

Cloud Solutions

Twisted Pairs

Coax

Equipment Management System



Port Setting Table							
Name	Port	Link	Speed	Link State	Up/Down	Link Error	Link Error
Port 1	GE0-1	Link 1	1000M	Up	Up	0	0
Port 2	GE0-2	Link 2	1000M	Up	Up	0	0
Port 3	GE0-3	Link 3	1000M	Up	Up	0	0
Port 4	GE0-4	Link 4	1000M	Up	Up	0	0
Port 5	GE0-5	Link 5	1000M	Up	Up	0	0
Port 6	GE0-6	Link 6	1000M	Up	Up	0	0
Port 7	GE0-7	Link 7	1000M	Up	Up	0	0
Port 8	GE0-8	Link 8	1000M	Up	Up	0	0
Port 9	GE0-9	Link 9	1000M	Up	Up	0	0
Port 10	GE0-10	Link 10	1000M	Up	Up	0	0
Port 11	GE0-11	Link 11	1000M	Up	Up	0	0
Port 12	GE0-12	Link 12	1000M	Up	Up	0	0
Port 13	GE0-13	Link 13	1000M	Up	Up	0	0
Port 14	GE0-14	Link 14	1000M	Up	Up	0	0
Port 15	GE0-15	Link 15	1000M	Up	Up	0	0
Port 16	GE0-16	Link 16	1000M	Up	Up	0	0
Port 17	GE0-17	Link 17	1000M	Up	Up	0	0
Port 18	GE0-18	Link 18	1000M	Up	Up	0	0
Port 19	GE0-19	Link 19	1000M	Up	Up	0	0
Port 20	GE0-20	Link 20	1000M	Up	Up	0	0
Port 21	GE0-21	Link 21	1000M	Up	Up	0	0
Port 22	GE0-22	Link 22	1000M	Up	Up	0	0
Port 23	GE0-23	Link 23	1000M	Up	Up	0	0
Port 24	GE0-24	Link 24	1000M	Up	Up	0	0
Port 25	GE0-25	Link 25	1000M	Up	Up	0	0
Port 26	GE0-26	Link 26	1000M	Up	Up	0	0
Port 27	GE0-27	Link 27	1000M	Up	Up	0	0
Port 28	GE0-28	Link 28	1000M	Up	Up	0	0
Port 29	GE0-29	Link 29	1000M	Up	Up	0	0
Port 30	GE0-30	Link 30	1000M	Up	Up	0	0
Port 31	GE0-31	Link 31	1000M	Up	Up	0	0
Port 32	GE0-32	Link 32	1000M	Up	Up	0	0
Port 33	GE0-33	Link 33	1000M	Up	Up	0	0
Port 34	GE0-34	Link 34	1000M	Up	Up	0	0
Port 35	GE0-35	Link 35	1000M	Up	Up	0	0
Port 36	GE0-36	Link 36	1000M	Up	Up	0	0
Port 37	GE0-37	Link 37	1000M	Up	Up	0	0
Port 38	GE0-38	Link 38	1000M	Up	Up	0	0
Port 39	GE0-39	Link 39	1000M	Up	Up	0	0
Port 40	GE0-40	Link 40	1000M	Up	Up	0	0
Port 41	GE0-41	Link 41	1000M	Up	Up	0	0
Port 42	GE0-42	Link 42	1000M	Up	Up	0	0
Port 43	GE0-43	Link 43	1000M	Up	Up	0	0
Port 44	GE0-44	Link 44	1000M	Up	Up	0	0
Port 45	GE0-45	Link 45	1000M	Up	Up	0	0
Port 46	GE0-46	Link 46	1000M	Up	Up	0	0
Port 47	GE0-47	Link 47	1000M	Up	Up	0	0
Port 48	GE0-48	Link 48	1000M	Up	Up	0	0
Port 49	GE0-49	Link 49	1000M	Up	Up	0	0
Port 50	GE0-50	Link 50	1000M	Up	Up	0	0
Port 51	GE0-51	Link 51	1000M	Up	Up	0	0
Port 52	GE0-52	Link 52	1000M	Up	Up	0	0
Port 53	GE0-53	Link 53	1000M	Up	Up	0	0
Port 54	GE0-54	Link 54	1000M	Up	Up	0	0
Port 55	GE0-55	Link 55	1000M	Up	Up	0	0
Port 56	GE0-56	Link 56	1000M	Up	Up	0	0
Port 57	GE0-57	Link 57	1000M	Up	Up	0	0
Port 58	GE0-58	Link 58	1000M	Up	Up	0	0
Port 59	GE0-59	Link 59	1000M	Up	Up	0	0
Port 60	GE0-60	Link 60	1000M	Up	Up	0	0
Port 61	GE0-61	Link 61	1000M	Up	Up	0	0
Port 62	GE0-62	Link 62	1000M	Up	Up	0	0
Port 63	GE0-63	Link 63	1000M	Up	Up	0	0
Port 64	GE0-64	Link 64	1000M	Up	Up	0	0
Port 65	GE0-65	Link 65	1000M	Up	Up	0	0
Port 66	GE0-66	Link 66	1000M	Up	Up	0	0
Port 67	GE0-67	Link 67	1000M	Up	Up	0	0
Port 68	GE0-68	Link 68	1000M	Up	Up	0	0
Port 69	GE0-69	Link 69	1000M	Up	Up	0	0
Port 70	GE0-70	Link 70	1000M	Up	Up	0	0
Port 71	GE0-71	Link 71	1000M	Up	Up	0	0
Port 72	GE0-72	Link 72	1000M	Up	Up	0	0
Port 73	GE0-73	Link 73	1000M	Up	Up	0	0
Port 74	GE0-74	Link 74	1000M	Up	Up	0	0
Port 75	GE0-75	Link 75	1000M	Up	Up	0	0
Port 76	GE0-76	Link 76	1000M	Up	Up	0	0
Port 77	GE0-77	Link 77	1000M	Up	Up	0	0
Port 78	GE0-78	Link 78	1000M	Up	Up	0	0
Port 79	GE0-79	Link 79	1000M	Up	Up	0	0
Port 80	GE0-80	Link 80	1000M	Up	Up	0	0
Port 81	GE0-81	Link 81	1000M	Up	Up	0	0
Port 82	GE0-82	Link 82	1000M	Up	Up	0	0
Port 83	GE0-83	Link 83	1000M	Up	Up	0	0
Port 84	GE0-84	Link 84	1000M	Up	Up	0	0
Port 85	GE0-85	Link 85	1000M	Up	Up	0	0
Port 86	GE0-86	Link 86	1000M	Up	Up	0	0
Port 87	GE0-87	Link 87	1000M	Up	Up	0	0
Port 88	GE0-88	Link 88	1000M	Up	Up	0	0
Port 89	GE0-89	Link 89	1000M	Up	Up	0	0
Port 90	GE0-90	Link 90	1000M	Up	Up	0	0
Port 91	GE0-91	Link 91	1000M	Up	Up	0	0
Port 92	GE0-92	Link 92	1000M	Up	Up	0	0
Port 93	GE0-93	Link 93	1000M	Up	Up	0	0
Port 94	GE0-94	Link 94	1000M	Up	Up	0	0
Port 95	GE0-95	Link 95	1000M	Up	Up	0	0
Port 96	GE0-96	Link 96	1000M	Up	Up	0	0
Port 97	GE0-97	Link 97	1000M	Up	Up	0	0
Port 98	GE0-98	Link 98	1000M	Up	Up	0	0
Port 99	GE0-99	Link 99	1000M	Up	Up	0	0
Port 100	GE0-100	Link 100	1000M	Up	Up	0	0
Port 101	GE0-101	Link 101	1000M	Up	Up	0	0
Port 102	GE0-102	Link 102	1000M	Up	Up	0	0
Port 103	GE0-103	Link 103	1000M	Up	Up	0	0
Port 104	GE0-104	Link 104	1000M	Up	Up	0	0
Port 105	GE0-105	Link 105	1000M	Up	Up	0	0
Port 106	GE0-106	Link 106	1000M	Up	Up	0	0
Port 107	GE0-107	Link 107	1000M	Up	Up	0	0
Port 108	GE0-108	Link 108	1000M	Up	Up	0	0
Port 109	GE0-109	Link 109	1000M	Up	Up	0	0
Port 110	GE0-110	Link 110	1000M	Up	Up	0	0
Port 111	GE0-111	Link 111	1000M	Up	Up	0	0
Port 112	GE0-112	Link 112	1000M	Up	Up	0	0
Port 113	GE0-113	Link 113	1000M	Up	Up	0	0
Port 114	GE0-114	Link 114	1000M	Up	Up	0	0
Port 115	GE0-115	Link 115	1000M	Up	Up	0	0
Port 116	GE0-116	Link 116	1000M	Up	Up	0	0
Port 117	GE0-117	Link 117	1000M	Up	Up	0	0
Port 118	GE0-118	Link 118	1000M	Up	Up	0	0
Port 119	GE0-119	Link 119	1000M	Up	Up	0	0
Port 120	GE0-120	Link 120	1000M	Up	Up	0	0
Port 121	GE0-121	Link 121	1000M	Up	Up	0	0
Port 122	GE0-122	Link 122	1000M	Up	Up	0	0
Port 123	GE0-123	Link 123	1000M	Up	Up	0	0
Port 124	GE0-124	Link 124	1000M	Up	Up	0	0
Port 125	GE0-125	Link 125	1000M	Up	Up	0	0
Port 126	GE0-126	Link 126	1000M	Up	Up	0	0
Port 127	GE0-127	Link 127	1000M	Up	Up	0	0
Port 128	GE0-128	Link 128	1000M	Up	Up	0	0
Port 129	GE0-129	Link 129	1000M	Up	Up	0	0
Port 130	GE0-130	Link 130	1000M	Up	Up	0	0
Port 131	GE0-131	Link 131	1000M	Up	Up	0	0
Port 132	GE0-132	Link 132	1000M	Up	Up	0	0
Port 133	GE0-133	Link 133	1000M	Up	Up	0	0
Port 134	GE0-134	Link 134	1000M	Up	Up	0	0
Port 135	GE0-135	Link 135	1000M	Up	Up	0	0
Port 136	GE0-136	Link 136	1000M	Up	Up	0	0
Port 137	GE0-137	Link 137	1000M	Up	Up	0	0
Port 138	GE0-138	Link 138	1000M	Up	Up	0	0
Port 139	GE0-139	Link 139	1000M	Up	Up	0	0
Port 140	GE0-140	Link 140	1000M	Up	Up	0	0
Port 141	GE0-141	Link 141	1000M	Up	Up	0	0
Port 142	GE0-142	Link 142	1000M	Up	Up	0	0
Port 143	GE0-143	Link 143	1000M	Up	Up	0	0
Port 144	GE0-144	Link 144	1000M	Up	Up	0	0
Port 145	GE0-145	Link 145	1000M	Up	Up	0	0
Port 146	GE0-146	Link 146	1000M	Up	Up	0	0
Port 147	GE0-147	Link 147	1000M	Up	Up	0	0
Port 148	GE0-148	Link 148	1000M	Up	Up	0	0
Port 149	GE0-149	Link 149	1000M	Up	Up	0	0
Port 150	GE0-150	Link 150	1000M	Up	Up	0	0
Port 151	GE0-151	Link 151	1000M	Up	Up	0	0
Port 152	GE0-152	Link 152	1000M	Up	Up	0	0
Port 153	GE0-153	Link 153	1000M	Up	Up	0	0
Port 154	GE0-154	Link 154	1000M	Up	Up	0	0
Port 155	GE0-155	Link 155	1000M	Up	Up	0	0
Port 156	GE0-156	Link 156	1000M				

G.hn Solutions Over COAX

G.hn technology offers a fast, sustainable and non-intrusive way of extending internet throughout the premises of an MDU and provide **symmetrical Gigabit services** by making use of existing **coaxial infrastructure** without the need of additional wiring of ethernet cable or fiber running into individual apartments

Cost-effective and faster deployments
Operates at a low frequency 5~200MHz
Longer coverage with Link Aggregation



G.hn Twisted Pairs

Solutions Over

G.hn technology offers a fast, sustainable and non-intrusive way of extending internet throughout the premises of an MDU and provide

symmetrical Gigabit services by making use of existing **twisted pair**

infrastructure without the need of additional wiring of ethernet cable or fiber running into individual apartments

Cost-effective and faster deployments

Operates at a low frequency 5~200MHz

Longer coverage with Link Aggregation



G.hn Solution For Coax



- ❖ TL-9607Q 4-port microDPU
- ❖ TL-9607D 1-port microDPU
- ❖ TL-9802 & TL-9825 CPE (w/o Wi-Fi)
- ❖ TL-9732C CPE (with Wi-Fi 6)
- ❖ L2 Switch 10-port & 24-port
- ❖ TL-2000C Coax SFP



G.hn over Coax – 4-port version



Master Unit

Model: TL-9607Q

Uplink: 2.5G Ethernet/SFP

Downlink: 4* 1G Coax

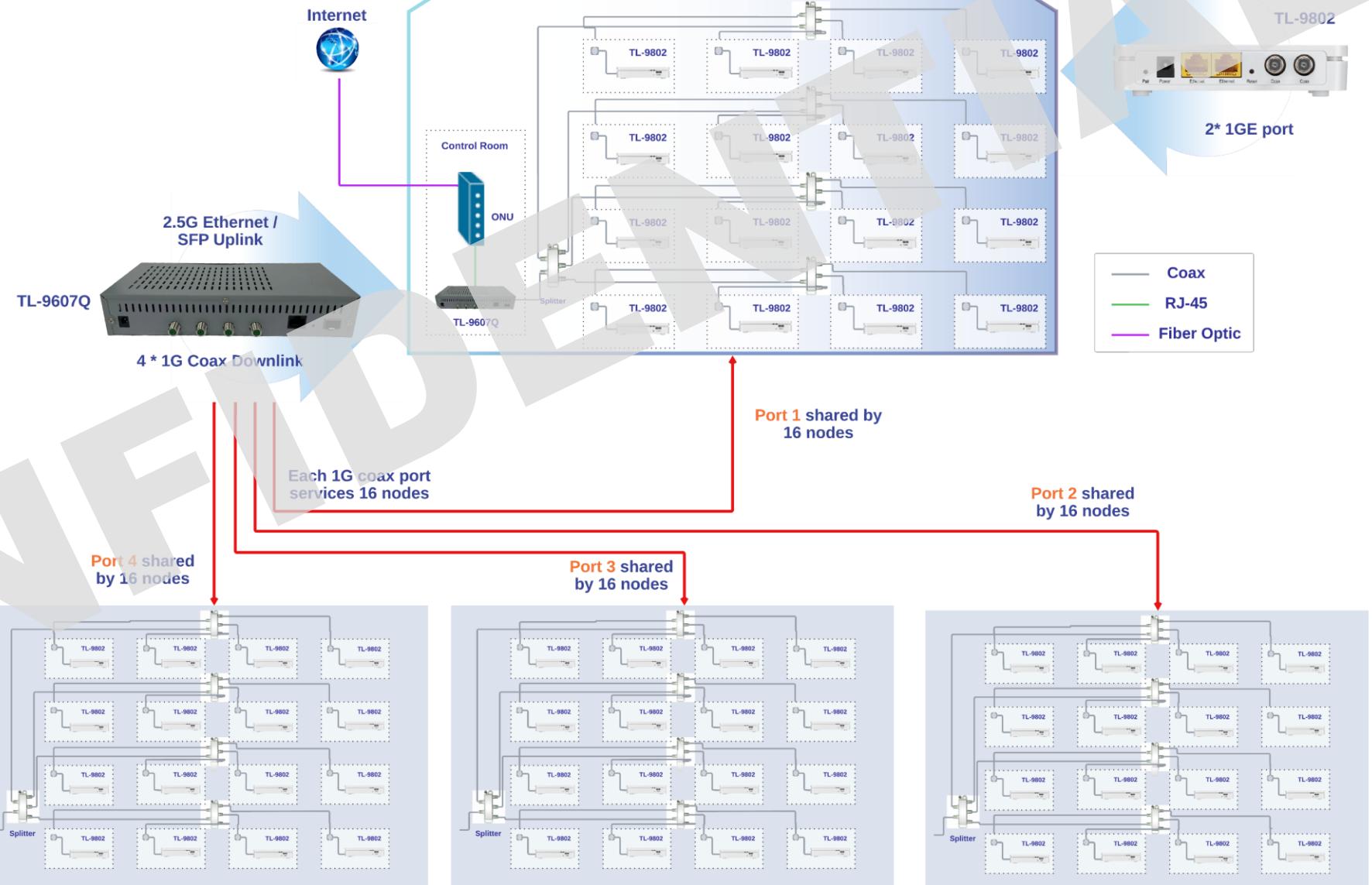
No. of nodes served: 64

CPE / Endpoints

Model: TL-9802

Ports: 2* 1GE ports; TV_{out} Coax

Other CPE options:
TL-9825
TL-9732C



G.hn over Coax – 4-port version

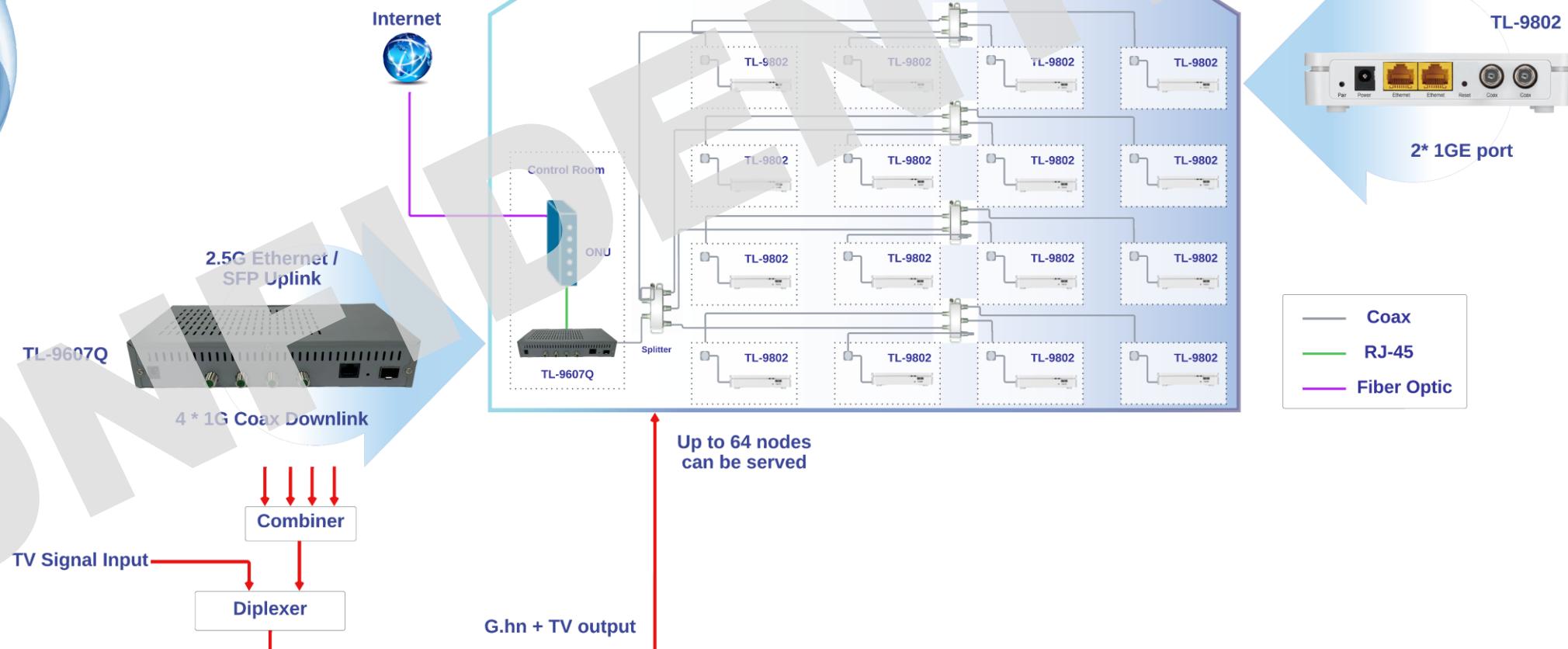
With TV Passthrough Via External Diplexer

Master Unit

Model: TL-9607Q
Uplink: 2.5G Ethernet/SFP
Downlink: 4* 1G Coax
No. of nodes served: 64
TV Passthrough: Yes (external diplexer)

CPE / Endpoints

Model: TL-9802
Ports: 2* 1GE ports; TV_{out}, Coax
Other CPE options: TL-9825, TL-9732C



G.hn Over Coax – Single Port



Master Unit

Model: TL-9607D

Uplink: 2.5G Ethernet/SFP

Downlink: 1* 2.5G Coax

No. of nodes served: 16

CPE / Endpoints

Model: TL-9825

Ports:

1* 2.5GE port; TV_{out} Coax

Other CPE options:

TL-9732C

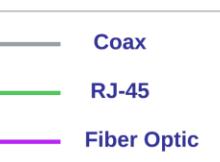
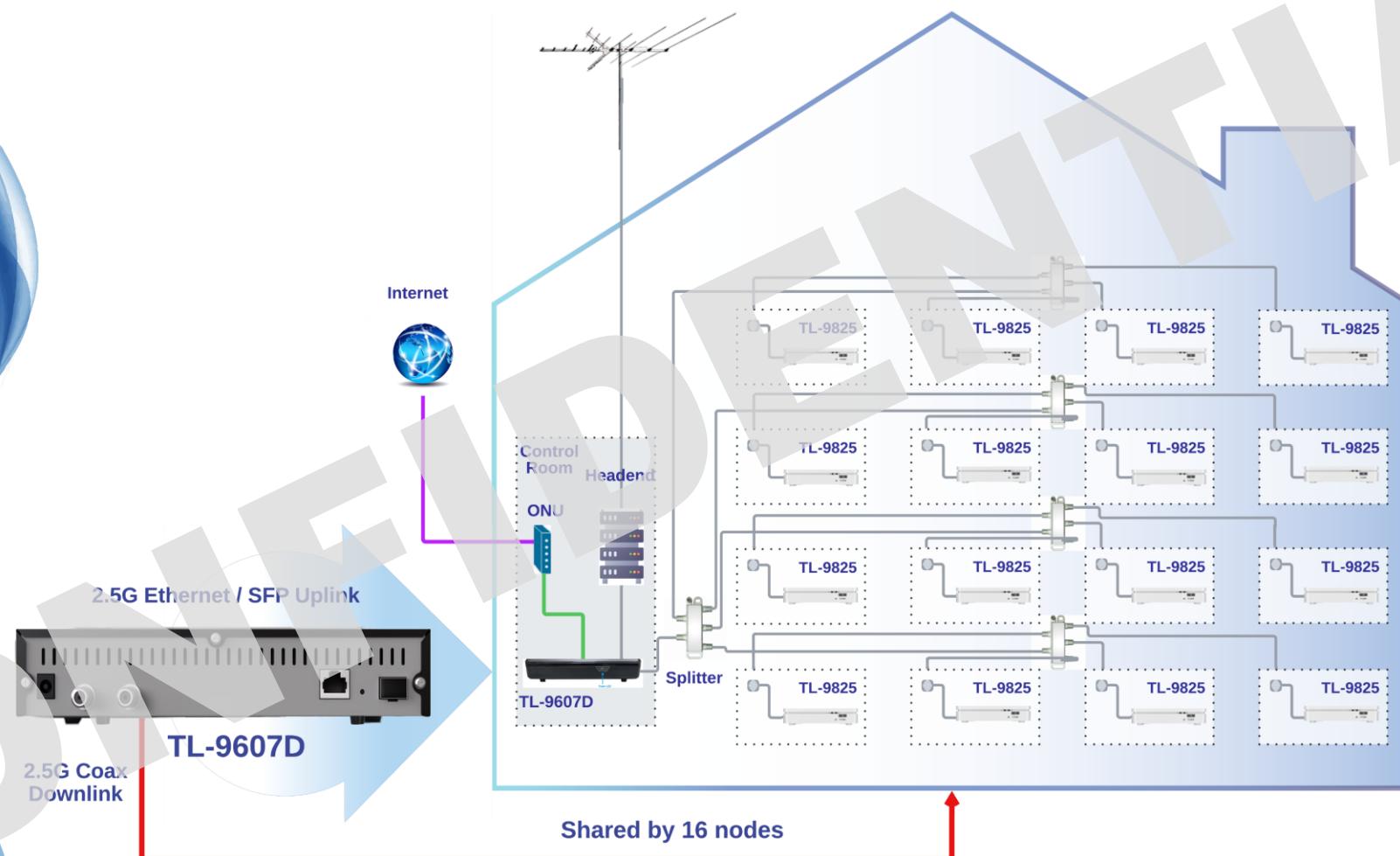
TL-9802



2.5G Ethernet / SFP Uplink

TL-9607D

2.5G Coax
Downlink



TL-9825

Single 2.5G
Ethernet Port

G.hn Over Coax – L2 Switch 10-Port



L2 Switch

Model: TL-1012
Uplink: 2* 10G SFP
Downlink: 10* 2.5G Coax
No. of nodes served: 160

CPE & SFP

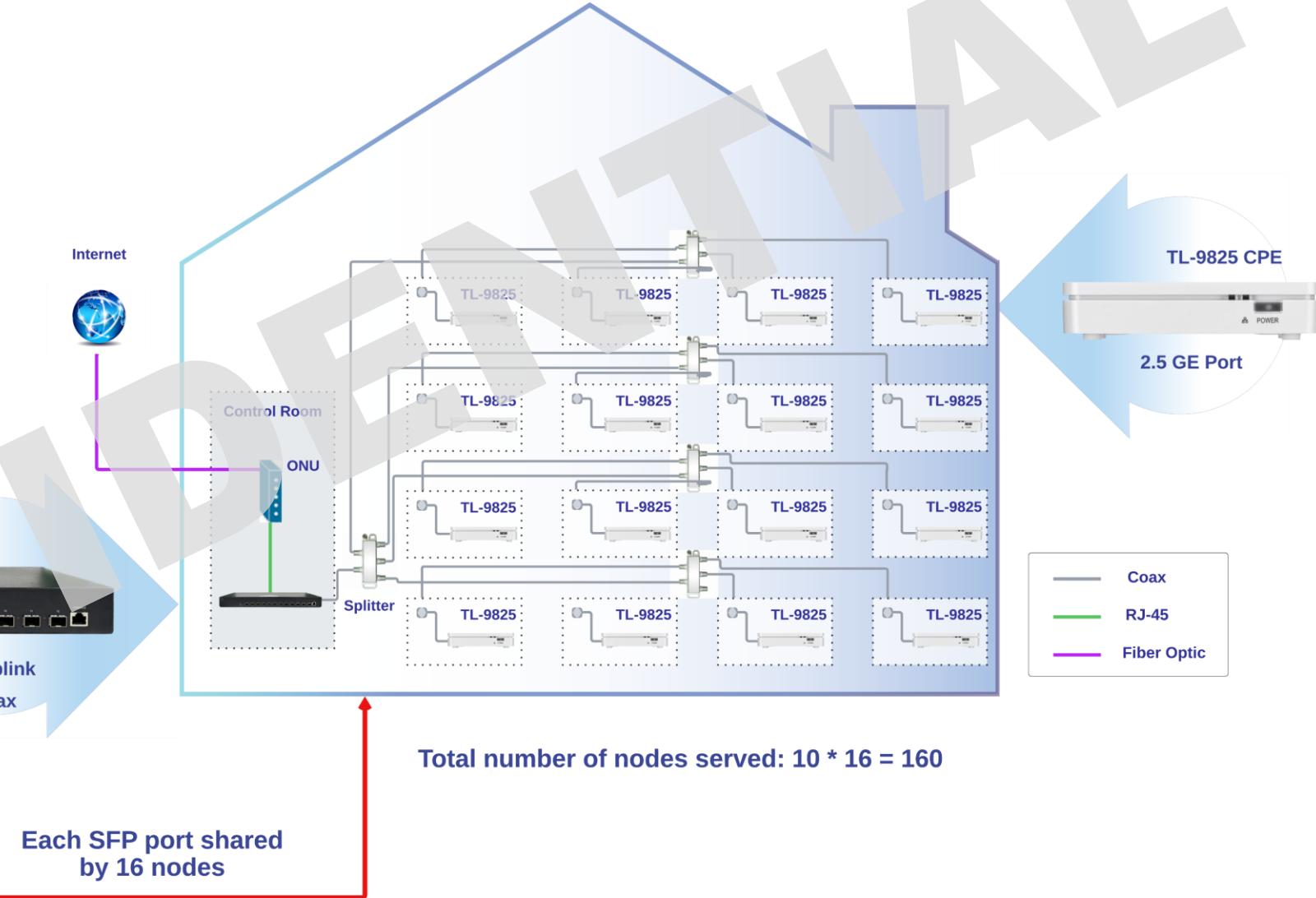
CPE Model: TL-9825
Ports:
1* 2.5GE port; TV_{out} Coax
Other CPE options:
TL-9732C
TL-9802
SFP Model: TL-2000C

TL-1012 10-port L2 switch

2x 10G SFP Uplink
10x 2.5G Coax Downlink



10x G.hn Coax SFPs
plugged into 10 SFP
ports



Total number of nodes served: $10 * 16 = 160$

Each SFP port shared
by 16 nodes

G.hn Over Coax – L2 Switch 24-Port



L2 Switch

Model: TL-1024

Uplink: 4* 10G SFP

Downlink: 24* 1G Coax

No. of nodes served: 384

CPE & SFP

CPE Model: TL-9802

Ports:
2* 1 GE port; TV_{out} Coax

Other CPE options:
TL-9825
TL-9732C

SFP Model: TL-2000C

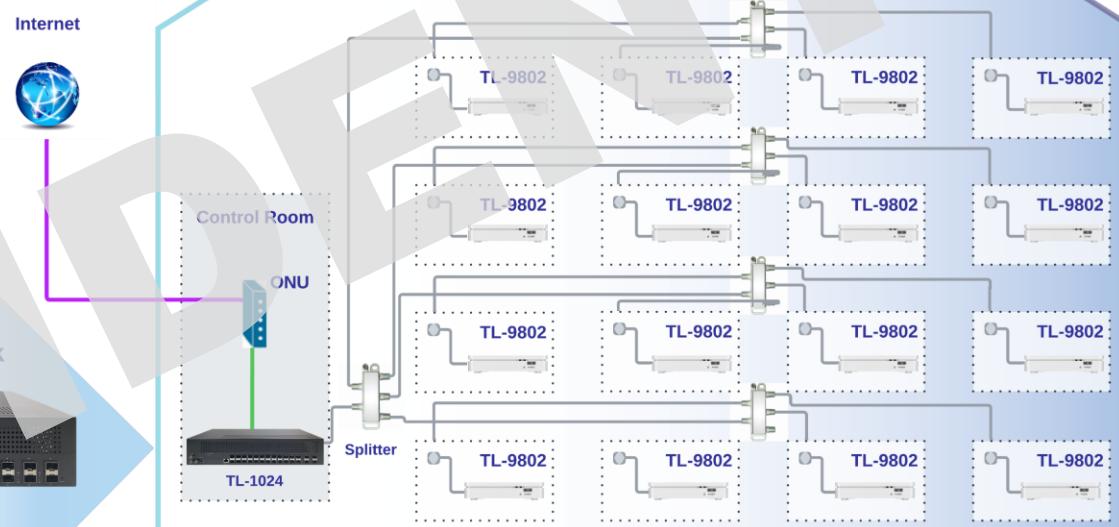
TL-1024 24-port
L2 switch

24x 1G Coax
Downlink



24x G.hn Coax
SFPs plugged into
24 SFP ports

Each SFP port shared by 16 nodes



TL-9802 CPE

2x 1GE ports

Coax
RJ-45
Fiber Optic

G.hn Solutions For Twisted Pairs



- ❖ TL-9902 CPE with 1 GE port
- ❖ TL-9732T CPE with Wi-Fi 6
- ❖ L2 Switch 10-port & 24-port
- ❖ TL-3000C G.hn Wave-2 MIMO SFP
- ❖ TL-4000C G.hn Wave-2 SISO SFP



G.hn over Twisted Pairs – L2 Switch 10-Port



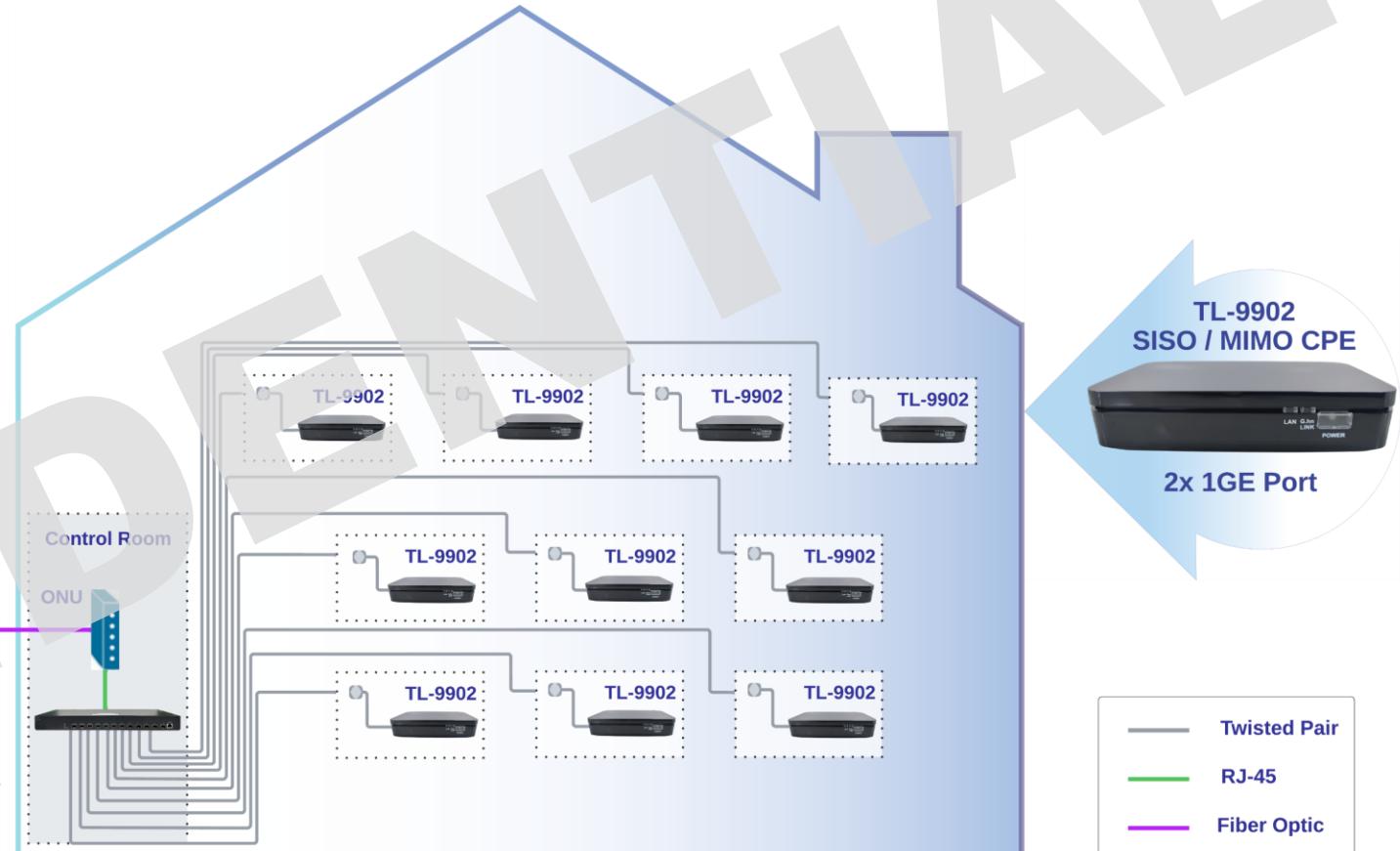
L2 Switch

Model: TL-1012
Uplink: 2* 10G SFP
Downlink: 10* 2.5G Twisted pair
No. of nodes served: 10

CPE & SFP

Model: TL-9902
Ports: 2* 1GE port
CPE options: TL-9732T
SFP Model:
TL-4000C SISO SFP
TL-3000C MIMO SFP

Vector Boost™ Technology



Each SFP port serves a node PTP
(point-to-point)



G.hn over Twisted Pairs – L2 Switch 24-Port



L2 Switch

Model: TL-1024

Uplink: 4* 10G SFP

Downlink: 24* 1G
Twisted pair

No. of nodes served: 24

CPE & SFP

Model: TL-9902

Ports: 2* 1GE port

CPE options: TL-9732T

SFP Model:

TL-4000C SISO SFP

TL-3000C MIMO SFP

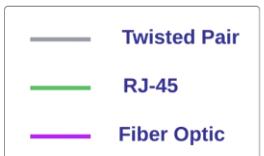
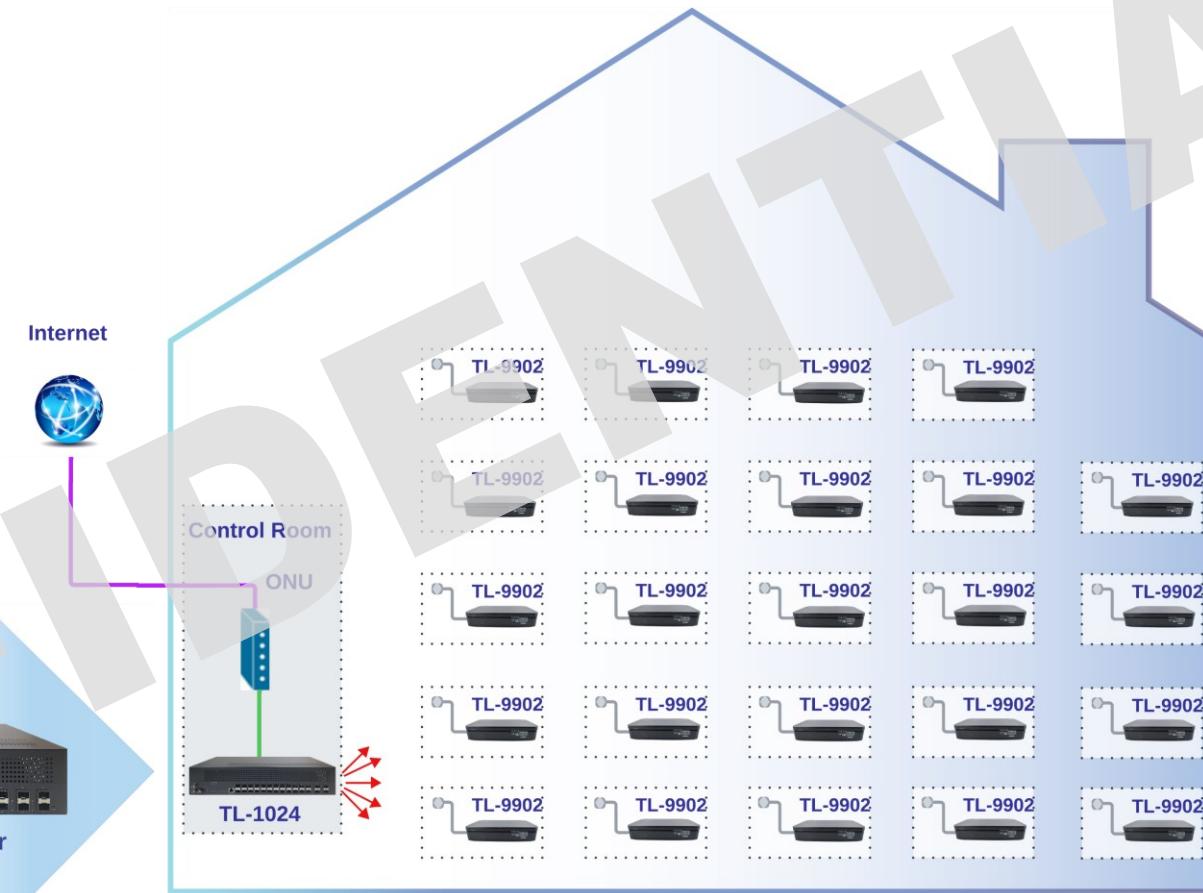
Vector Boost™ Technology

TL-1024
24-port
L2 Switch

4x 10G SFP Uplink

24x 1G Twisted Pair
Downlink

24x SISO/MIMO
SFPs plugged into
24 SFP ports



Performance & Test Results



Throughput between 24-port L2 Switch and G.hn Bridge with SISO SFP

- ❖ 24 pairs linked; only one pair has traffic performance information
- ❖ Packet size: 1518 bytes
- ❖ Generate 1Gbps traffic each direction

Throughput rate bi-direction (DS/US) (Mbps)	Download speed only (Mbps)	Upload speed only (Mbps)
592/585	939	920

Throughput between 24-port L2 Switch and G.hn Bridge with SISO SFP

- ❖ 6 pairs linked; only one pair has traffic performance information
- ❖ Packet size: 1518 bytes
- ❖ Generate 1Gbps traffic each direction

Throughput rate bi-direction (DS/US) (Mbps)	Download speed only (Mbps)	Upload speed only (Mbps)
615/594	998	955

MicroDPU Throughput (Coax)



Models Tested

TL-9732C



Models Tested

TL-9802,
TL-9825

MicroDPU			
Throughput	Throughput Rate bi-direction (DS/US) (Mbps)	Download speed only (Mbps)	Upload speed only (Mbps)
G.hn Wi-Fi AP	830/832	998	998
G.hn Bridge	836/827	998	998

Performance & Test Results



Throughput between 24-port L2 Switch and G.hn Bridge with SISO SFP

- ❖ **Packet size: 1518 bytes**
- ❖ **Generate 1Gbps traffic each direction**

Distance	PHY Tx (Mbps)	PHY Rx (Mbps)	Bi-direction Tx (Mbps)	Bi-direction Rx (Mbps)	One-way Tx (Mbps)	One-way Rx (Mbps)
100m	1691	1691	721	711	998	998
200m	1309	1286	559	550	998	998
300m	702	712	302	300	593	595
400m	446	427	190	182	377	360
500m						
600m						

DSL Line may disconnect

MicroDPU Throughput (Coax)



Models Tested

TL-9732C



Models Tested

TL-9802,
TL-9825

MicroDPU			
Throughput	Throughput Rate bi-direction (DS/US) (Mbps)	Download speed only (Mbps)	Upload speed only (Mbps)
G.hn Wi-Fi AP	830/832	998	998
G.hn Bridge	836/827	998	998