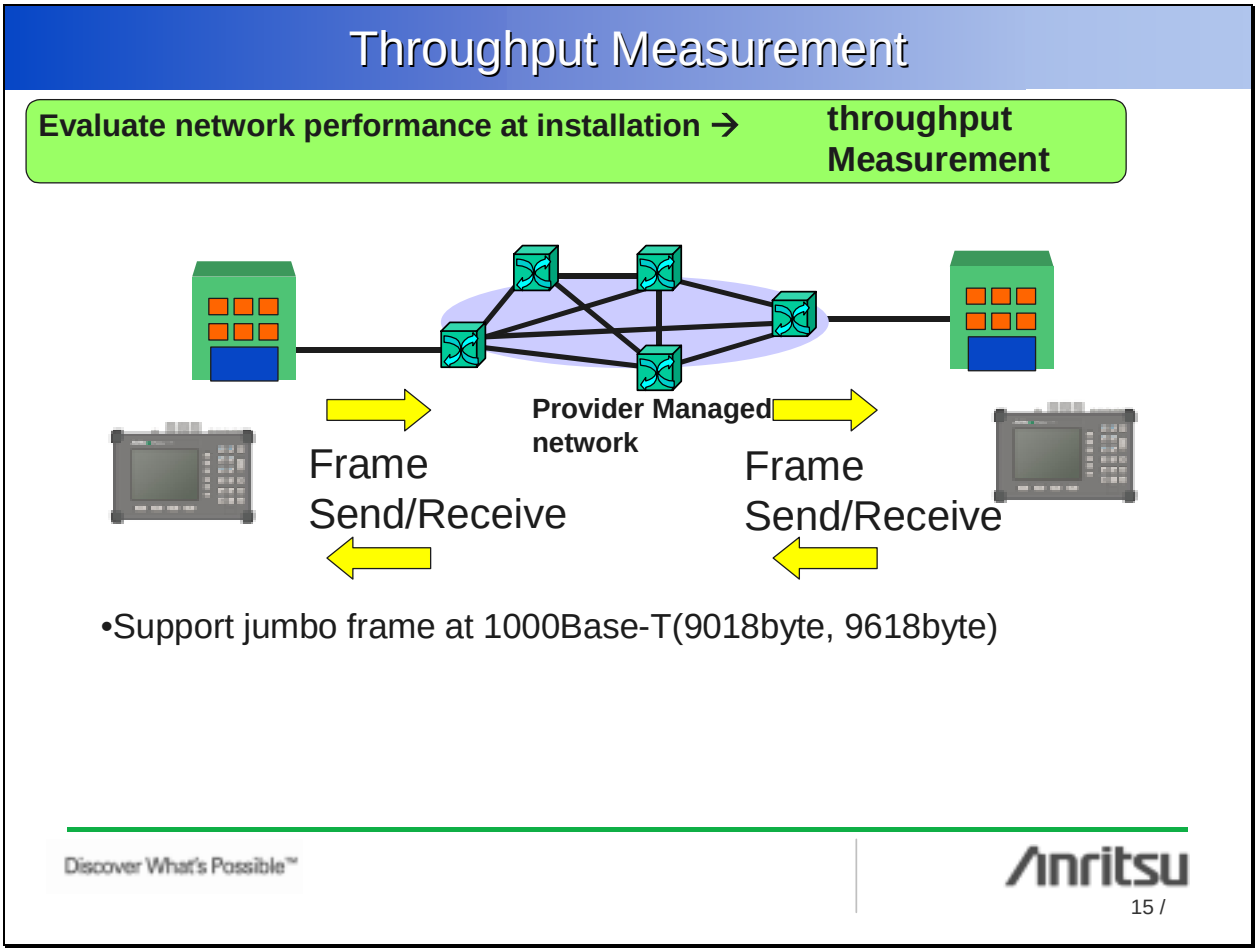
The MT9080 IP option can save the measurement results as a text file that can be read by a PC, printed out, archived, etc. In addition, if a connection cannot be made to an FTTH service for example, a protocol dump file can be saved for reading later using a binary editor on a PC to ascertain the cause of the inability to connect.



The MT9080 IP option is not only able to perform download speed tests; it also supports Basic network test functions, such as ping and Trace route, to enable network confirmation just as easily as using a PC.

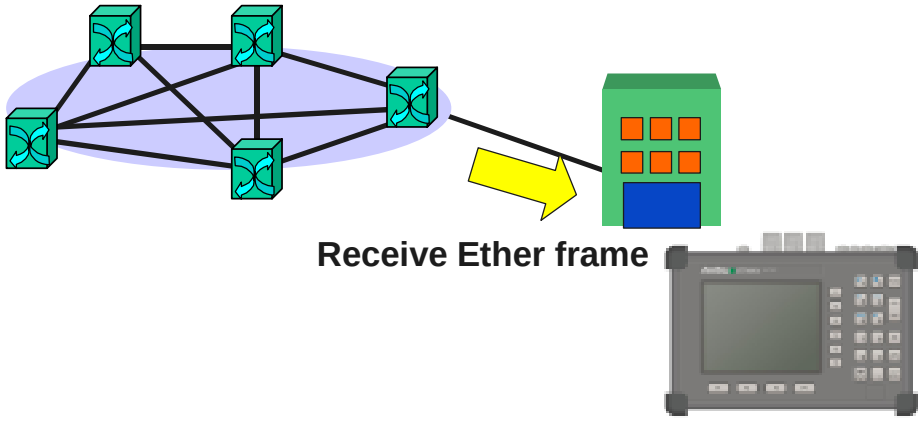


Not only does the MT9080 IP option support download speed testing—it also supports network test functions. In addition to Ping and Traceroute, it can also perform throughput testing. When the MT9080 with built-in IP option is connected to both ends of the network, frame data can be sent and received in both directions to measure the network send rate. This is the first test to use when evaluating a newly lit network.

Counter Measurement

Counter Measurement:

Count Packet frames and Error frames (Under, Over, FCS, Collisions)



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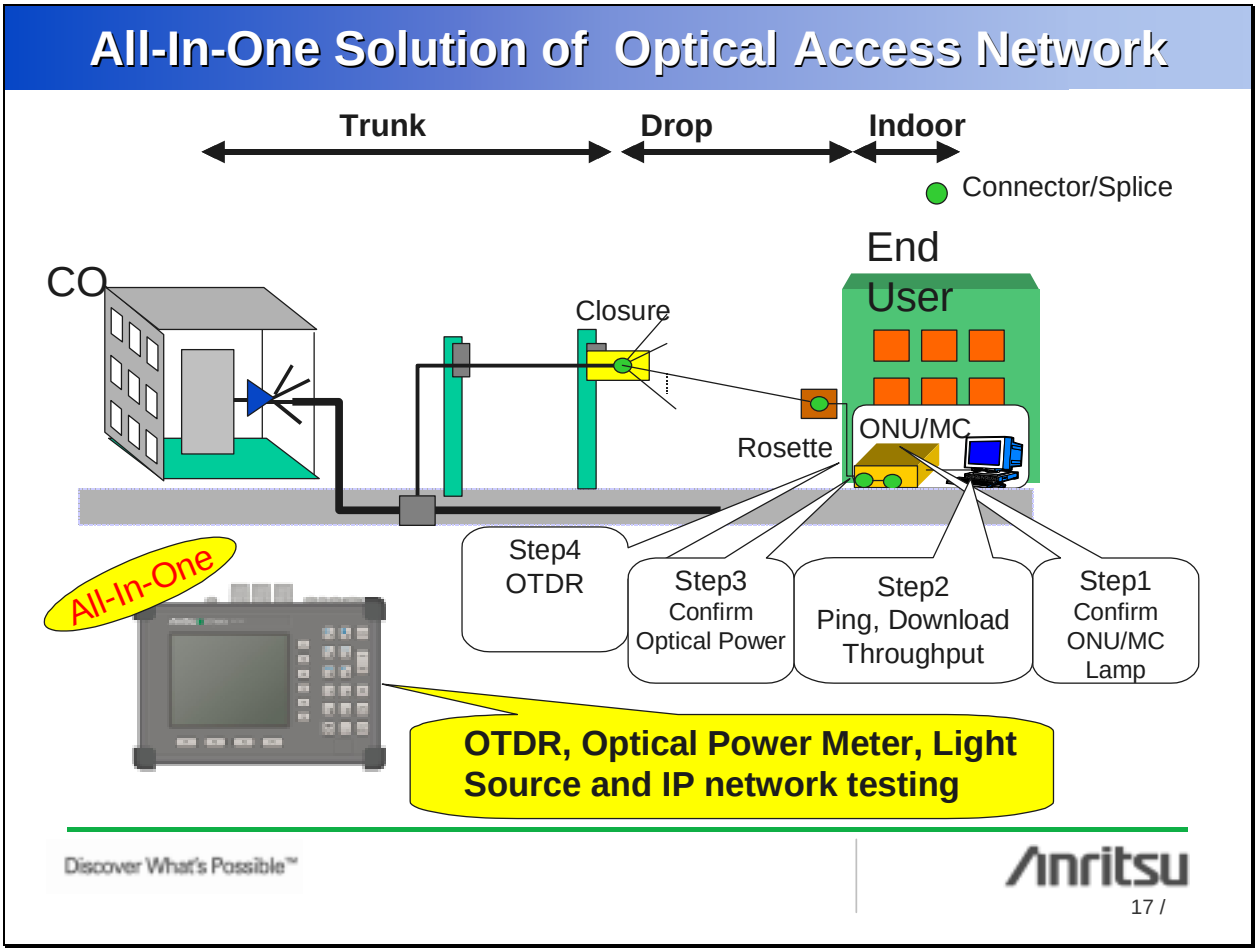
And of course, the MT9080 has counter functions too.
Counts are often used when opening a network and performing maintenance. Packets passing through the network are monitored and the numbers of packet errors (Under, Over, FCS, Collisions) are counted. The counter function can be used to ensure that the network bandwidth is being used effectively by counting the packet types.



Incorporating IP test and optical circuit functions in the single MT9080 cabinet permits very efficient on-site maintenance work.

When an end user makes a complaint about being unable to connect or about low speeds, the visiting service engineer simply has to:

Check the MC (media converter)/ONU lamps to make sure the MC/ONU is not faulty,

Use the MT9080 IP test function to run a ping test and measure the download throughput to determine whether the problem is at the provider's side (optical circuit or network) or the end user's side (PC),

Check the power of the optical circuit, and

If the optical fiber is dark, locate the fault using the OTDR function to find the break in the fiber.

Unlike previous troubleshooting, it is not necessary to classify the fault type with a power meter, so the fiber fault can be quickly located and repaired. Furthermore, there is no chance for misunderstandings about speed differences due to differences in the performance of the end user's PC and the PC brought for testing by the service engineer because the MT9080 evaluates the provider's network performance directly without the need for an accessory PC. The old-fashioned method of fault location using the very time-consuming cut and try method is no longer necessary when the service engineer has the MT9080 with IP option.

Thank you

Please refer to the catalog for a detailed about MT9080 ACCESS Master

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Specifications are subject to change without notice.

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