

A TELECOMMUNICATION ENCLOSURE

Field of Invention

The present invention relates generally to a telecommunication enclosure.

Background

With the advent of fibre-to-the-home (FTTH) and the like services, the requirement for inter-connectivity between services and applications becomes an ever increasing need to achieve connectivity flexibility between devices within a premise and services provided to the premise.

A typical premise, for example an apartment unit, usually has various telecommunication services being provided thereto. These services, for example cable television services and telephony services, are provided by service providers with consideration to locality interdependency and inter-communicatability. As such, various wiring or cabling problems arise for a tenant of the premise. These problems includes provision of typical voice cabling approaches that results in voice points within the premise being looped in series. This limits the premise to only a single telephone service or number which requires the tenant to incur additional surface wiring should addressing of this problem be required.

The problems include the inability of the tenant to network cable points provided on the premise. Most data points typically provided or existing within the premise are located next to the telephone points. These data points converges at a data patch panel but no cable connections exist for networking a modem with the data patch panel. This has resulted in wireless network being adopted to address this problem.



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Should a fibre point under the FTTH service be provided to the premise, there will not be any convenient space to house the customer-premises equipment (CPE). Should an alternate location be used, new surface laid cables would be required to allow the CPE to be coupled to the incoming optic cable thereby rendering the existing data points unutilised.

Therefore, there exists a need for an improved telecommunication system for converging the various telecommunication services and points.

Summary

In accordance with a first aspect of the invention, there is disclosed a telecommunication enclosure comprising a processing system, a plurality of exit nodes and a containment structure for containing the processing system and the plurality of exit nodes. The processing system is for communicating communication signals comprising video components and at least one of data components and voice components. A plurality of devices is couplable to the plurality of exit nodes. The processing system is couplable with the plurality of exit nodes for communicating the video components as video signals to a first at least one of the plurality of devices via at least one of the plurality of exit nodes and at least one of the data components as data signals and the voice components as voice signals to a second at least one of the plurality of devices via at least one of the plurality of exit nodes. The containment structure defines at least one access wherethrough the plurality of devices and the plurality of exit nodes are inter-couplable.

In accordance with a second aspect of the invention, there is disclosed a telecommunication system comprising a processing system and a plurality of exit nodes. The processing system is for communicating communication signals comprising video components and at least one of data components and voice components. A plurality of devices is couplable to the plurality of exit nodes. The processing system is couplable with the plurality of exit nodes for communicating the video components as video signals to a first at least one of the plurality of devices via at least one of the plurality of exit nodes and at least one of the data

components as data signals and the voice components as voice signals to a second at least one of the plurality of devices via at least one of the plurality of exit nodes.

Brief Description of the Drawings

FIG. 1 shows system diagram of a telecommunication enclosure according to a first exemplary embodiment of the invention;

FIG. 2 shows a data flow diagram of the telecommunication enclosure of FIG. 1;

FIG. 3 shows a data flow diagram of the telecommunication enclosure of FIG. 1 according to a second exemplary embodiment of the invention;

FIG. 4 shows a data flow diagram of the telecommunication enclosure of FIG. 1 according to a third exemplary embodiment of the invention; and

FIG. 5 shows a data flow diagram of the telecommunication enclosure of FIG. 1 according to a fourth exemplary embodiment of the invention.

Detailed Description

A first exemplary embodiment of the present invention, a telecommunication enclosure 20, is described hereinafter with reference to FIG. 1 and FIG. 2.

The telecommunication enclosure 20 comprises a processing system 22, a plurality of exit nodes 24 and a containment structure 26. Preferably, the processing system 22 and the plurality of exit nodes 24 are contained within the containment structure 26 on a patch panel (not shown). Alternatively, the plurality of exit nodes 24 are formed integral the containment structure 26.

Multiple devices 28 are couplable to the plurality of exit nodes 24. Each of the plurality of exit nodes 24 can have one or a few of the devices 28 coupled thereto. The devices 28 comprise, for example, audio-visual (AV) devices, television sets, computer systems, notebook computers and phone sets. Each of the plurality of exit nodes 24 is wired to one or more outlet points, for example RJ 11 jacks, at one or more localities. This enables the devices 28 to be coupled to the plurality of exit nodes 24 by plugging to the outlet points. Preferably, the containment structure 26 defines an access opening wherethrough cables inter-coupling the exit nodes 24 and the outlet points passages.

Communication signals 36 are communicable with the processing system 22. The communication signals are preferably carried by riser equipment 37. The riser equipment 37 comprises, for example, riser telecommunication cables with the communication signals being substantially dedicated for a premise whereat the telecommunication enclosure 20 is disposable and wherein the devices 28 are locatable. Preferably, the telecommunication enclosure 20 is where all telecommunication cables, from within the premise and external thereto, converges.

The communication signals 36 comprise video components and data components. The video components of the communication signals 36 are communicable as video signals 42 with a

first device group 44 via at least one of the plurality of exit nodes 24. Additionally, the data components of the communication signals 36 are communicable as data signals 46 with a second device group 48 via at least one of the plurality of exit nodes 24. Each of the first device group 44 and the second device group 48 comprises at least one of the devices 28. Preferably, the video signals 42 are analogue signals and the data signals 46 are digital signals. Alternatively, the video signals 42 are digital signals.

In the first exemplary embodiment of the invention, the processing system 22 of the telecommunication enclosure 20 comprises a signal splitter 50 and a modem 52. Functionally, the signal splitter 50 signals from a single signal source to one or more destination devices. Additionally or alternatively, the signal splitters 50 is an amplifier splitter further for amplifying incoming source signals prior to providing the amplified signals to the one or more destination devices. The communication signals 36 comprise first signals 54 communicable with the signal splitter 50 and second signals 56 communicable with the modem 52. A first cable 58 couples to the signal splitter 50 for carrying and communicating the first signals 54 therewith and a second cable 60 couples to the modem 52 for carrying and communicating the second signals 56 therewith.

The signal splitter 50 communicates the first signals 54 as the video signals 42 to the first device group 44 via at one or more of the plurality of exit nodes 24. The modem 52 modulates between the second signals 56 and the data signals 46. Preferably, each of the first signals 54 and the second signals 56 are analogue signals. Alternatively, each of the first signals 54 and the second signals 56 are one of analogue signals and digital signals. Preferably, the modem 52 is an asymmetric digital subscriber line (ADSL) modem. Therefore, the processing system 22 further comprises a switch (not shown) for controlling switching between a portion of the plurality of exit nodes 24 for communication with the modem 52 to thereby control communication of the data signals 46 with and amongst the second device group 48.

Additionally, the processing system 22 further comprises a filter 64 for inter-coupling the second cable 60 with one or more of the plurality of exit nodes 24. The second signals 56 further comprises voice components communicable as voice signals 68 to a third device group 70 via at least one of the plurality of exit nodes 24. The third device group 68 comprises one or more of the devices 28. Preferably, the filter 64 is a micro-filter for filtering away at least a portion of non-voice components from the second signals 56.

A second exemplary embodiment of the invention, a telecommunication enclosure 100 comprising a processing system 102, a plurality of exit nodes 104 and a containment structure 106 for containing the processing system 102 and the plurality of exit nodes 104 is shown in Fig. 3. The function of and configuration between the processing system 102, the plurality of exit nodes 104 and the containment structure 106 of the second exemplary embodiment of the invention corresponds with the processing system 22, the plurality of exit nodes 24 and the containment structure 26 of the first exemplary embodiment of the invention. As with the first embodiment of the invention, the devices 28 couple to the plurality of exit nodes 104 for communication therevia and are grouped into the first device group 44, the second device group 48 and the third device group 70. As with the processing system 22 of the first exemplary embodiment, the video components, the data components and the voice components of the communication signals 36 are processable and communicable by the processing system 102 of the second embodiment as the video signals 42, the data signals 46 and the voice signals 68 respectively.

The processing system 102 comprises a signal splitter 108 and a modem 110. The modem 110 is preferably a cable modem. An entry cable 112 couples with the signal splitter 108 for carrying and communicating the communication signals 36 therewith. The signal splitter 108 communicates the communication signals 36 as the video signals 42 with the first device group 44 via at least one of the plurality of exit nodes 104. Further, the signal splitter 108 communicates the communication signals 36 with the modem 110. The modem 110 modulates between the communication signals 36 and the data signals 46. The data signals 46 are communicable between the modem 110 and the second device group 48 via at least one of the plurality of exit nodes 104. The processing system 102 further comprises a switch

(not shown) for inter-coupling the modem 110 and the plurality of exit nodes 104. The switch is for controlling switching between a portion of the plurality of exit nodes 24 for communication with the modem 110 to thereby control communication of the data signals 46 with and amongst the second device group 48.

The telecommunication enclosure 100 further comprises voice cables 116 coupled to the plurality of exit nodes 104. The voice cables 116 are for carrying and communicating the voice signals 68 with the third device group 70 via at least one of the plurality of exit nodes 104. Each of the voice cables 116 is preferably dedicated for a specific voice communication service. For example, a first of the voice cables 116 is dedicated for a first telephony service, a second of the voice cables 116 is dedicated to a second telephony service and a third of the voice cables 116 is dedicated to a facsimile service. From the foregoing description, it is apparent that a single voice cable be used in place of the multiple voice cables 116 for coupling to the plurality of exit nodes 104.

A third exemplary embodiment of the invention, a telecommunication enclosure 200 comprising a processing system 202, a plurality of exit nodes 204 and a containment structure 206 for containing the processing system 202 and the plurality of exit nodes 204 is shown in Fig. 4. The function of and configuration between the processing system 202, the plurality of exit nodes 204 and the containment structure 206 of the third exemplary embodiment of the invention corresponds with the processing system 22, the plurality of exit nodes 24 and the containment structure 26 of the first exemplary embodiment of the invention. As with the first embodiment of the invention, the devices 28 couple to the plurality of exit nodes 204 for communication therevia and are grouped into the first device group 44, the second device group 48 and the third device group 70. As with the processing system 22 of the first exemplary embodiment, the video components, the data components and the voice components of the communication signals 36 are processable and communicable by the processing system 202 of the third embodiment as the video signals 42, the data signals 46 and the voice signals 68 respectively.

The processing system 202 comprises a signal splitter 208 and a modem 210. An entry cable 212 couples with the signal splitter 208 for carrying and communicating the communication signals 36 therewith. The signal splitter 208 communicates the communication signals 36 as the video signals 42 with the first device group 44 via at least one of the plurality of exit nodes 204. Further, the signal splitter 208 communicates the communication signals 36 with the modem 210. The modem 210 modulates between the communication signals 36 and the data signals 46. The data signals 46 are communicable between the modem 210 and the second device group 48 via at least one of the plurality of exit nodes 204.

Preferably, the processing system 202 further comprises a switch (not shown) for inter-coupling the modem 210 and the plurality of exit nodes 204. The switch is for controlling switching between a portion of the plurality of exit nodes 24 for communication with the modem 210 to thereby control communication of the data signals 46 with and amongst the second device group 48.

The modem 210 is preferably a voice-enabled cable modem (VECM). Therefore, the modem 210 is able to extract the voice components from the communication signals 36 for communication as the voice signals 68 with the third device group 70 via at least one of the plurality of exit nodes 204. The entry cable 212 is preferably a cable-TV signal carrier with the voice components being embedded in the communication signals 36 as, for example, voice-over-IP (VoIP) streams. The voice signals 36 are analogue signals.

A fourth exemplary embodiment of the invention, a telecommunication enclosure 300 comprising a processing system 302, a plurality of exit nodes 304 and a containment structure 306 for containing the processing system 302 and the plurality of exit nodes 304 is shown in Fig. 5. The function of and configuration between the processing system 302, the plurality of exit nodes 304 and the containment structure 306 of the fourth exemplary embodiment of the invention corresponds with the processing system 22, the plurality of exit nodes 24 and the containment structure 26 of the first exemplary embodiment of the invention. As with the first embodiment of the invention, the devices 28 couple to the plurality of exit nodes 304 for

communication therevia and are grouped into the first device group 44, the second device group 48 and the third device group 70. As with the processing system 22 of the first exemplary embodiment, the video components, the data components and the voice components of the communication signals 36 are processable and communicable by the processing system 302 of the fourth embodiment as the video signals 42, the data signals 46 and the voice signals 68 respectively.

The processing system 302 comprises a signal splitter 308 and a customer-premises equipment (CPE) 310. An entry cable 312 couples with the CPE 310 for carrying and communicating the communication signals 36 therewith. Preferably, the CPE 310 is for fibre-to-the-home (FTTH) applications with the entry cable 312 being a fibre-optics cable.

The CPE 310 functions to convert between the communication signals 36 and the video signals 42, data signals 46 and the voice signals 36. The CPE 310 is coupled to the signal splitter 308 for communicating the video signals 42 with the first device group 44 therevia. The CPE 310 is further coupled to the plurality of exit nodes 304 for communicating the data signals 46 with the second device group 48 via at least one of the plurality of exit nodes 304 and the voice signals 36 with the third device group 70 via at least one of the plurality of exit nodes 304.

Preferably, the CPE 310 is able to function as a switch for controlling switching between a portion of the plurality of exit nodes 24 for communication with the modem 210 to thereby control communication of the data signals 46 with and amongst the second device group 48.

Additionally or alternatively, the CPE 310 has wireless wireless-LAN capabilities for communicating the data signals 46 with any of the devices 28 enabled with wireless-LAN communication capabilities.

Preferably, the containment structure 26/106/206/306 of the first to fourth exemplary embodiments has a door coupled to an opening thereof (not shown) and operable for providing access to the processing system 22/ 102, 202/302 and the plurality of exit nodes 24/104/204/304 for enabling reconfiguration, rewiring, maintenance and/or replacement thereof or addition of equipment thereto. The door is further operable and physically securable for substantially impeding unwanted access to the interior of the containment structure 26/106/206/306.

Additionally, the containment structure 26/106/206/306 is couplable with a power source for provision of power to any one of its contents. The containment structure 26/106/206/306 is also formable as part of an enclosure for providing other functions. For example, the containment structure 26/106/206/306 is also formable as part of a shoe cabinet.

In the foregoing description, use of the word video is meant to refer either to visual components, combined visual and audio components (synchronised or unsynchronised) or visual and audio components with intermittent or empty audio data.

In the foregoing manner, a telecommunication enclosure is described according to four exemplary embodiments of the present invention. Although only four exemplary embodiments of the present invention are disclosed, it will be apparent to a person skilled in the art in view of this disclosure that numerous changes and/or modifications can be made without departing from the scope and spirit of the present invention.

Claims

1. A telecommunication enclosure comprising:

a processing system wherewith communication signals are communicable, the communication signals comprising video components and at least one of data components and voice components;

a plurality of exit nodes whereto a plurality of devices are couplable, the processing system being couplable with the plurality of exit nodes for communicating the video components as video signals to a first at least one of the plurality of devices via at least one of the plurality of exit nodes and at least one of the data components as data signals and the voice components as voice signals to a second at least one of the plurality of devices via at least one of the plurality of exit nodes; and

a containment structure for containing the processing system and the plurality of exit nodes, the containment structure defining at least one access wherethrough the plurality of devices and the plurality of exit nodes are inter-couplable.

2. The telecommunication enclosure as in 1, the video signals being one of analogue signals and digital signals and the data signals being digital signals.

3. The telecommunication enclosure as in claim 1, the processing system comprising:

a signal splitter for communicating the video signals to the first at least one of the plurality of devices via at least one of the plurality of exit nodes.

4. The telecommunication enclosure as in claim 3, the communication signals comprising:

first signals carried on a first cable couplable to the signal splitter, the first signals having the video components providable as the video signals to the signal splitter; and

second signals carried on a second cable couplable to the processing system, the second signals comprising the data components.

5. The telecommunication enclosure as in claim 4, the processing system further comprising:

a modem whereto the second cable is couplable, the modem for modulating between the second signals and the data signals.

6. The telecommunication enclosure as in claim 5, the processing system comprising:

a switch for controlling switching between a portion of the plurality of exit nodes for communication of the data signals with the second at least one of the plurality of devices.

7. The telecommunication enclosure as in claim 5, further comprising:

a filter for inter-coupling the second cable with at least one of the plurality of exit nodes for communicating the voice signals to a third at least one of the plurality of devices therevia, the second signal further comprising a voice components providable as the voice signals to the third at least one of the plurality of devices.

8. The telecommunication enclosure as in claim 3. further comprising:

a modem coupled to the signal splitter, the signal splitter further for providing the communication signals to the modem and the modem for modulating between the communication signals and the data signals; and

a switch for controlling switching between a portion of the plurality of exit nodes for communication of the data signals with the second at least one of the plurality of devices.

9. The telecommunication enclosure as in claim 8, further comprising:
 - an entry cable couplable to the signal splitter, the entry cable for carrying the communication signals communicable with the signal splitter; and
 - at least one voice cable couplable with at least one of the plurality of exit nodes for communicating the voice signals carried thereon with a third at least one of the plurality of devices.
10. The telecommunication enclosure as in 9, the voice signals being analogue signals.
11. The telecommunication enclosure as in claim 8, the communication signals further comprising voice components and the modem further for converting between the voice components of the communication signals and voice signals, the voice signals being communicable with a third at least one of the plurality of devices via at least one of the plurality of exit nodes.
12. The telecommunication enclosure as in 11, the voice signals being analogue signals.
13. The telecommunication enclosure as in claim 3, the processing system further comprising:
 - a customer-premises equipment (CPE) coupled to the signal splitter and the plurality of exit nodes, the CPE for communicating the video signals with the first at least of the plurality of devices via the signal splitter and the data signals with the second at least one of the plurality of devices via at least one of the plurality of exit nodes.

14. The telecommunication enclosure as in claim 13, the CPE for communicating the voice components as the voice signals to a third at least one of the plurality of devices via at least one of the plurality of exit nodes.
15. The telecommunication enclosure as in claim 13, the CPE further for generating voice signals from the data signals for communication with a third at least one of the plurality of devices via at least one of the plurality of exit nodes.
16. The telecommunication enclosure as in 15, each of the communication signals and the data signals being digital signals and the voice signals being analogue signals.
17. The telecommunication enclosure as in claim 13, further comprising a fibre-optics cable coupled to the CPE, the fibre-optics cable carrying the communication signals for communication with the CPE.
18. The telecommunication enclosure as in claim 1, the communication signals being communicated between a riser equipment and the processing system.
19. The telecommunication enclosure as in claim 18, the riser equipment comprising riser telecommunication cables.
20. A telecommunication system comprising:
 - a processing system wherewith communication signals are communicable, the communication signals comprising video components and data components; and
 - a plurality of exit nodes whereto a plurality of devices are couplable, the processing system being couplable with the plurality of exit nodes for communicating

the video components as video signals to a first at least one of the plurality of devices via at least one of the plurality of exit nodes and at least one of the data components as data signals and the voice components as voice signals to a second at least one of the plurality of devices via at least one of the plurality of exit nodes.

21. The telecommunication system as in 20, the video signals being one of analogue signals and digital signals and the data signals being digital signals.
22. The telecommunication system as in claim 20, the processing system comprising:
 - a signal splitter for communicating the video signals to the first at least one of the plurality of devices via at least one of the plurality of exit nodes.
23. The telecommunication system as in claim 22, the processing system further comprising:
 - a customer-premises equipment (CPE) coupled to the signal splitter and the plurality of exit nodes, the CPE for communicating the video signals with the first at least one of the plurality of devices via the signal splitter and the data signals with the second at least one of the plurality of devices via at least one of the plurality of exit nodes.
24. The telecommunication system as in claim 23, the CPE for communicating the voice components as the voice signals to a third at least one of the plurality of devices via at least one of the plurality of exit nodes.
25. The telecommunication system as in claim 23, the CPE further for generating voice signals from the data signals for communication with a third at least one of the plurality of devices via at least one of the plurality of exit nodes.

26. The telecommunication system as in 25, each of the communication signals and the data signals being digital signals and the voice signals being analogue signals.
28. The telecommunication system as in claim 23, further comprising a fibre-optics cable coupled to the CPE, the fibre-optics cable carrying the communication signals for communication with the CPE.
29. The telecommunication system as in claim 20, the communication signals being communicated between a riser equipment and the processing system.
30. The telecommunication system as in claim 29, the riser equipment comprising riser telecommunication cables.