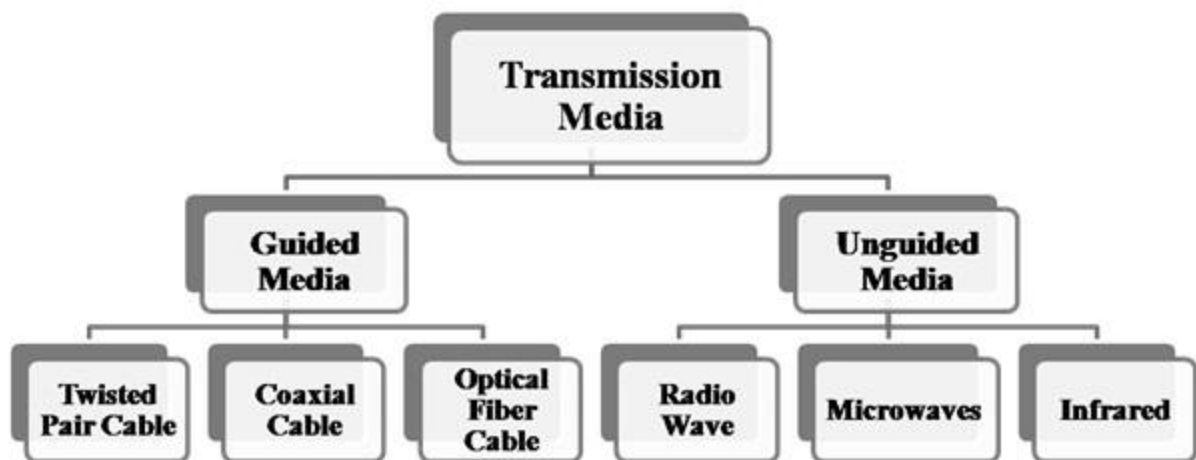


Computer Networks LAB Session-2

Q.1) Transmission Media (Wireless and Wired)

- Communication terminology, a transmission medium is a physical path between the transmitter and the receiver i.e. it is the channel through which data is sent from one place to another. Transmission Media is broadly classified into the following types:



1. Guided Media:(Wired Media)

It is also referred to as Wired or Bounded transmission media. Signals being transmitted are directed and confined in a narrow pathway by using physical links.

Features:

- High Speed
- Secure
- Used for comparatively shorter distances

There are 3 major types of Guided Media:

(i) Twisted Pair Cable –

It consists of 2 separately insulated conductor wires wound about each other. Generally, several such pairs are bundled together in a protective

sheath. They are the most widely used Transmission Media. Twisted Pair is of two types:

1. Unshielded Twisted Pair (UTP):

This type of cable has the ability to block interference and does not depend on a physical shield for this purpose. It is used for telephonic applications.

Advantages:

- Least expensive
- Easy to install
- High speed capacity

Disadvantages:

- Susceptible to external interference
- Lower capacity and performance in comparison to STP
- Short distance transmission due to attenuation

2. Shielded Twisted Pair (STP):

This type of cable consists of a special jacket to block external interference. It is used in fast-data-rate Ethernet and in voice and data channels of telephone lines.

Advantages:

- Better performance at a higher data rate in comparison to UTP
- Eliminates crosstalk
- Comparatively faster

Disadvantages:

- Comparatively difficult to install and manufacture
- More expensive
- Bulky

(ii) Coaxial Cable –

It has an outer plastic covering containing 2 parallel conductors each having a separate insulated protection cover. Coaxial cable transmits information in two modes: Baseband mode (dedicated cable bandwidth) and Broadband mode (cable bandwidth is split into

separate ranges). Cable TVs and analog television networks widely use Coaxial cables.

Advantages:

- High Bandwidth
- Better noise Immunity
- Easy to install and expand
- Inexpensive

Disadvantages:

- Single cable failure can disrupt the entire network

(iii) Optical Fiber Cable –

It uses the concept of reflection of light through a core made up of glass or plastic. The core is surrounded by a less dense glass or plastic covering called the cladding. It is used for transmission of large volumes of data.

Advantages:

- Increased capacity and bandwidth
- Light weight
- Less signal attenuation
- Immunity to electromagnetic interference
- Resistance to corrosive materials

Disadvantages:

- Difficult to install and maintain
- High cost
- Fragile
- unidirectional, i.e. will need another fiber, if we need bidirectional communication

2. Unguided Media: (Wireless)

It is also referred to as Wireless or Unbounded transmission media. No physical medium is required for the transmission of electromagnetic signals.

Features:

- Signal is broadcasted through air
- Less Secure
- Used for larger distances

There are 3 major types of Unguided Media:

(i) Radio waves –

These are easy to generate and can penetrate through buildings. The sending and receiving antennas need not be aligned. Frequency Range: 3KHz – 1GHz. AM and FM radios and cordless phones use Radio waves for transmission.

Further Categorized as (i) Terrestrial and (ii) Satellite.

(ii) Microwaves –

It is a line of sight transmission i.e. the sending and receiving antennas need to be properly aligned with each other. The distance covered by the signal is directly proportional to the height of the antenna.

Frequency Range: 1GHz – 300GHz. These are majorly used for mobile phone communication and television distribution.

(iii) Infrared –

Infrared waves are used for very short distance communication. They cannot penetrate through obstacles. This prevents interference between systems. Frequency Range: 300GHz – 400THz. It is used in TV remotes, wireless mouse, keyboard, printer, etc.

Don't stop now and take your learning to the next level. Learn all the important concepts of Data Structures and Algorithms with the help of the most trusted course: DSA Self-Paced. Become industry ready at a student-friendly price.

(Q).2-A) What is packet tracer?

- Cisco Packet Tracer (CPT) is a powerful network simulator program developed by Cisco. With the simulator program by building complex network and improve your network knowledge. Cisco router switch server PC laptop is a free program that provides support for many more devices. And it is also very simple and easy to use. it is more conventional and faster than GNS3 because it does not force your computer over. Before developing a real network topology you can make a design in a packet tracer and create a more professional design.

Workspace:

1. Logical –

Logical workspace shows the logical network topology of the network the user has built. It represents the placing, connecting and clustering virtual network devices.

2. Physical –

Physical workspace shows the graphical physical dimension of the logical network. It depicts the scale and placement in how network devices such as routers, switches and hosts would look in a real environment. It also provides geographical representation of networks, including multiple buildings, cities and wiring closets.

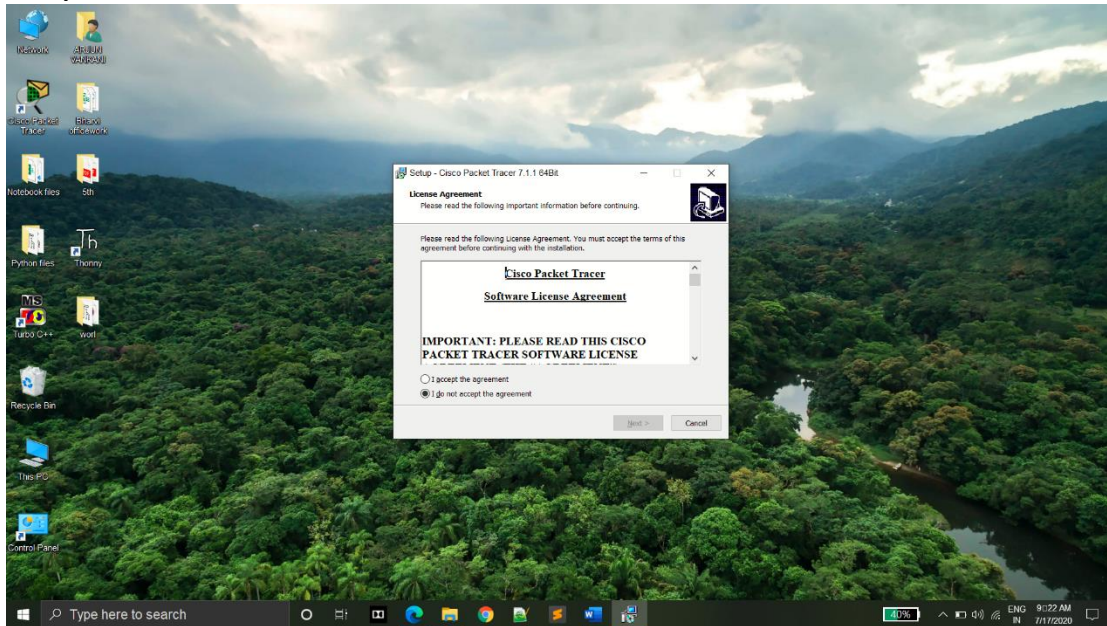
Key Features:

- Unlimited devices
- Customize single/multi user activities
- Interactive Environment
- Visualizing Networks
- Real-time mode and Simulation mode
- Self-paced
- Supports majority of networking protocols
- International language support
- Cross platform compatibility

Q.(2-B) Installation Process with screenshot.

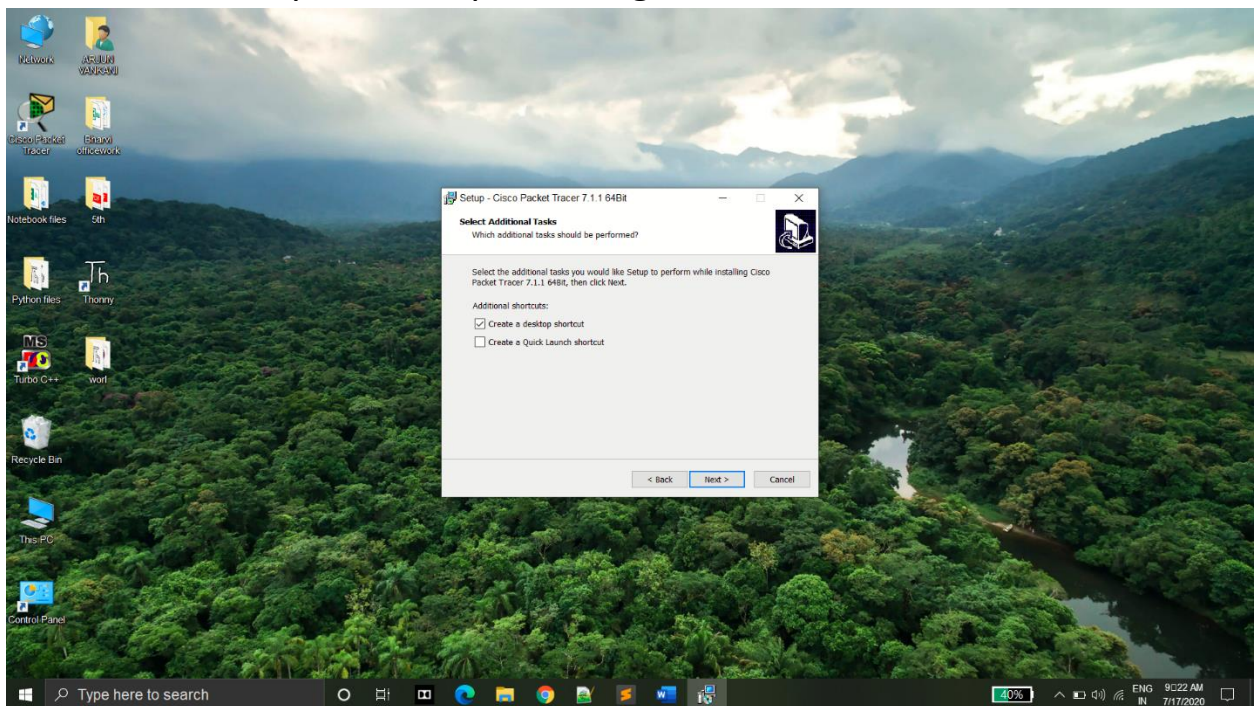
- First, we have to download Packet Tracer from Cisco site and enroll the course of understanding about packet tracer.

➤ Step-1



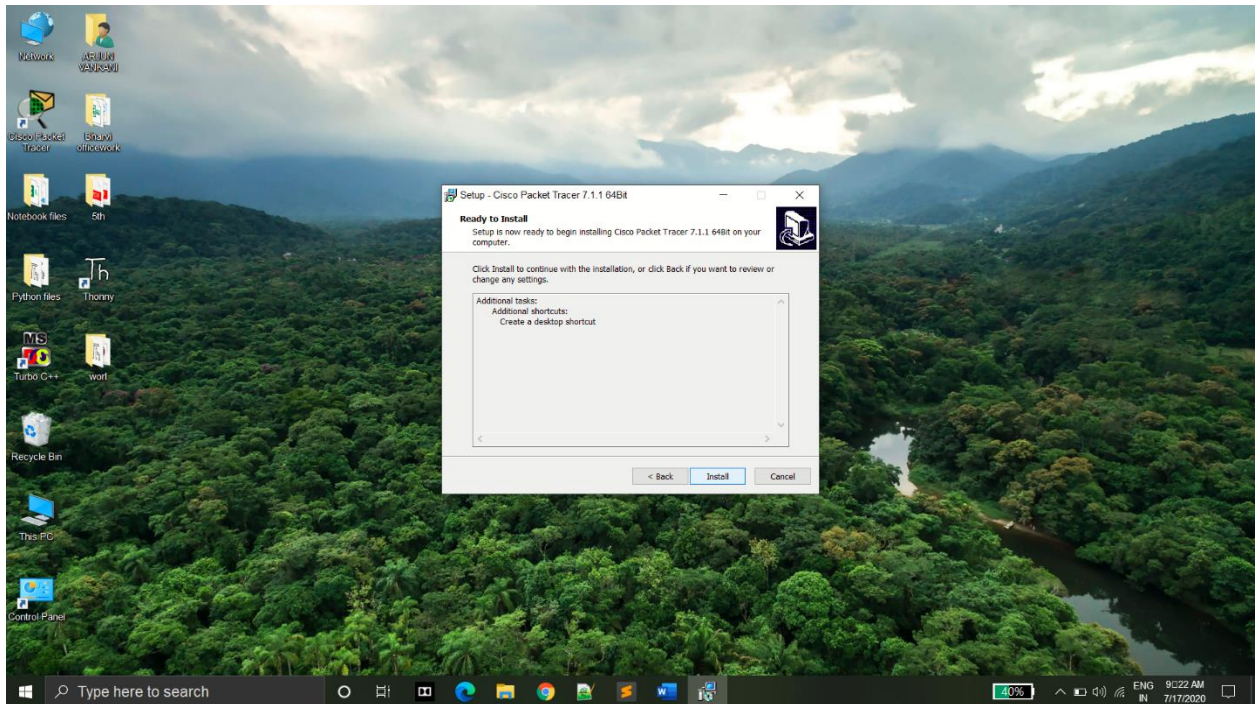
➤ Step-2

After install setup into our pc, And agree the condition



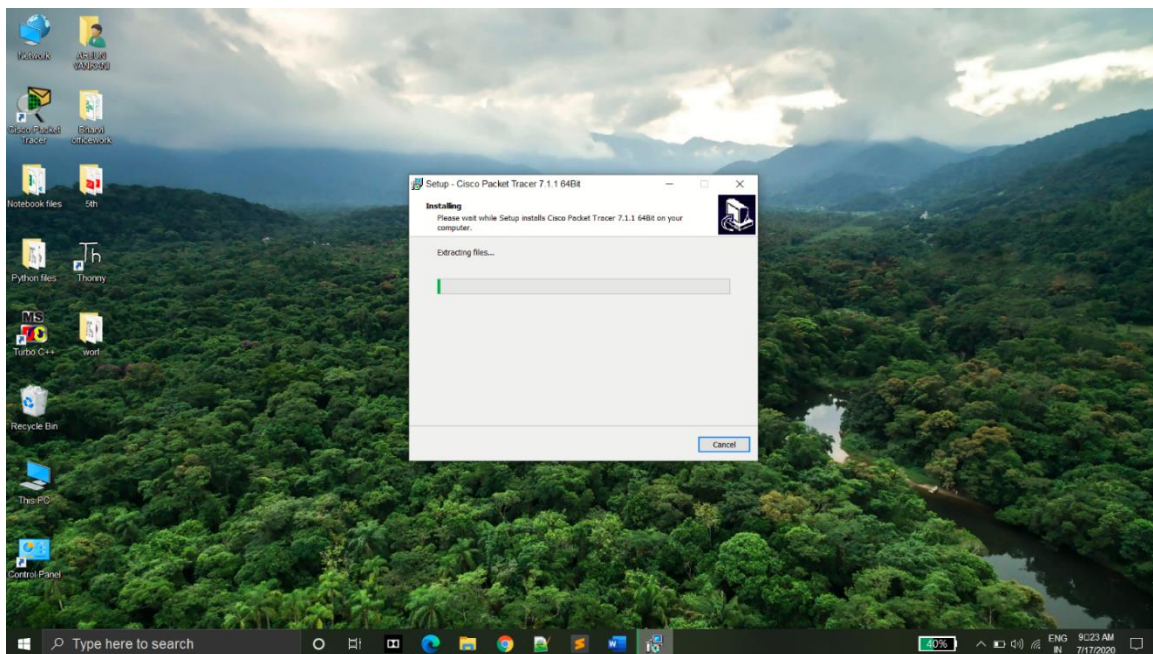
➤ Step-3

if we want to create shortcut then select it and launch as quick shortcut.



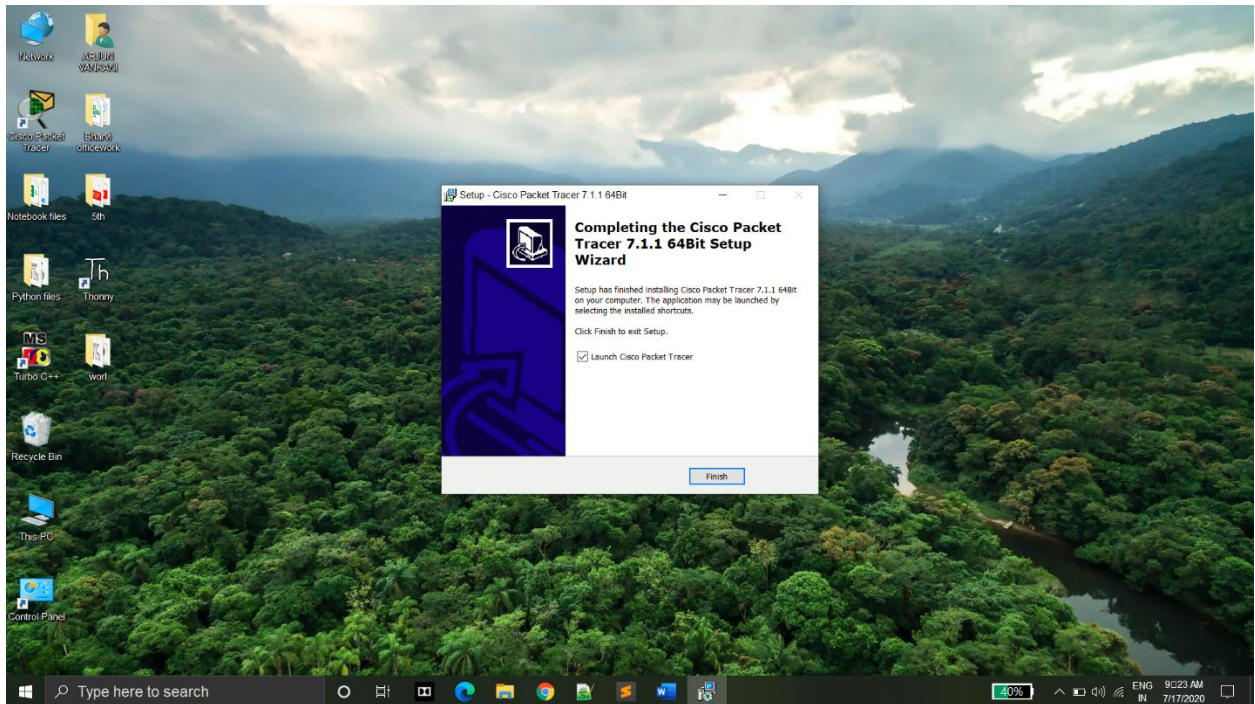
Step-4

➤ Push the install button to install that software



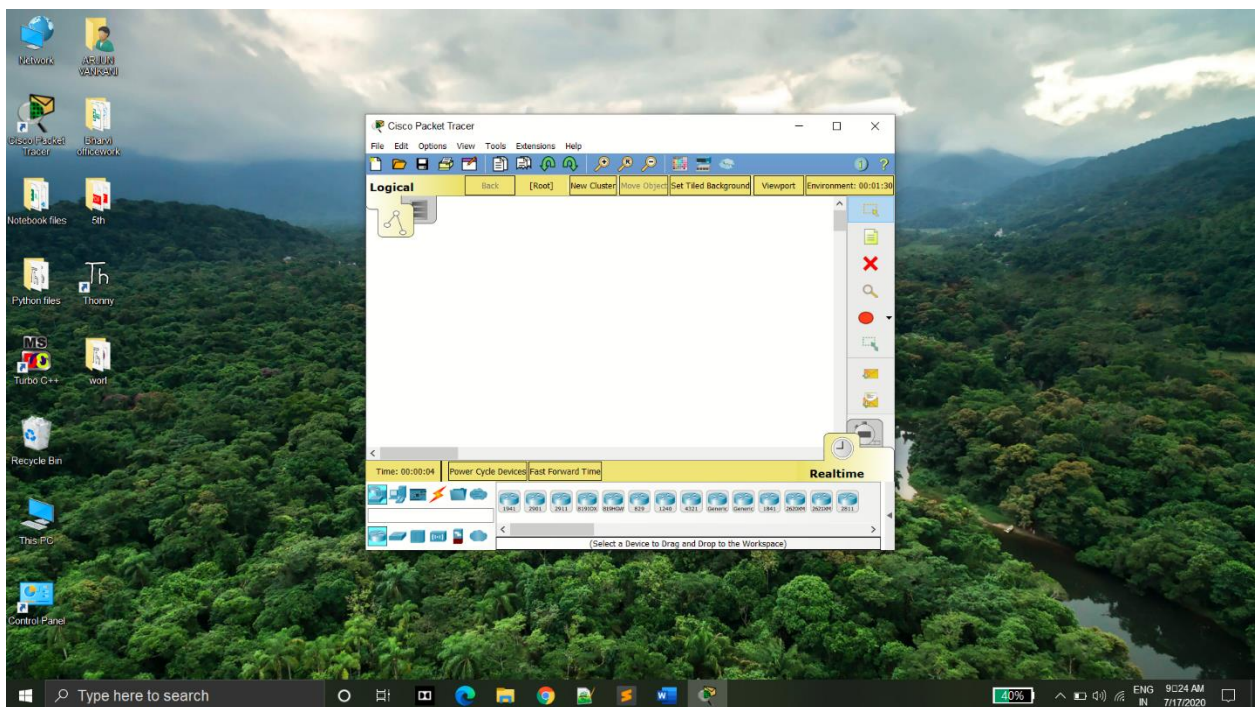
Step-5

- It works on extracting and installing setup.



Step-6

- This is shown Software was finish



- This is Main window of Packet tracer, now get started with work!!


(Q)(2-c) Explain uses and application of packet tracer?








- In this packet tracer we can make network model virtually like adding Pc& Laptop.
- We can assign IP address to computers, in which static or dynamic Ip and use VPN connection also run command in CMD or terminal windows
- Add switching network and set physical host
- Used cable network devices
- We can test ping between computers & add wireless router
- We create our special workspace and adding comment, notes

(Q)(2-d) List out Important modules /component of packet tracer.

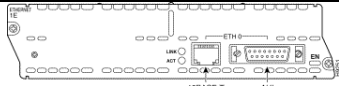
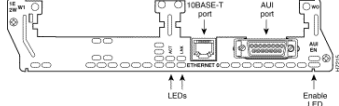
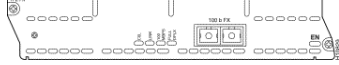
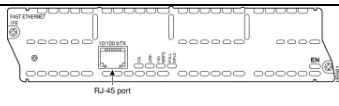
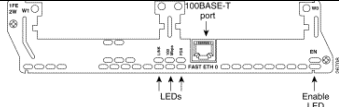


- **1)Router devices emulated in Cisco Packet Tracer**

- Cisco 1841 ISR router
- Cisco 2620XM ISR router
- Cisco 2621XM ISR router
- Cisco 2811 ISR router
- Cisco 1941 ISR router
- Cisco 2901 ISR router
- Cisco 2911 ISR router
- Cisco 819 ISR router
- Cisco 829 ISR router
- Cisco CGR 1240 rugged router
- Cisco 4321 ISR router (added in Cisco Packet Tracer 7.1)
- **2)WIC modules**

<i>Module</i>	<i>Photo</i>
WIC-1AM	

WIC-1ENET	
WIC-1T	
WIC-2AM	
WIC-2T	
HWIC-4ESW	
HWIC-8A	
WIC-Cover	

3)Network modules (NM)

Module	Photo
NM-1E	
NM-1E2W	
NM-1FE-FX	
NM-1FE-TX	
NM-1FE2W	
NM-2E2W	
NM-2FE2W	
NM-2W	
NM-4A/S	
NM-4E	
NM-8A/S	
NM-8AM	
NM-Cover	