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United States Patent Application Publication 20250264669
Kind Code A1
Publication Date August 21, 2025
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DUST CAP STRIP FOR AN ADAPTER ELEMENT OF A FIBER OPTIC NETWORK

Abstract

A dust cap strip for an adapter element in a fiber optic network. The dust cap strip includes an elongate strip body having a first end, a second end, and a plurality of dust cap bodies, wherein each of the plurality of dust cap bodies is connected to an adjacent dust cap body. Each dust cap body includes a flange and a plug extending from the flange. When the dust cap strip is engaged with the adapter element, the plug of each dust cap body is received in at least one of the connector ports of the adapter element and the flange of each dust cap body is in abutting or near abutting relationship with a connection face of the adapter element. In this way, the dust caps of a large group of connector ports or even all the connector ports of the adapter element may be removed by a single pulling operation.

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Family ID: **1000008435841**

Appl. No.: **19/018116**

Filed: **January 13, 2025**

Related U.S. Application Data

us-provisional-application US 63555453 20240220

Publication Classification

Int. Cl.: **G02B6/38** (20060101)

U.S. Cl.:

CPC **G02B6/3849** (20130101);

Background/Summary

PRIORITY APPLICATION [0001] This application claims the benefit of priority of U.S. Provisional Application No. 63/555,453, filed on Feb. 20, 2024, the content of which is relied upon and incorporated herein by reference in its entirety.

TECHNICAL FIELD
[0002] The invention relates generally to fiber optic connectivity, and more specifically to a dust cap strip for an adapter element of a fiber optic network, such as at an intermediate distribution frame in a data center, and to a method of using the dust cap strip in a fiber optic cable assembly.
BACKGROUND
[0003] The large amount of data and other information transmitted over the internet has led businesses and other organizations to develop large scale data centers for organizing, processing, storing and/or disseminating large amounts of data. Data centers contain a wide range of network equipment including, for example, servers, networking switches, routers, storage subsystems, etc. Data centers further include a large amount of cabling and equipment racks to organize and interconnect the network equipment in the data center. Modern data centers may include multi-building campuses having, for example, one primary or main building and a number of auxiliary buildings in close proximity to the main building. All the buildings on the campus are interconnected by a local fiber optic network.
[0004] Data center design and cabling-infrastructure architecture are increasingly large and complex. To manage the interconnectivity of a data center, the network equipment within the buildings on the data center campus is often arranged in structured data halls having a large number of spaced-apart rows. Each of the rows is, in turn, configured to receive a number of equipment racks or cabinets (e.g., twenty racks or cabinets) which hold the network equipment. In some data center architectures, each of the rows includes an intermediate distribution frame at a front or head end of the row. Building fiber optic cables with a relatively large number of optical fibers (high fiber counts) are routed from a building distribution frame to the intermediate distribution frame for the different rows of equipment racks. At the intermediate distribution frame, a large number of distribution fiber optic cables with lower fiber counts are connected to the optical fibers of the associated high fiber count building fiber optic cable(s) and routed along the row to connect to the network equipment held in the various racks in the row. To organize the large number of in-row distribution fiber optic cables, each row typically includes a cable tray or basket disposed above the row for supporting the distribution fiber optic cables as they extend along the row. The network equipment in the racks is optically connected to the distribution fiber optic cables by technicians during the construction of the data center using a large number of jumper cables.
[0005] A large number of optical connections between the building fiber optic cables and the distribution fiber optic cables are made at the intermediate distribution frame. For this reason, the intermediate distribution frame typically includes a large number of adapters that define a corresponding large number of rear connector ports and front connector ports on opposite sides of the adapters. Optical fibers from the building fiber optic cables are terminated by a large number of building fiber optic connectors. Similarly, optical fibers from the distribution fiber optic cables are terminated by a large number of distribution fiber optic connectors. To make optical connections between the two fiber optic cables at the intermediate distribution frame, an installer must insert the building fiber optic connectors into respective rear connector ports and insert the distribution fiber optic connectors into respective front connector ports of the adapters held in the intermediate distribution frame.

[0006] In many cases, the intermediate distribution frames are assembled with adapters in advance of the installers making the fiber optic connections at the intermediate distribution frame. In order to keep dust and other debris from contaminating the adapters, the adapters typically include individual dust caps (also referred to as dust plugs) for each of the connector ports of the adapter (i.e., both front and rear connector ports). Thus, prior to making fiber optic connections at the intermediate distribution frame, installers must first remove the dust caps from the connector ports. Given that the connector density of intermediate distribution frames is exceedingly high (and is expected to go higher in the future), removing the individual dust caps is a tedious and laborious task and takes an inordinate amount of time. Additionally, after installation, one is left with a large number of individual dust caps dispersed about the intermediate distribution frame (e.g., typically on the floor of the facility) that must be cleaned up and disposed of.

[0007] Accordingly, installers seek improvements to optical connectivity at an intermediate distribution frame or other patch panels of a fiber optic network that overcomes these drawbacks in handling dust caps during an install.

SUMMARY

[0008] In one aspect of the disclosure, a dust cap strip for an adapter element used for making connections in a fiber optic network is disclosed. The adapter element includes a plurality of connector ports and a connection face adjacent the plurality of connector ports. The dust cap strip includes an elongate strip body having a first end, a second end, and a plurality of dust cap bodies extending between the first end and the second end. Each of the plurality of dust cap bodies is connected to at least one adjacent dust cap body along an interface. Each dust cap body includes a flange and a plug extending from the flange. When the dust cap strip is engaged with the adapter element, the plug of each dust cap body is received in at least one of the plurality of connector ports of the adapter element and the flange of each dust cap body is in abutting relationship or near abutting relationship with the connection face of the adapter element adjacent the at least one of the plurality of connector ports.

[0009] In one embodiment, the elongate strip body may be generally flexible. For example, the elongate strip body may be formed from a generally flexible material, such as rubber or other flexible material. Alternatively, the elongate strip body may include flexible portions that allow portions of the strip body to flex relative to other portions of the strip body. In one embodiment, the interface between two adjacent dust cap bodies may include a tear line. This allows adjacent dust cap bodies to be selectively separated from each other. In one exemplary embodiment, for example, the tear line may include perforations that facilitate the separation of adjacent dust cap bodies. Moreover, in one embodiment, the interface between two adjacent dust cap bodies may include a bend line that allows adjacent dust cap bodies to flex relative to each other. In an exemplary embodiment, for example, the bend line may include a groove, such as a V-groove or other indentation that promotes bending. In one embodiment, the tear line and the bend line may coincide with each other, such as at the interface between adjacent dust cap bodies. For example, in one embodiment, the interface between two adjacent dust cap bodies may be along side edges of the flanges of adjacent dust cap bodies.

[0010] In one embodiment, for each dust cap body of the plurality of dust cap bodies, the flange may be sized relative to the plug to define a ledge around a periphery of the plug. The ledge is configured to confront the connection face of the adapter element, and may abut the connection face when the dust cap strip is engaged with the adapter element. In one embodiment, the plug of the dust cap bodies may be generally rectangular in shape and may be generally hollow and/or open ended. The plug may alternatively be solid. Additionally, in one embodiment, at least one dust cap body of the plurality of dust cap bodies may include a pull tab extending from the flange. For example, the dust cap body adjacent the first end of the elongate strip body and/or the dust cap body adjacent the second end of the elongate strip body may include a pull tab. Alternatively, each of the plurality of dust cap bodies my include a pull tab. In an exemplary embodiment, the pull tab

of the at least one of the plurality of dust cap bodies may extend from a side of the flange opposite the plug.

[0011] In one embodiment, the adapter element may include a multi-port adapter having the plurality of connector ports and each of the plurality of dust cap bodies may be configured to be received in a respective one of the plurality of connector ports of the adapter. In another embodiment, the adapter element may include a ganged adapter including a plurality of adapters arranged adjacent to each other, and each adapter of the plurality of adapters may include at least one connector port of the plurality of connector ports. In this embodiment, each of the plurality of dust cap bodies may be configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter.

[0012] In another aspect of the disclosure, a fiber optic assembly includes an adapter element used for making connections in a fiber optic network and at least one dust cap strip according to the first paragraph of this Summary engaged with the adapter element. The adapter element includes a plurality of connector ports and a connection face adjacent the plurality of connector ports.

[0013] In one embodiment, the adapter element may include an adapter having the plurality of connector ports, and wherein each of the plurality of dust cap bodies is configured to be received in a respective one of the plurality of connector ports of the adapter. In an alternative embodiment, the adapter element may include a ganged adapter having a plurality of adapters arranged adjacent to each other. Each adapter of the plurality of adapters includes at least one connector port of the plurality of connector ports, and each of the plurality of dust cap bodies is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter.

[0014] In one embodiment, the fiber optic assembly may further include a housing configured to hold the adapter element. For example, in one embodiment, the housing may include an interface band for holding the plurality of adapters in the ganged adapter. In this embodiment, the interface band may be configured to engage with a tray used in an intermediate distribution frame or other racking/patching structure in the fiber optic network, for example. In another embodiment, the housing may include a bezel plate for holding the plurality of adapters in the ganged adapter. In this embodiment, the bezel plate may be configured to be attached to a panel of an intermediate distribution frame or other racking/patching structure in the fiber optic network, such as through a releasable connection, for example. In yet a further embodiment, the housing may include a panel for holding the plurality of adapters in the ganged adapter. In this embodiment, the panel may be configured to be attached to an intermediate distribution frame or other racking/patching structure in the fiber optic network, for example.

[0015] In one embodiment, the plurality of adapters of the ganged adapter may be arranged in an array having a least one row or at least one column. Each of the plurality of dust cap bodies of the at least one dust cap strip is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter that forms the at least one row or the at least one column in the array. In another embodiment, the array includes a plurality of rows and a plurality of columns, and each of the plurality of dust cap bodies of the at least one dust cap strip is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter that forms at least two rows or at least two columns in the array. In still a further embodiment, the array includes a plurality of rows and a plurality of columns, the at least one dust cap strip includes a plurality of dust cap strips, and each of the plurality of dust cap bodies of each dust cap strip is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter that forms one row or one column in the array.

[0016] In another aspect of the disclosure, a fiber optic cable assembly includes a fiber optic cable carrying a plurality of optical fibers. The fiber optic cable includes at least one optical interface at (at least) one end of the fiber optic cable for connection to network equipment. The at least one

optical interface includes a plurality of fiber optic connectors terminating at least some of the plurality of optical fibers of the fiber optic cable, a plurality of adapters arranged adjacent to each other to define an adapter array, and at least one dust cap strip according to the first paragraph of this Summary section connected to the adapter array. Each of the plurality of adapters of the adapter array includes at least one first connector port on a first connection face of the adapter and at least one second connector port on a second connection face of the adapter, such that the adapter array includes a plurality of the first connector ports and a plurality of the second connector ports. The adapter array includes a first array connection face including the plurality of first connector ports and a second array connection face including the plurality of second connector ports. Each fiber optic connector of the plurality of fiber optic connectors is connected to a respective second connector port of the plurality of second connector ports, and the dust cap strip is connected to the plurality of first connector ports on the first array connection face of the optical interface. Each of the plurality of dust cap bodies of the dust cap strip is partially received in the at least one first connector port of a respective adapter of the plurality of adapters in the adapter array.

[0017] In one embodiment, each fiber optic connector of the plurality of fiber optic connectors of the at least one optical interface is a multi-fiber connector. Additionally, in one embodiment, each adapter of the plurality of adapters of the at least one optical interface may include at least two, and preferably at least four, first connector ports on the first connection interface and at least two, and preferably at least four, second connector ports on the second connection interface. Moreover, in one embodiment, the adapter array of the at least one optical interface may include at least four adapters. For example, the plurality of adapters may be arranged side-by-side, either directly in contact with each other or slightly spaced from each other, to define the adapter array of the at least one optical interface. Alternatively, the plurality of adapters may be arranged in so that the adapter array has a plurality of rows and a plurality of columns.

[0018] In another aspect of the disclosure, a method of making a fiber optic cable assembly includes providing a fiber optic cable carrying a plurality of optical fibers. The plurality of optical fibers at (at least) one end of the fiber optic cable is terminated by a plurality of fiber optic connectors. The method further includes providing an adapter array defined by a plurality of adapters arranged adjacent to each other. The adapter array includes a first array connection face including a plurality of first connector ports of the plurality of adapters and a second array connection face including a plurality of second connector ports from the plurality of adapters. The method further includes inserting each of the plurality of fiber optic connectors of the fiber optic cable into a respective second connector port of the plurality of second connector ports and applying a dust cap strip according to the first paragraph of this Summary section to the first array connection face of the adapter array. Each of the plurality of dust cap bodies of the dust cap strip is partially received in at least one of the first connector ports of a respective adapter of the plurality of adapters in the adapter array.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The accompanying drawings are included to provide a further understanding and are incorporated in and constitute a part of this specification. The drawings illustrate one or more embodiment(s), and together with the description serve to explain principles and operation of the various embodiments. Features and attributes associated with any of the embodiments shown or described may be applied to other embodiments shown, described, or appreciated based on this disclosure.

[0020] FIG. **1** is a schematic illustration of a data center campus according to an exemplary embodiment of the disclosure.

[0021] FIG. **2** is a partial perspective view of an exemplary data hall of the data center shown in FIG. **1** according to one embodiment.
[0022] FIG. **3** is an enlarged partial perspective view of the exemplary data hall shown in FIG. **2**.
[0023] FIG. **4** is a perspective view of an exemplary fiber optic cable assembly with one adapter.
[0024] FIG. **5** is a perspective view of an exemplary fiber optic cable assembly with a ganged adapter.
[0025] FIG. **6** is a perspective view of a dust cap strip according to an embodiment of the disclosure.
[0026] FIG. **7** is another perspective view of the dust cap strip of FIG. **6**.
[0027] FIG. **8** is a perspective view of the fiber optic cable assembly of FIG. **5** with the dust cap strip of FIG. **6** connected to it.
[0028] FIG. **9**A is a perspective view of a fiber optic cable assembly with a dust cap strip installed in a tray assembly.
[0029] FIG. **9**B is a perspective view of the tray assembly of FIG. **9**A with a distribution fiber optic cable connected to the fiber optic cable assembly.
[0030] FIG. **10** is a perspective view of a dust cap strip according to another embodiment of the disclosure.
[0031] FIG. **11** is another perspective view of the dust cap strip of FIG. **10**.
[0032] FIG. **12** is a perspective view of an optical interface according to an alternative embodiment of the disclosure.
[0033] FIG. **13** is a disassembled perspective view of the optical interface shown in FIG. **12**.
[0034] FIG. **14** is a perspective view of an optical interface according to a further alternative embodiment of the disclosure.
[0035] FIG. **15** is a disassembled perspective view of the optical interface shown in FIG. **14**.
[0036] FIG. **16** is a perspective view of the optical interface shown in FIG. **14** being attached to a panel.
[0037] FIG. **17** illustrates a panel having a plurality of optical interfaces as shown in FIG. **14**, attached thereto.
[0038] FIG. **18** is a perspective view of an optical interface according to yet another embodiment of the disclosure.

DETAILED DESCRIPTION

[0039] Various embodiments will be further clarified by examples in the description below. In general, the description relates to a dust cap strip that may be used in a single adapter with multiple connector ports, in one configuration. In another configuration, a dust cap strip may be used in a adapter array, preferably defined by a group of multi-port adapters and possibly “ganged” together to form a ganged adapter, to cover each of the connector ports in the group of adapters. In either configuration, the dust cap strip includes one or more pull tabs that allow the entire dust cap strip to be removed from the plurality of connector ports in a single motion or operation by the installer. Thus, the installer may grab an end of the dust cap strip and remove it in one pulling motion, thereby immediately exposing a group and possibly all of the connector ports in the adapter or adapter array without having to remove numerous individual dust caps, as is the case in conventional arrangements.
[0040] By way of example, a tray or panel of an intermediate distribution frame or other racking/patching structure of the fiber optic network may include at least one and possible multiple optical interfaces, where each optical interface may include a plurality of adapters, and each adapter may include four connector ports. Thus, in that single tray/panel there would be a large number of individual connector ports (e.g., on just one side of the adapter). Conventionally, it would take a corresponding large number of dust caps to prevent contamination of the optical interfaces and an installer would have to remove each of those individual dust caps during installation. According to one aspect of the disclosure, a dust cap strip may be configured to plug a

group or possibly all the connector ports associated with the optical interface. Thus, a smaller number of plug components are needed to prevent contamination of the optical interface. Perhaps more importantly, however, technicians need only remove a relatively small number of individual plug components during installation. This saves significant time, labor, and costs during installation in, for example, a data center or the like having a large number of optical interfaces for making optical connections.

[0041] As illustrated in FIG. **1**, a modern-day data center **10** may include a collection of buildings (referred to as a data center campus) having, for example, a main building **12** and one or more auxiliary buildings **14** in close proximity to the main building **12**. While three auxiliary buildings are shown, there may be more or less depending on the size of the campus. The data center **10** provides for a local fiber optic network **16** that interconnects the auxiliary buildings **14** with the main building **12**. The local fiber optic network **16** allows network equipment **18** in the main building **12** to communicate with various network equipment (not shown) in the auxiliary buildings **14**. In the exemplary embodiment shown, the local fiber optic network **16** includes trunk cables **20** extending between the main building **12** and each of the auxiliary buildings **14**. Conventional trunk cables **20** generally include a high fiber-count arrangement of optical fibers for passing data and other information through the local fiber optic network **16**. In the example illustrated in FIG. **1**, the trunk cables **20** from the auxiliary buildings **14** are routed to one or more distribution cabinets **22** housed in the main building **12** (one shown).

[0042] Within the main building **12**, a plurality of indoor fiber optic cables **24** ("indoor cables **24**") are routed between the network equipment **18** and the one or more distribution cabinets **22**. The indoor cables **24** generally include a high fiber-count arrangement of optical fibers for passing data and other information from the distribution cabinets **22** to the network equipment **18**. Although only the interior of the main building **12** is schematically shown in FIG. **1** and discussed above, each of the auxiliary buildings **14** may house similar equipment for similar purposes. Thus, although not shown, each of the trunk cables **20** may be routed to one or more distribution cabinets **22** in one of the auxiliary buildings **14** in a manner similar to that described above. Furthermore, each of the auxiliary buildings **14** may include indoor cables **24** that extend between network equipment **18** and the one or more distribution cabinets **22** of the auxiliary building **14**.

[0043] As illustrated in more detail in FIGS. **2** and **3**, the network equipment **18** in the main building **12** or an auxiliary building **14** may be arranged in one or more data halls **26** that generally include a plurality of spaced-apart rows **28** on one or both sides of an access pathway **30**. The arrangement of the data halls **26** into rows **28** helps organize the large number of equipment, fiber optic cables, fiber optic connections, etc. Each of the rows **28** includes a plurality of equipment racks or cabinets **32** (referred to hereafter as "racks **32**") generally arranged one next to the other along the row **28**. Each of the racks **32** is a vertically arranged framework for holding various network equipment **18** of the data center **10**, as is generally known in the telecommunications industry.

[0044] In one common arrangement, and as further illustrated in FIG. **2**, each row **28** may include an intermediate distribution frame **34** at the head end of the row **28** closest to the access pathway **30**. The intermediate distribution frame **34** represents a termination point of at least some of the optical fibers carried by one or more of the indoor cables **24**, for example. Although the intermediate distribution frame **34** is shown as being positioned above the row **28**, in other embodiments, the intermediate distribution frame **34** may be in a cabinet (not shown) at the head end of the row **28** or in the first equipment rack **32** at the head end of the row **28**. In yet other embodiments, the intermediate distribution frame **34** may be located within the associated row, such as in the middle of the row, and be above, below, or within one of the equipment racks **32**. As discussed in the Background section above, in a conventional arrangement, one or more distribution cables **36** (only a representative one is shown in FIGS. **2** and **3**) are connected to the intermediate distribution frame **34** of a row **28** and routed along a cable tray **38** generally disposed

above the row **28**. The network equipment **18** in the equipment racks **32** is then optically connected to the one or more distribution cables **36** to provide the interconnectivity of the network equipment **18** of the data center **10**.

[0045] FIG. **4** shows four cable legs **42** of a fiber optic cable each terminated with a fiber optic connector **44** that is plugged into an adapter **46**. The four cable legs **42** may be at least part of the indoor fiber optic cable **24** that enters the intermediate distribution frame **34** as shown in FIGS. **2** and **3**. Indeed, in the examples described below, the adapter **46** is described with use in the intermediate distribution frame **34** in mind. However, the adapter **46** may be used in other contexts, such as in network equipment **18** (FIG. **2**) in the equipment racks **32**. Thus, in some embodiments the four cable legs **42** may alternatively be at least part of one or more distribution cables **36**, and the adapter **46** may be used to establish connections between such distribution cable(s) **36** and other fiber optic cables used in the data center **10** (e.g., patch cords or cable harnesses that extend between different network equipment **18** within one of the equipment racks **32**).

[0046] The connectors **44** are shown in the form of MMC connectors, which are multi-fiber connectors available from US Conec Ltd. However, any conventional, or yet to be developed, optical connector may be used in other embodiments, including, but not limited to simplex or duplex connectors (e.g., LC connectors) and other multi-fiber connectors (e.g., MPO connectors). The adapter **46** is considered to be of a type that corresponds to the connectors **44**. Thus, the adapter **46** in the embodiment shown is considered to be a MMC-type adapter.

[0047] As shown in FIG. **4**, the adapter **46** includes four front connector ports **52***a*, **52***b*, **52***c*, **52***d* on a front side **52** of the adapter **46** and four rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on a rear side **54** of the adapter **46**. Adapter **46**, however, is not limited to having only four connector ports, but could have any number of front and rear connector ports in alternative embodiments (e.g., one, two, three, five, six, etc.). For example, in one embodiment, the adapter **46** may include at least two front connector ports and at least two rear connector ports. In a preferred embodiment, however, the adapter **46** may include at least four front connector ports and at least four rear connector ports. Thus, the adapter **46** should not be limited to any specific number of connector ports. Each of the fiber optic connectors **44** may be plugged into respective rear connector ports **54***a*, **54***b*, **54***c*, **54***d* at the rear side **54** of the adapter **46**.

[0048] FIG. **5** shows a plurality of adapters **46** positioned adjacent to each other to define an adapter array, and specifically a ganged adapter **58**. In the depicted embodiment, the ganged adapter **58** includes four adapters **46** arranged side-by-side to define the ganged adapter **58**. However, it is to be understood that, in alternative embodiments, the ganged adapter **58** may include fewer or more adapters **46** and may include the adapters **46** in various arrangements. In one embodiment, the front connector ports **52***a*, **52***b*, **52***c*, **52***d* and rear connector ports **54***a*, **54***b*, **54***c*, **54***d* may have a horizontal orientation in each of the plurality of adapters **46** in the ganged adapter **58**. Alternatively, however, the front connector ports **52***a*, **52***b*, **52***c*, **52***d* and rear connector ports **54***a*, **54***b*, **54***c*, **54***d* may have a vertical orientation in each of the plurality of adapters **46** of the ganged adapter **58**. An interface housing **60** is configured to hold (or house) the ganged adapter **58**. In the embodiment shown in FIG. **5**, for example, the interface housing **60** may be configured as an interface band. However, in alternative embodiments, the interface housing **60** may have other configurations, as will be discussed below in greater detail. Together, the ganged adapter **58** and the interface housing **60** form an optical interface **62**. As used herein, the term adapter element may refer to a single adapter **46** or an array of adapters **46** (including the ganged adapter **58**) or any other single adapter or plurality of adapters in configurations different from what is described or illustrated herein.

[0049] During installation, the optical interface **62** may be prepared and placed within the intermediate distribution frame **34**, or other racking/patching structure in the fiber optic network, well prior to one of the distribution fiber optic cables **36** being connected to the optical interface **62**. In the interim, dust, dirt, and other debris may enter the open connector ports **52***a*, **52***b*, **52***c*, **52***d*

and potentially block, obscure, or even damage the end faces of the fiber optic connectors **44** that extend into the rear side **54** of the adapter **46** or ganged adapter **58**. The end faces of the fiber optic connectors **44** present ends of optical fibers for mating such that the debris may potentially block, obscure, or even damage the optical fiber ends themselves. Either situation can result in the debris interfering with optical signals between the optical fibers being connected across the adapter **46** or ganged adapter **58**, leading to significant and unacceptable signal loss across the optical connection. Conventionally, to prevent the egress of such debris, individual dust caps have been used to cover each individual connector port **52***a,* **52***b,* **52***c,* **52***d* of the adapter **48** or ganged adapter **58**. Using individual dust caps, however, has drawbacks as discussed above.

[0050] A dust cap strip **70** according to one aspect of the disclosure addresses the drawbacks of using individual dust caps to cover the connector ports **52***a,* **52***b,* **52***c,* **52***d* of the adapter element, whether that be for a single adapter **46** or a ganged adapter **58**. For example, one such dust cap strip **70** is shown in FIGS. **6** and **7**. In this embodiment, the dust cap strip **70** includes an elongate strip body **72** having a first end **74**, an opposed second end **76**, and a plurality of dust cap bodies **78** arranged from the first end **74** to the second end **76**. Each of the dust cap bodies **78** may be connected to at least one adjacent dust cap body **78** along an interface **80**. Each dust cap body **78** is configured to engage with a respective connector port **52***a,* **52***b,* **52***c,* **52***d* of the adapter **46** or with a respective adapter **46** in the ganged adapter **58**. In one embodiment, each dust cap body **78** may include a flange **82** and a plug **84** connected to and extending from the flange **82**. In one embodiment, the flange **82** may include a plate-like body having opposed planar surfaces and be generally rectangular in shape. Other shapes of the flange **82**, however, may also be possible. The plug **84** extends from one of the planar surfaces of the flange **82** and is configured to be received within at least one of the connector ports **52***a,* **52***b,* **52***c,* **52***d* of the adapter **46** or be received within an adapter **46** of the ganged adapter **58**. In one embodiment, the plug **84** may be generally rectangular in shape and may be solid. In an alternative embodiment, the plug **84** may be generally hollow. For example, as shown in FIG. **7**, the plug **84** may include a recess in the outer side of the plug **84** to provide a generally hollow configuration. In one embodiment, the flange **82** may be sized relative to the plug **84** to define a ledge **96** around a periphery **98** of the plug **84**.

[0051] In one embodiment, at least one of the plurality of the dust cap bodies **78** may include a pull tab **86** extending from the flange **82**. For example, the pull tab **86** on the at least one dust cap body **78** may extend from the surface of the flange **82** opposite to the plug **84**. In use, the pull tab **86** provides a gripping point to allow an installer to remove the dust cap strip **70** from the adapter **46** or the ganged adapter **58**. By way of example, in one embodiment, the dust cap body **78** adjacent to the first end **74** of the elongate strip body **72** and/or the dust cap body **78** adjacent the second end **76** of the elongate strip body **72** may include the pull tab **86** (with the other dust cap bodies **78** omitting the pull tab **86**). In an alternative embodiment, however, each of the dust cap bodies **78** of the dust cap strip **70** may include a pull tab **86**. As illustrated in FIG. **6**, for example, in one embodiment, the pull tab **86** may include an enlarged end piece that may be grasped by the installer to remove the dust cap strip **70** from the connector ports **52***a,* **52***b,* **52***c,* **52***d* of the adapter **46** or from the adapters **46** of the ganged adapter **58**.

[0052] In some installation scenarios, only some of the connector ports **52***a,* **52***b,* **52***c,* **52***d* on the adapter **46** or only some of the adapters **46** of the ganged adapter **58** may need to be accessed. Thus, it may be desirable to remove some of the dust cap bodies **78** of the dust cap strip **70** while maintaining some of the dust cap bodies **78** with the adapter **46** or ganged adapter **58**. Accordingly, it may be desirable for the dust cap bodies **78** of the dust cap strip **70** to be separable or severable from each other. In one embodiment, for example, the interface **80** between two adjacent dust cap bodies **78** may include a tear line **88** to facilitate the severability of adjacent dust cap bodies **78** in the dust cap strip **70**. The tear line **88** may be a weakened section in the dust cap strip **70** that allows for easy severability. In one exemplary embodiment, for example, the tear line **88** may be formed at least by a plurality of perforations **90**. Other ways of forming weaknesses in the dust cap

strip **70** may also be possible.
[0053] In addition to the above, the dust cap strip **70** may be generally flexible to facilitate the removal of the strip **70** from the adapter **46** or the ganged adapter **58** through a pulling action. In one embodiment, for example, the dust cap strip **70** may be formed from a generally flexible material, such as rubber. In an alternative embodiment, the dust cap strip **70** may be formed from a more rigid material but include one or more flexible sections along the length of the dust cap strip **70**. In this regard, and in one embodiment, the interface **80** between adjacent dust cap bodies **78** in the dust cap strip **70** may include a bend line that allows adjacent dust cap bodies **78** to flex relative to each other about the bend line. By way of example and without limitation, the bend line may be formed by a groove **100** in the material of the dust cap strip **70**. In one embodiment (not shown), the tear line and the bend line at the interface **80** may be at separate locations. In an alternative embodiment, however, the tear line **88** and the bend line may be formed at the same location in the dust cap strip **70**, and therefore coincide with each other. In one embodiment, and as illustrated in FIGS. **6** and **7**, the interface **80** between two adjacent dust cap bodies **78** may be along side edges **92**, **94** of the flanges **82** of adjacent dust cap bodies **78**. Adjacent dust cap bodies **78** may be separated from each other along the tear line **88**. The presence of the perforations **90** in the tear line **88** may facilitate separating the adjacent dust cap bodies **78**. Additionally, the dust cap strip **70** may bend about the bend lines defined at the interface **80**.
[0054] FIG. **8** shows the ganged adapter **58** with the connector ports **52***a*, **52***b*, **52***c*, **52***d* in each adapter **46** and the dust cap strip **70** engaged with the connector ports **52***a*, **52***b*, **52***c*, **52***d* of each of the adapters **46**. As such, and in this embodiment, the plug **84** of each dust cap body **78** is received in the plurality of connector ports **52***a*, **52***b*, **52***c*, **52***d* of the respective adapters **46** of the ganged adapter **58**. In addition, the flange **82** of each dust cap body **78** is in abutting relationship or near abutting relationship with a connection face **106** of the respective adapters **46** of the ganged adapter **58** adjacent the plurality of connector ports **52***a*, **52***b*, **52***c*, **52***d*.
[0055] While FIG. **8** shows the dust cap strip **70** engaged with all of the connector ports **52***a*, **52***b*, **52***c*, **52***d* of each of the four adapters **46** of the ganged adapter **58**, this same concept may be used in connection with, for example, just a single multiport adapter **46** (FIG. **4**). In this regard, in an alternative embodiment, the plugs **84** of the dust cap strip **70** may be configured to be received in the respective connector ports **52***a*, **52***b*, **52***c*, **52***d* of the multiport adapter **46**. Thus, even though the concept may be applied to a single adapter **46** instead of a ganged adapter **58** (as shown in FIG. **8**), in such embodiments the dust cap strip **70** still provides the advantage that all of the plugs occluding the connector ports **52***a*, **52***b*, **52***c*, **52***d* of the adapter **46** may be removed in a single pulling motion of the dust cap strip **70** away from the adapter **46**. Thus, it should be understood that at least both of these embodiments are within the scope of the present disclosure.
[0056] In one embodiment, the intermediate distribution frame **34** may include a plurality of individual tray assemblies ("tray **112**") that may serve as a location to connect the indoor fiber optic cables **24** to the distribution fiber optic cables **36**, and ultimately to the network equipment **18** in the racks **32** of the rows **28**. An exemplary tray **112** of such an intermediate distribution frame **34** is illustrated in FIG. **9**A. The tray **112** includes a plurality of optical interface receivers **114** and a plurality of cable routing guides **116**. While only one optical interface **62** is shown in FIG. **9**A, it should be appreciated that the tray **112** may include fiber optic cables and optical interfaces in each of the optical interface receivers **114** of the tray **112**. FIG. **9**A shows one of the indoor cables **24** with the optical interface **62** received In and engaged by the optical interface receiver **114** and further held in place by cable routing guides **116**. Because the distribution fiber optic cable **36** is not yet connected to the optical interface **62**, and specifically the individual adapters **46**, the dust cap strip **70** is received in and engaged with the connector ports **52***a*, **52***b*, **52***c*, **52***d* of the ganged adapter **58** so as to prevent dust, dirt, and other debris from entering the connector ports **52***a*, **52***b*, **52***c*, **52***d*, and potentially interfering with the transmission of the optical signals from the indoor fiber optic cables **24** to the distribution fiber optic cables **36** across the adapters **46**.

[0057] When it is time to connect one or more distribution fiber optic cable **36** to the optical interfaces **62** in the tray **112**, the installer may remove the dust cap strip **70** such as by pulling on one of the pull tabs **86**. By way of example, the installer may grasp the pull tab **86** at one of the ends of the dust cap strip **70** and pull away to cause each of the dust cap bodies **78** to come away from their respective adapters **46** in the ganged adapter **58** that makes up the optical interface **62**. The fiber optic connectors **44** on the distribution cable(s) **36** may then be inserted into the front connector ports **52***a*, **52***b*, **52***c*, **52***d* on each adapter **46** of the optical interface **62**. FIG. **9**B shows fiber optic connectors **44** of the distribution fiber optic cable **36** connected to the optical interface **62**. In some instances, the distribution fiber optic cable **36** may not be connected to each adapter **46**, leaving some of the connector ports **52***a*, **52***b*, **52***c*, **52***d* open. In that circumstance, the installer may remove one or more of the dust cap bodies **78** to correspond to the adapters **46** that will be used to connect the distribution fiber optic cable **36**. The remaining attached dust cap bodies **78** may be used to cover the connector ports **52***a*, **52***b*, **52***c*, **52***d* that are not being used, i.e., not engaged with a fiber optic connector **44** of the distribution cable **36**.

[0058] Another aspect of the disclosure contemplates a fiber optic cable assembly. One exemplary fiber optic cable assembly **122** is shown in FIG. **4**. Another exemplary fiber optic cable assembly **124** is shown in FIG. **5**. The fiber optic cable assembly **122** includes at least one adapter **46** whereas fiber optic cable assembly **124** includes at least one ganged adapter **58**. The fiber optic cable assembly **124** includes a fiber optic cable, such as the cable leg **42**, having a distribution end **126**, a terminal end (not shown), and carrying a plurality of optical fibers (located in the interior of the fiber optical cable, e.g., cable leg **42**). The fiber optic cable assembly **124** also includes at least one optical interface **62** at the distribution end **126** of the fiber optic cable for connecting to network equipment **18**. The optical interface **62** is of the type shown in and described with respect to FIG. **5**. The optical interface **62** further includes the dust cap strip **70** connected to the ganged adapter **58** (FIG. **8**). Each of the plurality of adapters **46** of the ganged adapter **58** includes a plurality of front connector ports **52***a*, **52***b*, **52***c*, **52***d* on a front connection face **106** of the adapter **46** and a plurality of rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on a rear connection face **128** of the adapter **46**. The ganged adapter **58** includes a front ganged connection face **130** including the plurality of front connector ports **52***a*, **52***b*, **52***c*, **52***d* of the plurality of adapters **46** and a rear ganged connection face **132** including the plurality of rear connector ports **54***a*, **54***b*, **54***c*, **54***d* from the plurality of adapters **46**.

[0059] The plurality of fiber optic connectors **44** from, for example, the indoor fiber optic cables **24** may be connected to respective rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on the rear ganged connection face **132** of the optical interface **62**. The dust cap strip **70** may be connected to the front connector ports **52***a*, **52***b*, **52***c*, **52***d* on the front ganged connection face **130** of the optical interface **62**. In one embodiment, each of the plurality of fiber optic connectors **44** includes a multifiber connector (not shown). In one embodiment, each of the plurality of adapters **46** of the at least one optical interface **62** includes at least two, and preferably at least four, front connector ports **52***a*, **52***b*, **52***c*, **52***d* on the front connection face **106** and at least two, and preferably at least four, rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on the rear connection interface **128**. In one embodiment, the ganged adapter **58** of the optical interface **62** includes at least four adapters **46**. In one embodiment, the plurality of adapters **46** may be arranged side-by-side to define the ganged adapter **58** of the optical interface **62**. Other arrangements of the adapters **46** to form the ganged adapter **58** is, however, possible and within the scope of the present disclosure.

[0060] Another aspect of the disclosure contemplates a method of making a fiber optic cable assembly. The method of making includes providing a fiber optic cable, such as cable leg **42**, having a distribution end **126**, a terminal end (not shown), and carrying a plurality of optical fibers. The plurality of optical fibers at the distribution end of the fiber optic cable may be terminated by a plurality of fiber optic connectors **44**. The method further includes providing the ganged adapter **58** defined by a plurality of adapters **46** arranged adjacent to each other. The ganged adapter includes

the first ganged connection face **130** having the plurality of front connector ports **52***a*, **52***b*, **52***c*, **52***d* of the plurality of adapters **46** and the rear ganged connection face **132** including the plurality of rear connector ports **54***a*, **54***b*, **54***c*, **54***d* from the plurality of adapters **46**. The method further includes inserting each of the plurality of fiber optic connectors **44** of the fiber optic cable into a respective one of the plurality of rear connector ports **54***a*, **54***b*, **54***c*, **54***d* in the rear ganged connection face **132** of the ganged adapter **58** and applying the dust cap strip **70** into the front connector ports **52***a*, **52***b*, **52***c*, **52***d* in the front ganged connection face **130** of the ganged adapter **58**.

[0061] In this embodiment, the adapter element, e.g., the adapter **46** or the ganged adapter **58**, forms part of the fiber optic cable assembly, i.e., at the optical interface **62**, for example. This contrasts with the adapter element typically being pre-installed in the intermediate distribution frame and fiber optic connectors being inserted into both ends of the adapters during installation, as with conventional approaches. In this embodiment, the fiber optic cable assembly may then be routed through the data center **10**, for example, and to the intermediate distribution frame **34**, where the optical interface **62** may be connected to the tray **112**, as described above. The method described above may then be performed to form optical connections across the adapter elements. By forming the optical interface **62** as part of the fiber optic cable assembly, installation labor and time may be significantly reduced. Additionally, since the fiber optic cable assembly having the optical interface **62** may be made in a factory setting, faulty optical connections, and the time and labor associated with their resolution, may be significantly reduced. Thus, several advantages may be gained by including the adapter element as part of the fiber optic cable assembly instead of as a separate component pre-installed in the intermediate distribution frame **34**, for example.

[0062] FIGS. **10** and **11** show another exemplary dust cap strip **140** in accordance with the disclosure. Dust cap strip **140** includes many of the same features as the dust cap strip **70**, as indicated by like reference numbers. However, the dust cap strip **140** has pull tabs **142** that have a different configuration (e.g., shape) as compared to pull tabs **86**. For example, in this embodiment, the pull tabs **142** extend generally outward from the first and second ends **74**, **76** of the elongate strip body **72**. In one embodiment, the pull tabs **142** may extend from the elongate strip body **72** in a substantially perpendicular manner (e.g., +\−10°). Other angles, however, may be possible. Additionally, in other embodiments, only a single pull tab **142** may be provided, either on the first end **74** or second end **76**. In one embodiment, the pull tabs **142** may include ribbing **144** on one or both sides of the pull tabs **142** to enhance the grip the installer has on the pull tab **142** as the dust cap strip **140** is being pulled away from the adapter element. The one or more pull tabs **142** may be integrally formed with the elongate strip body **72** such that the dust cap trip has a monolithic construction.

[0063] FIGS. **12** and **13** illustrate an optical interface **150**, such as for a fiber optic cable assembly (not shown). Similar to optical interface **62** described above, optical interface **150** includes a ganged adapter **152** and an interface housing **154** for holding the plurality of adapters **46** that form the ganged adapter **152**. In this embodiment, the interface housing **154** includes a bezel plate **156** for holding the plurality of adapters **46**. The bezel plate **156** includes a flat elongate body **158** having a front side **160** and a rear side **162**. The elongate body **158** includes at least one opening **164** for receiving one or more of the adapters **46**. In the illustrated embodiment, the elongate body **158** includes one opening **164** for receiving a plurality of adapters **46**. More particularly, the opening **164** may be configured to receive eight adapters in a side-by-side arrangement. The opening **164**, however, may be configured to receive more or less than this number in alternative embodiments. Moreover, the plurality of adapters **46** may be arranged in a single row, for example. However, other arrangements of the plurality of adapters **46** in the bezel plate **156** may be possible and remain within the scope of the present disclosure, as discussed below in more detail.

[0064] Similar to the above, each of the plurality of adapters **46** of the ganged adapter **152** includes a plurality of front connector ports **52***a*, **52***b* on a front connection face **106** of the adapter **46** and a

plurality of rear connector ports **54***a*, **54***b* on a rear connection face **128** of the adapter **46**. The ganged adapter **58** includes a front ganged connection face **130** including the plurality of front connector ports **52***a*, **52***b* of the plurality of adapters **46** and a rear ganged connection face **132** including the plurality of rear connector ports **54***a*, **54***b* from the plurality of adapters **46**. In one embodiment, each of the plurality of adapters **46** of the at least one optical interface **150** includes at least two, and preferably at least four, front connector ports **52***a*, **52***b* on the front connection face **106** and at least two, and preferably at least four, rear connector ports **54***a*, **54***b* on the rear connection interface **128**. A plurality of fiber optic connectors **44** from, for example, the indoor fiber optic cables **24** may be connected to respective rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on the rear ganged connection face **132** of the optical interface **150** (not shown). The dust cap strip **166** may be connected to the front connector ports **52***a*, **52***b* on the front ganged connection face **130** of the optical interface **150**. Dust cap strip **166** is similar to that shown in FIGS. **10** and **11** and similar reference numbers refer to like features shown in those figures.

[0065] Similar to the above, the interface housing **154** (which may take the form of the bezel plate **156** in the illustrated embodiment) may be configured to be coupled to, for example, a patch panel **168**, such as a patch panel in an intermediate distribution frame **34** or other racking/patching structure of the fiber optic network. In an alternative embodiment, for example, the patch panel **168** may form part of an equipment rack **32** in a row **28** of a data hall **26**. In this regard, the bezel plate **156** may include at least one releasable connector for attaching the bezel plate **156** to the patch panel **168**. In one embodiment, the at least one releasable connector may include at least one push pin **169** for being pushed into and pulled out of openings in the patch panel **168** (not shown). In one embodiment, the bezel plate **156** may include a pair of push pins **169** on, for example, opposite sides of the opening **164** in the bezel plate **156** that receives the plurality of adapters **46**. Other arrangements of the push pins **169** area also possible

[0066] FIGS. **14** and **15** illustrate another embodiment of an optical interface **170** in accordance with the disclosure that may be used with, for example, a fiber optic cable assembly (not shown). The optical interface **170** is similar to the optical interface **150** and like reference numbers will refer to like features illustrated in FIG. **12** and described above. Similar to optical interface **150** described above, optical interface **170** includes an interface housing **154** for holding the plurality of adapters **46** that form an adapter array **172**. The primary difference between optical interface **170** and optical interface **150** is that the interface housing **154** takes the form of a bezel plate **156** having a pair of openings **164** positioned one on top of the other in the elongate body **158** of the bezel plate **156**. Each of the openings **164** may be configured to receive a plurality of adapters **46** (e.g., four adapters **46**) in a side-by-side arrangement. However, the openings **164** may be configured to receive more or less than this number in alternative embodiments. Moreover, the plurality of adapters **46** may be arranged so that the adapter array **172** has a plurality of rows and a plurality of columns, such as two rows and four columns, for example. However, other arrangements of the plurality of adapters **46** in the bezel plate **156** may be possible and remain within the scope of the present disclosure.

[0067] Similar to the above, the interface housing **170** may be configured to be coupled to, for example, a patch panel **168**, such as a patch panel in an intermediate distribution frame **34** or other racking/patching structure in the fiber optic network (not shown). In an alternative embodiment, for example, the patch panel **168** may form part of an equipment rack **32** in a row **28** of a data hall **26**. A plurality of fiber optic connectors **44** from, for example, the indoor fiber optic cables **24** may be connected to respective rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on the rear array connection face **132** of the optical interface **170** (not shown). At least one dust cap strip **166** may be connected to the front connector ports **52***a*, **52***b*, **52***c*, **52***d* on the front array connection face **130** of the optical interface **170**. In one embodiment, each row of the adapter array **172** may include a dust cap strip **166**. In an alternative embodiment, a single dust cap strip **166** may be used to cover the front connector ports **52***a*, **52***b*, **52***c*, **52***d* of all the rows of the adapter array **172** (i.e., a single dust cap

strip **166** for the embodiment shown in FIGS. **14** and **15**). Dust cap strip **166** may be similar to that shown in FIGS. **10** and **11**. Alternatively, the dust cap strip **166** may be similar to that shown in FIGS. **6** and **7**. FIGS. **16** and **17** illustrate a plurality of optical interfaces **170** attached to, for example, a patch panel **168**, such as a patch panel in an intermediate distribution frame **34**. In an alternative embodiment, the patch panel **168** may form part of an equipment rack **32** in a row **28** of a data hall **26**. In this regard, the push pins **169** may be received in corresponding openings **171** in the patch panel **168** to secure the optical interface thereto.

[0068] FIG. **18** illustrates still a further embodiment of an optical interface **190** in accordance with the disclosure that may be used with, for example, a fiber optic cable assembly (not shown). The optical interface **190** is similar to the optical interfaces **150** and **170** and like reference numbers will refer to like features illustrated in FIGS. **12-15** and described above. Similar to optical interfaces **150** and **170** described above, optical interface **190** includes an interface housing **154** for holding the plurality of adapters **46**. One primary difference between optical interfaces **150** and **170** and optical interface **190** is that each of the openings **164** in the interface housing **154** is configured to receive only a single adapter **46**, instead of a plurality of adapters in a side-by-side arrangement, for example. This allows spacing between adjacent adapters **46** to be slightly increased, which may improve installation. Another primary difference between optical interfaces **150** and **170** and optical interface **190** is that in this embodiment, the interface housing **154** takes the form of the patch panel **168** itself, instead of a bezel plate **156** configured to be attached to the patch panel **168**, as shown in FIGS. **15** and **16**, for example.

[0069] As illustrated in FIG. **18**, the patch panel **168** includes a plurality of openings **164** in an array **192** of a plurality of rows and columns. As noted above, each of the openings **164** in the patch panel **168** is configured to receive only a single adapter **46**, instead of a plurality of adapters in a side-by-side arrangement, for example. However, the adapters **46** are attached directly to the patch panel **168** without, for example, a bezel plate **156** or other intermediate structural element. Thus, the patch panel **168** operates as the interface housing **154** for the optical interface **190**. A plurality of fiber optic connectors **44** (FIG. **4**) from, for example, the indoor fiber optic cables **24** may be connected to respective rear connector ports **54***a*, **54***b*, **54***c*, **54***d* on the rear array connection face **132** of the optical interface **190**. At least one dust cap strip **166** may be connected to the front connector ports **52***a*, **52***b*, **52***c*, **52***d* on the front array connection face **130** of the optical interface **190**. In one embodiment, for example, each row (or each column) of the array **192** may include a single dust cap strip **166**. In an alternative embodiment, a single dust cap strip **166** may be used to cover the front connector ports **52***a*, **52***b*, **52***c*, **52***d* of a plurality of rows (or alternatively a plurality of columns) of the array **192** on the front array connection face **130** of the optical interface **170**. By way of example, each dust cap strip **166** may be used to cover two or three rows (or two or three columns) of the front connector ports **52***a*, **52***b*, **52***c*, **52***d* on the front array connection face **130** of the optical interface **170**. Dust cap strip **166** may be similar to that shown in FIGS. **10** and **11**. Alternatively, the dust cap strips **166** may be similar to that shown in FIGS. **6** and **7**.

[0070] While the present disclosure has been illustrated by the description of specific embodiments thereof, and while the embodiments have been described in considerable detail, it is not intended to restrict or in any way limit the scope of the appended claims to such detail. The various features discussed herein may be used alone or in any combination within and between the various embodiments. Additional advantages and modifications will readily appear to those skilled in the art. The disclosure in its broader aspects is therefore not limited to the specific details, representative apparatus and methods and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the scope of the disclosure.

Claims

1. A dust cap strip for an adapter element used for making connections in a fiber optic network, the adapter element including a plurality of connector ports and a connection face adjacent the plurality of connector ports, the dust cap strip comprising: an elongate strip body having a first end, a second end, and a plurality of dust cap bodies extending between the first end and the second end, wherein each of the plurality of dust cap bodies is connected to at least one adjacent dust cap body along an interface, and wherein each of the plurality of dust cap bodies, comprises: a flange; and a plug connected to and extending from the flange, wherein when the dust cap strip is engaged with the adapter element: the plug of each of the plurality of dust cap bodies is received in at least one of the plurality of connector ports of the adapter element, and the flange of each of the plurality of dust cap bodies is in abutting relationship or near abutting relationship with the connection face of the adapter element adjacent the at least one of the plurality of connector ports.
2. The dust cap strip of claim 1, wherein the elongate strip body is flexible.
3. The dust cap strip of claim 1, wherein the interface between two adjacent dust cap bodies of the plurality of dust cap bodies includes either a tear line having perforations or a bend line having a groove.
4. The dust cap strip of claim 1, wherein the interface between two adjacent dust cap bodies of the plurality of dust cap bodies includes both a tear line having perforations and a bend line having a groove, and wherein the tear line and the bend line coincide with each other.
5. The dust cap strip of claim 1, wherein the interface between two adjacent dust cap bodies of the plurality of dust cap bodies is along side edges of the respective flanges.
6. The dust cap strip of claim 1, wherein for each dust cap body of the plurality of dust cap bodies, the flange is sized relative to the plug to define a ledge around a periphery of the plug.
7. The dust cap strip of claim 1, wherein the plug is generally hollow.
8. The dust cap strip of claim 1, wherein the dust cap body adjacent the first end of the elongate strip body and/or the dust cap body adjacent the second end of the elongate strip body includes the pull tab a pull tab extending from the flange of the dust cap body.
9. The dust cap strip of claim 8, wherein the pull tab extends from a side of the flange opposite the plug.
10. A fiber optic assembly, comprising: an adapter element used for making connections in a fiber optic network, the adapter element including a plurality of connector ports and a connection face adjacent the plurality of connector ports; and at least one dust cap strip engaged with the adapter element, wherein each dust cap strip of the at least one dust cap strip comprises: an elongate strip body having a first end, a second end, and a plurality of dust cap bodies extending between the first end and the second end, wherein each of the plurality of dust cap bodies is connected to at least one adjacent dust cap body along an interface, and wherein each of the plurality of dust cap bodies, comprises: a flange; and a plug connected to and extending from the flange, wherein: the plug of each of the plurality of dust cap bodies is received in at least one of the plurality of connector ports of the adapter element, and the flange of each of the plurality of dust cap bodies is in abutting relationship or near abutting relationship with the connection face of the adapter element adjacent the at least one of the plurality of connector ports.
11. The fiber optic assembly of claim 10, wherein the adapter element includes an adapter having the plurality of connector ports, and wherein each of the plurality of dust cap bodies is configured to be received in a respective one of the plurality of connector ports of the adapter.
12. The fiber optic assembly of claim 10, wherein the adapter element includes a ganged adapter comprising plurality of adapters arranged adjacent to each other, wherein each adapter of the plurality of adapters includes at least one connector port of the plurality of connector ports, and wherein each of the plurality of dust cap bodies is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter.
13. The fiber optic assembly of claim 12, further comprising a housing configured to hold the

ganged adapter.
14. The fiber optic assembly of claim 13, wherein the housing includes at least one of the following: an interface band for holding the plurality of adapters in the ganged adapter; a bezel plate for holding the plurality of adapters in the ganged adapter; or a panel for holding the plurality of adapters in the ganged adapter.
15. The fiber optic assembly claim 14, wherein the plurality of adapters are arranged in an array having a least one row or at least one column, and wherein each of the plurality of dust cap bodies of the at least one dust cap strip is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter that forms the at least one row or the at least one column in the array.
16. The fiber optic assembly of claim 15, wherein the array includes a plurality of rows and a plurality of columns, and wherein each of the plurality of dust cap bodies of the at least one dust cap strip is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter that forms at least two rows or at least two columns in the array.
17. The fiber optic assembly of **15**, wherein the array includes a plurality of rows and a plurality of columns, wherein the at least one dust cap strip includes a plurality of dust cap strips, and wherein each of the plurality of dust cap bodies of each dust cap strip is configured to be partially received in the at least one connector port of a respective adapter of the plurality of adapters in the ganged adapter that forms one row or one column in the array.
18. A fiber optic cable assembly, comprising: a fiber optic cable carrying a plurality of optical fibers; and at least one optical interface at an end of the fiber optic cable for connection to network equipment, the at least one optical interface comprising: a plurality of fiber optic connectors terminating at least some of the plurality of optical fibers at the end of the fiber optic cable; a plurality of adapters arranged adjacent to each other to define an adapter array; and at least one dust cap strip connected to the ganged adapter, the dust cap strip comprising: an elongate strip body having a first end, a second end, and a plurality of dust cap bodies extending between the first end and the second end, wherein each of the plurality of dust cap bodies is connected to at least one adjacent dust cap body along an interface, and wherein each of the plurality of dust cap bodies, comprises: a flange; and a plug connected to and extending from the flange, wherein: each of the plurality of adapters of the adapter array includes at least one first connector port on a first connection face of the adapter and at least one second connector port on a second connection face of the adapter, such that the adapter array includes a plurality of the first connector ports and a plurality of the second connector ports, the adapter array includes a first array connection face including the plurality of first connector ports and a second array connection face including the plurality of second connector ports; each fiber optic connector of the plurality of fiber optic connectors is connected to a respective second connector port of the plurality of second connector ports, the at least one dust cap strip is connected to the plurality of first connector ports on the first array connection face of the optical interface, each of the plurality of dust cap bodies of the at least one dust cap strip is partially received in the at least one first connector port of a respective adapter of the plurality of adapters in the adapter array, and the flange of each of the plurality of dust cap bodies is in abutting relationship or near abutting relationship with the first array connection face of the adapter array.
19. The fiber optic cable assembly of claim 18, wherein each adapter of the plurality of adapters of the at least one optical interface includes a plurality of first connector ports on the first connection interface and a plurality of second connector ports on the second connection interface.
20. The fiber optic cable assembly of claim 19, wherein each adapter of the plurality of adapters of the at least one optical interface includes: at least two first connector ports on the first connection interface, and at least two second connector ports on the second connection interface.