

PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 1 of 2

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TITLE OF THE INVENTION (500 characters max):		
SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK		
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ENCLOSED APPLICATION PARTS (check all that apply)		
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Charter Communications, Inc. - Exhibit 1004
Charter Communications, Inc. v. Iarnach Technologies, Ltd.

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Page 2 of 2

PTO/SB/16 (12-08)

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SIGNATURE /Bing Ai/

Date March 28, 2011

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Docket Number: 09064-8011.US00

**SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN
ETHERNET PASSIVE OPTICAL NETWORK**

TECHNICAL FIELD

5

This patent document relates to systems, devices and techniques for data communications in an Ethernet passive optical network (EPON).

BACKGROUND

10

Data Over Cable Service Interface Specification (DOCSIS) is a telecommunications standard that permits the addition of high-speed data transfer to an existing Cable TV (CATV) system. DOCSIS is employed by cable television operators to provide data services such as Internet over the hybrid fiber coaxial (HFC) infrastructure. Ethernet Passive Optical Network (EPON) is an optical network architecture based on point to multipoint (P2MP) topology in which a single optical fiber and multiple passive optical splitters are used to provide services from a central office or headend to multiple customer premises. EPON uses a point to point (P2P) Emulation Sublayer to render the P2MP network to appear as a collection of P2P links to the higher protocol layers. A network Operations, Administration and Maintenance (OAM) mechanism is included in EPON to facilitate operations and management of EPON.

20

DPoE (DOCSIS Provisioning over EPON) uses EPON and a DOCSIS Mediation Layer (DML) solution to provide the translation between the EPON and the DOCSIS backoffice systems for provisioning of DOCSIS services. Details of this architecture, as well as expected roles and functionalities of specific network elements, e.g., a Demarcation device, a DPoE Bridge Optical Network Unit (B-ONU), the DPoE System, can be found in the DPoE-SP-ARCH standard, published by CableLabs.

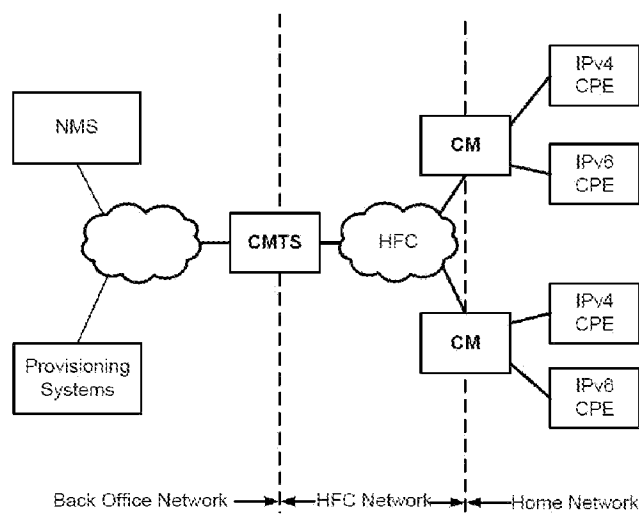
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SUMMARY

This patent document provides, among others, systems, devices and techniques for updating configuration of an optical network unit in a communication network based on DOCSIS provisioning over EPON.

DETAILED DESCRIPTION

A DOCSIS architecture is illustrated in the figure below and includes a back office network with Network Management System (NMS) and provisioning systems, a HFC network and a home network. Network management functions for operating a communication network can include, for example, controlling, planning, allocating, deploying, coordinating, and monitoring the resources of a communication network. These operational functions are supported by Operations Support Systems (OSS).



DOCSIS Architecture

A cable modem (CM) is located at a customer premise as a communication interface between the HFC network and one or more customer premise equipment (CPE) devices. The CM connects to the operator's HFC network and to a home network, bridging packets between them. CPE devices can be embedded with the CM in a single device, or can be separate

standalone devices as illustrated. Examples of some CPE devices are home routers, set-top devices and personal computers. A cable modem termination system (CMTS) is located at the CATV headend. Cable systems supporting on-demand programming use a hybrid fiber-coaxial system. Fiber optic lines bring digital signals to nodes in the system where they are
5 converted into RF channels and modem signals on coaxial trunk lines. The CMTS connects the operator's back office and core network with the HFC network. CMTS forwards packets between these two domains, and between upstream and downstream channels on the HFC network.

10 DPoE (DOCSIS Provisioning over EPON) uses EPON and a DOCSIS Mediation Layer (DML) solution to provide the translation between the EPON and the DOCSIS backoffice systems for provisioning of DOCSIS services. Details of this architecture, as well as expected roles and functionalities of specific network elements, e.g., a Demarcation device, one or more DPoE Optical Network Units (ONUs) such as a DPoE Bridge Optical Network Unit (B-
15 ONU), the DPoE System, can be found in the DPoE-SP-ARCH standard, published by CableLabs.

In various implementations of DOCSIS systems, a change in the configuration of the Cable Modem (CM) device involves a reboot of the CM device and, after the reboot, polling of a
20 new configuration file from the (T)FTP server located in the central office (CO) is performed to update the configuration of the CM device. This reboot is disruptive to the service provided via the CM device and thus is undesirable.

Consider a specific example for the above disruptive reboot implementation. In such an
25 DPoE Network, DPoE ONU devices are provisioned using DOCSIS like mechanism, in which a DPoE ONU is discovered and registered at the EPON layer (according to IEEE Std 802.3 definitions) and next vCM instance created on the DPoE System issues DHCP request, informing the back-office system about its capabilities and identification. In response, the back-office system informs the vCM about the target config file name as well as the list of
30 (T)FTP address servers holdings it config file. The vCM then polls the said servers in a sequence, obtaining successfully the config file from one of them. Once in the vCM, the

config file is translated into a series of DPoE System and DPoE ONU configuration parameters. The DPoE System configuration parameters are used to drive the operation of the EPON OLT located in the DPoE System, while the DPoE ONU parameters are encapsulated in a series of eOAMPDUs and delivered using the established EPON eOAM link. Next, once
5 at the DPoE ONU, such parameters are used to drive the configuration of the ONU device, specific configuration rules etc. In case of any changes to the DPoE ONU, service etc. configuration, the device has to be rebooted (power cycled) to go through the process of discovery and registration once again.

10 The above reboot process is disruptive to services and, when used to upgrade any of the existing and live services, can adversely affect services provisioned on the given DPoE ONU. It is a default behaviour of the DOCSIS CM devices, which was intended to be emulated by the DPoE I01 specifications, where a CM (vCM or DPoE ONU) remains unprovisioned after reboot and needs to go through the authentication, discovery, registration and finally config
15 file download process to enable any services. This guarantees tighter control over what devices are connected to the network and what services are provisioned on specific devices, allowing the MSO provide strict control over services and customer accounting, something that remains more challenging in open networks, where e.g. any xDSL modem can be registered with the DSLAM without requiring exchange of any specific parameters apart from
20 the user name and password.

The techniques provided in this document can be used to achieve seamless update of DPoE ONU configuration in DPoE Networks without the need to reboot ONU. Accordingly, in implementations as described in this document, the ONU configuration parameters, and
25 especially parameters for any configured services, may be changed without affecting other live services operating simultaneously on the ONU. Therefore, the update described in this document is seamless update in the sense that an ONU continues its power and operation without interruption.

30 Such seamless update can be important for local maintenance and customer support services, in cases where dynamic changes to the service configuration already provisioned on the ONU

is needed. In one example, a service for the given customer might need to be temporarily blocked for any operational reasons while leaving services for other customers provided with the same DPoE ONU intact. In another example, service provisioned for a particular customer might need to be modified without affecting for other customers provided with the same

5 DPoE ONU intact – in certain business scenarios, bandwidth provided for the given customer might needed to be increased to accommodate expected demand spike, for which customer is charged extra.

The present seamless update can be implemented in ways that the DPoE ONU configuration,

10 and especially any elements of service configuration as provisioned on a DPoE ONU, may be modified from the OSS level without requiring the DPoE ONU to power cycle and go through the regular discovery and registration process as defined in DPoE I01 series specifications. For example, the present seamless update can be implemented in a way that overcomes various limitations in dynamic configuration modification of the DPoE ONU devices in some

15 deployment designs in which changes to their configuration, and specifically configuration of the services provided on these devices can require the DPoE ONUs to power cycle and go through the discovery and registration process. The present seamless update can, for example, introduce changes to the service and device configuration on the fly, whereas the default config files for the given DPoE ONU devices stored on the local (T)FTP server remain

20 unchanged, providing a default fall back in case the DPoE ONU device is power cycled and needs to load the initial config file.

DEFAULT MECHANISM PER DPOE I01 SPEC

25 The default DPoE ONU configuration process can be summarized as follows. The DPoE ONU devices are provisioned using DOCSIS like mechanism, in which a DPoE ONU is discovered and registered at the EPON layer (according to IEEE Std 802.3 definitions) and next vCM instance created on the DPoE System issues DHCP request, informing the back-office system about its capabilities and identification. In response, the back-office system

30 informs the vCM about the target config file name as well as the list of (T)FTP address servers holdings it config file. The vCM then polls the said servers in a sequence, obtaining

successfully the config file from one of them. Once in the vCM, the config file is translated into a series of DPoE System and DPoE ONU configuration parameters. The DPoE System configuration parameters are used to drive the operation of the EPON OLT located in the DPoE System, while the DPoE ONU parameters are encapsulated in a series of eOAMPDUs and delivered using the established EPON eOAM link. Next, once at the DPoE ONU, such parameters are used to drive the configuration of the ONU device, specific configuration rules etc. In case of any changes to the DPoE ONU, service etc. configuration, the device has to be rebooted (power cycled) to go through the process of discovery and registration once again. Obviously, such a process is disruptive to services and cannot be used in practice to upgrade any of the existing and live services without affecting all services provisioned on the given DPoE ONU.

Once the DPoE ONU is authenticated and securely provisioned, a number of services can be instantiated. For the purpose of further description, it is assumed that the given DPoE ONU supports at least two services, the parameters for one of which will be modified through the proposed mechanism and the other one will remain fully operational during the reconfiguration process.

Examples of 6 seamless update mechanisms for achieving the dynamic configuration modification of the DPoE ONU devices are described below.

In these mechanisms, configuration parameters for the DPoE System, and specifically EPON OLT and Edge Router comprising the DPoE System, may be also modified via the OSS request using the mechanism defined above. The vCM is instantiated as part of the DPoE System device, internal communication between software agents operating on the same platform can be configured or controlled by the given system developer.

MECHANISM 1

In this mechanism, the vCM maintains a copy of the config file downloaded from the (T)FTP
5 server following the mechanism described in section entitled “DEFAULT MECHANISM
PER DPOE I01 SPEC”. In such a configuration, the vCM is aware of the current service
configuration for the given associated DPoE ONU device.

Step 1

10 At some time, the network administrator decides to introduce changes into one of the services
(hereinafter referred to as service₁) currently provisioned for the selected DPoE ONU
(hereinafter referred to as ONU₁). In such a case, a series of SNMP requests are issued from
the OSS towards the selected vCM associated with ONU₁, transferring the copy of the ONU₁
configuration stored locally on the associated vCM to the OSS. Once retrieved from the vCM,
15 the received configuration is verified and the next step is executed only if the verification
process is successful.

Step 2

The network administrator introduces changes to the retrieved ONU₁ configuration either
20 manually or using any automation tools available. The modified configuration set is again
verified and the next step is executed only if the verification process is successful.

At this step, the network administrator may also decide whether the changes are to be
introduced in a permanent manner or not: in case of permanent changes, the modifications
need to be also written into the OSS database used to automatically generate DPoE ONU
25 config files following the mechanism described in section entitled “DEFAULT
MECHANISM PER DPOE I01 SPEC” Otherwise, no changes are made to the said database
and all modifications are considered temporary.

Step 3

30 Once the updated config file is saved, the OSS issues a series of SNMP write requests, writing
the updated config file directly into the selected vCM associated with the given ONU₁. Upon

completion of the write process, the OSS may optionally validate the correct transmission of the new config file to the said vCM.

Step 4

- 5 Once the updated config file has been downloaded successfully to the vCM associated with the given ONU₁, the vCM is instructed to update configuration of the ONU₁. This process involves translation of the received config file delivered from the OSS via the series of SNMP write requests into a series of eOAMPDUs per definitions included in DPoE-SP-OAM I01 and delivering them to the said ONU₁ via the eOAM channel opened during the discovery and
- 10 registration process. This mechanism is part of the DPoE I01 specifications and not subject to description in this application.

- It is assumed, that the previously provisioned ONU configuration, and especially classification rules, are cleared and then loaded with the new content from the vCM. This
- 15 might result in short-term service suspension for all connected customers and all instantiated services.

Step 5

- The process is complete once the ONU₁ provisioning phase started in Step 4 above is
- 20 complete. At this stage, the ONU₁ should be equipped with a complete set of classification rules for all instantiated services and other configuration parameters needed for the proper operation of the ONU e.g. QoS enforcement parameters etc.

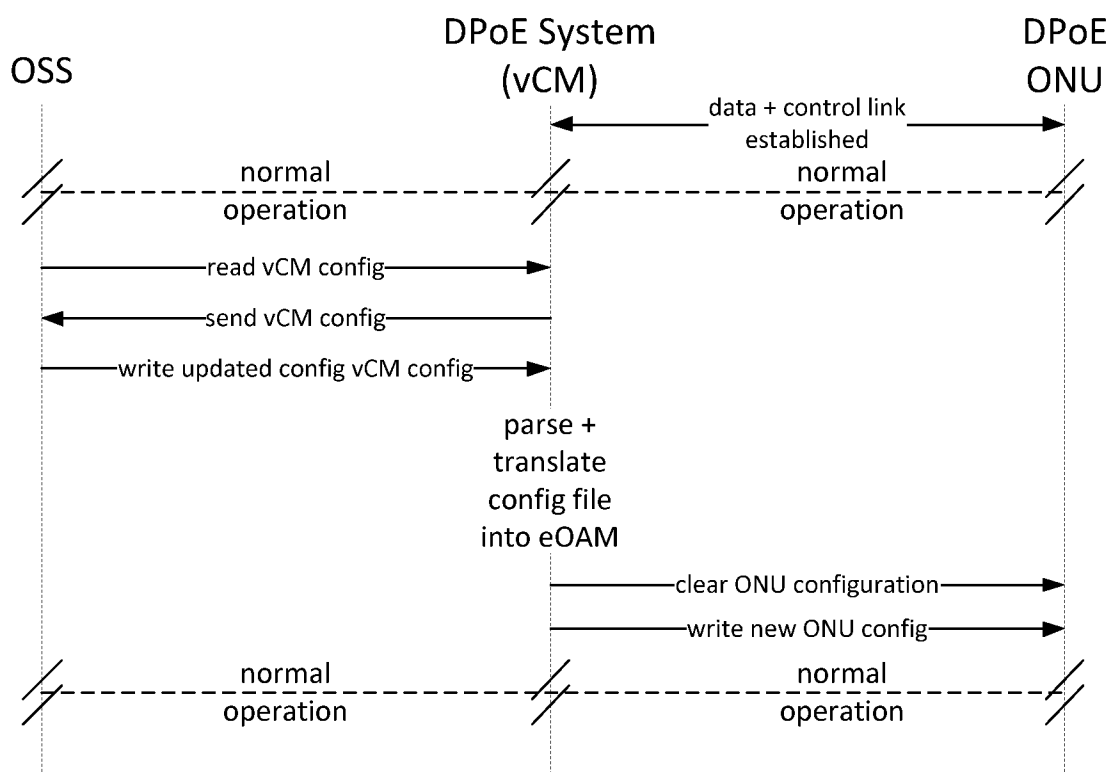


Figure 1: Graphical illustration of the MECHANISM 1

MECHANISM 2

In this mechanism, it is assumed that the vCM does not maintain a copy of the config file
5 downloaded from the (T)FTP server following the mechanism described in section entitled
“DEFAULT MECHANISM PER DPoE I01 SPEC”. In such a configuration, the vCM is not
aware of the current service configuration for the given associated DPoE ONU device and
such a configuration must be polled from the associated ONU prior to its transmission to the
OSS. Furthermore, the vCM must be capable of polling the ONU configuration parameters
10 using the mechanism defined in the DPoE-SP-OAM I01 specifications, requesting current
classifier configuration settings, any associated QoS settings etc. and then translating these
parameters into DOCSIS compatible config file.

Step 1

15 At some time, the network administrator decides to introduce changes into one of the services
(hereinafter referred to as service₁) currently provisioned for the selected DPoE ONU
(hereinafter referred to as ONU₁). In such a case, the first SNMP request issued by the OSS
towards the vCM associated with ONU₁ causes the said vCM to poll the current configuration
settings from the associated ONU₁ using the mechanism described in the introduction to this
20 method. Once the availability of the polled ONU₁ config at the vCM is confirmed series of
SNMP requests are issued from the OSS towards the selected vCM associated with ONU₁
transferring the copy of the ONU₁ configuration stored locally on the associated vCM to the
OSS. Once retrieved from the vCM, the received configuration is verified and the next step is
executed only if the verification process is successful.

25 Step 2 through step 5 are identical as described in MECHANISM 1

Step 6

One the vCM completes the transfer of the config file to ONU₁, it removes the local copy of
30 the config file.

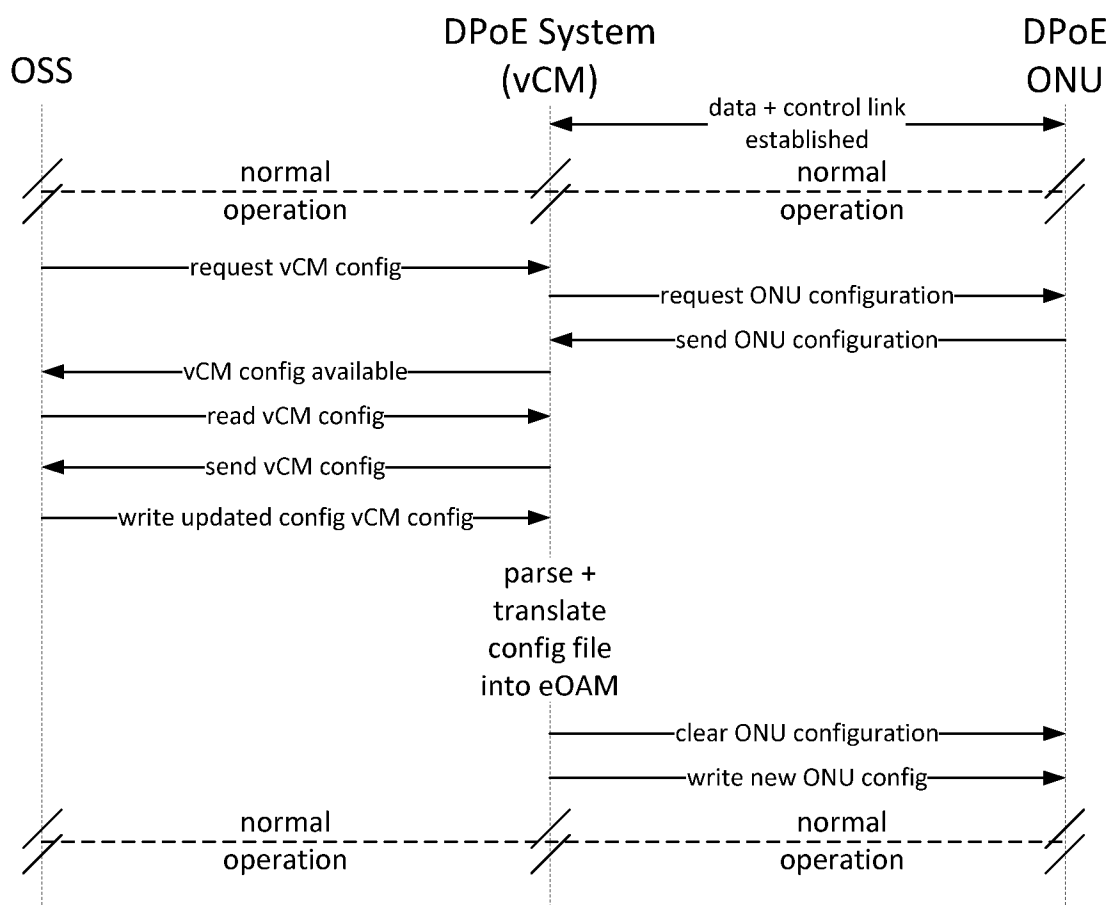


Figure 2: Graphical illustration of the MECHANISM 2

MECHANISM 3

This method is further derived from description of step 1 through step 3 in MECHANISM 1
5 and MECHANISM 2, where the OSS retrieves the copy of the current configuration from the
given vCM associated with ONU₁. This mechanism assumes that the vCM is capable of
performing a differential update of the ONU₁ configuration parameters, without having to
reset the classification rules and other QoS parameters on the ONU to perform modification in
some of the configuration parameters of the ONU.

10 Step 1 through step 3 are identical as described in MECHANISM 1 or MECHANISM 2

Step 4

Once the updated config file has been downloaded successfully to the vCM associated with
15 the given ONU₁, the vCM is instructed to update configuration of the ONU₁. This process
involves translation of the received config file delivered from the OSS via the series of SNMP
write requests into a series of eOAMPDUs per definitions included in DPoE-SP-OAM I01
and delivering them to the said ONU₁ via the eOAM channel opened during the discovery and
registration process. This mechanism is part of the DPoE I01 specifications and not subject to
20 description in this application.

It is assumed, that the vCM is aware of the current ONU configuration parameters and can
identify the modifications between the previously provisioned configuration parameters and
configuration parameters obtained in the previous step from the OSS via the series of SNMP
25 write requests. For this effect, the vCM needs to keep a copy of the previous configuration
and the new configuration and be capable of performing a differential comparison for
parameters for specific services. Only services with modifications in the configuration
parameters will be updated in the next step.

30 The vCM creates a list of services and configuration parameters that need to be updated on
the given associated ONU₁.

Step 5

The vCM associated with ONU₁ issues a series of read/write commands via the eOAM channel, where the vCM reads the current classification rules, identifies rules associated with the given set of services to be updated on ONU₁ and then uses the eOAM channel to update specific rules as instructed by the OSS. Other ONU parameters e.g. QoS settings, are updated in the same way. See Figure 3 for more details – the sequence of request / send / (optional) write eOAM commands is executed for each configuration fragment which requires modification as identified by vCM in step 4.

Such an update process does not affect services which are not subject to modification of their parameters. There might occur transitory QoS enforcement problems, especially when modifying priority allocation to specific services, though such artefacts are not expected to be long-term.

Step 6

The process is complete once the ONU₁ provisioning phase started in Step 4 above is complete. At this stage, the ONU₁ should be equipped with a complete set of classification rules for all instantiated services and other configuration parameters needed for the proper operation of the ONU e.g. QoS enforcement parameters etc.

The vCM replaces the previous configuration with the new configuration for the associated ONU₁ and remains ready for any future changes to the ONU₁ configuration parameters.

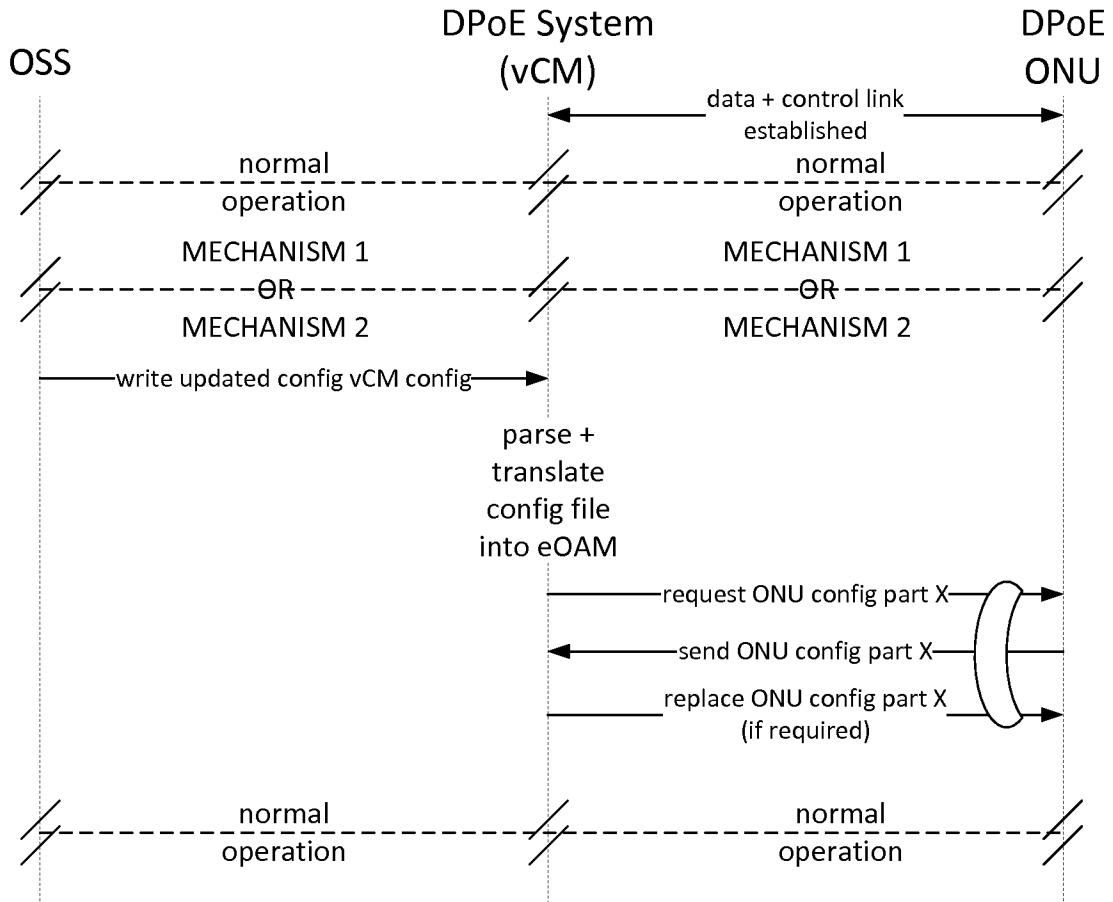


Figure 3: Graphical illustration of the MECHANISM 3

MECHANISM 4

This method is derived from the existing DPoE I01 mechanism as described in “DEFAULT
5 MECHANISM PER DPOE I01 SPEC”, in which the vCM is soft-reset and required to poll
DHCP server(s) and then configured (T)FTP servers for the updated configuration file.

Step 1

At some time, the network administrator decides to introduce changes into one of the services
10 currently provisioned for ONU₁. In such a case, data associated with the given ONU₁ stored in
the configuration data base is updated, resulting in a new config file being generated for this
particular ONU₁ when it power cycles again or if the associated vCM is soft reset. The new
config file is not generated at this step, per definitions included in “DEFAULT
MECHANISM PER DPOE I01 SPEC”.

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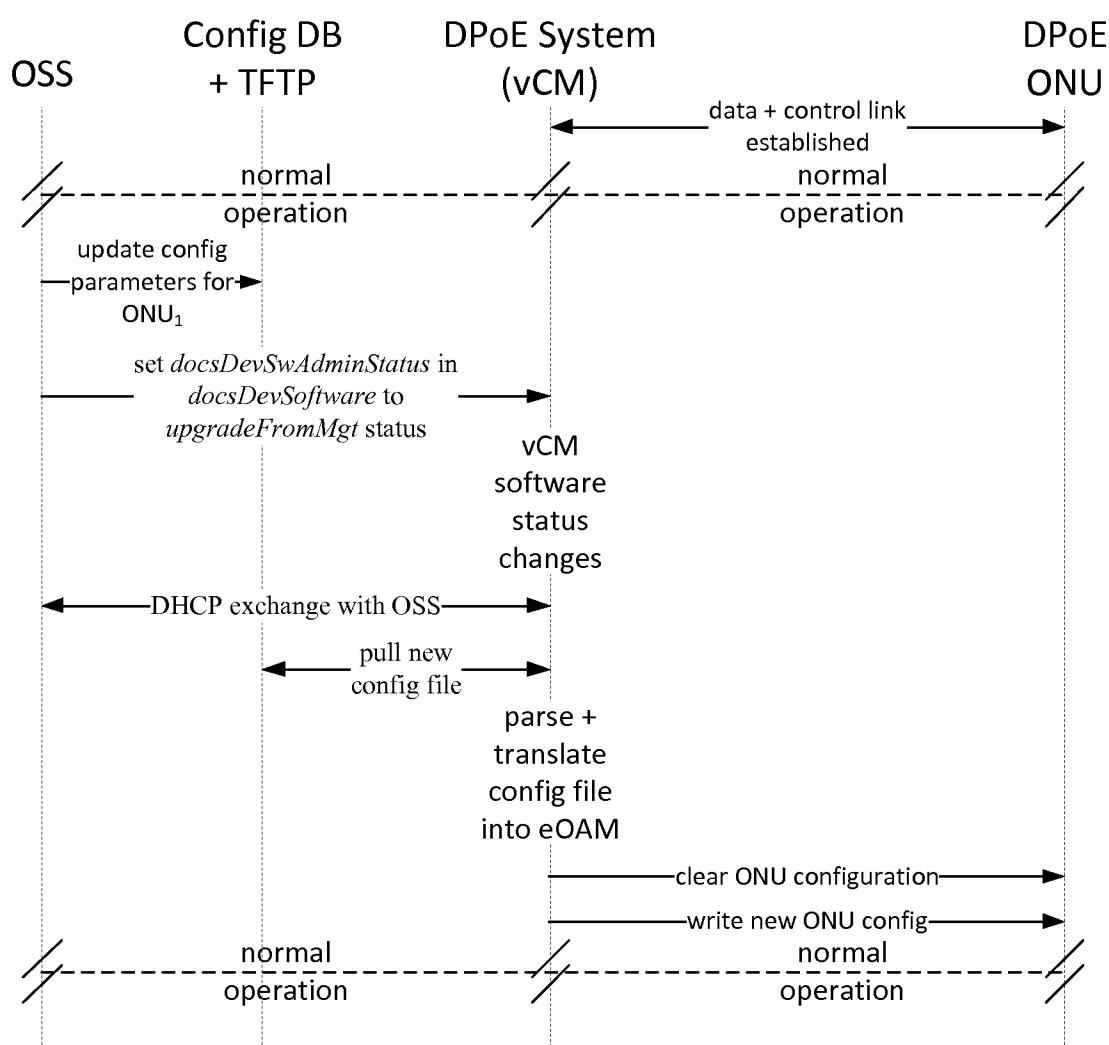
Step 2

Following the changes in the config data base, the vCM associated with ONU1 is soft-reset
using an SNMP command, for example *docsDevSwAdminStatus* in *docsDevSoftware* (see
DPoE1.0 OSSI spec) can be set to *upgradeFromMgt* status, causing the vCM to go through
20 the config file upgrade using the mechanism described in “DEFAULT MECHANISM PER
DPOE I01 SPEC” i.e. the vCM sends the DHCP request, receives the IP address (the same as
previously or not, depending on the OSS configuration) , the list of (T)FTP servers storing
the updated config file and the name of updated config file generated by the OSS. The config
file associations with ONU1 is maintained on the OSS that can determine what version of the
25 config file is loaded into the vCM.

Step 3

In this step, the vCM retrieves the the config file from the designated (T)FTP server(s) in a
manner described in “DEFAULT MECHANISM PER DPOE I01 SPEC” section. The
30 retrieved config file, once at the vCM, is verified and the system moves to the next step only
when the verification process has been successful.

Further steps in this mechanism can be identical to step 4 through step 5 as defined for MECHANISM 1, whereas the ONU configuration is updated as a whole, first resetting the ONU configuration and then loading a new data set; or identical to step 4 through step 6 as defined for MECHANISM 3, whereas the ONU configuration is updated selectively, where the vCM is capable of performing a differential update by generating list of changes from the previously loaded config file and sending a series of eOAM read/examine/write requests



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Figure 4: Graphical illustration of the MECHANISM 4, with ONU config clear

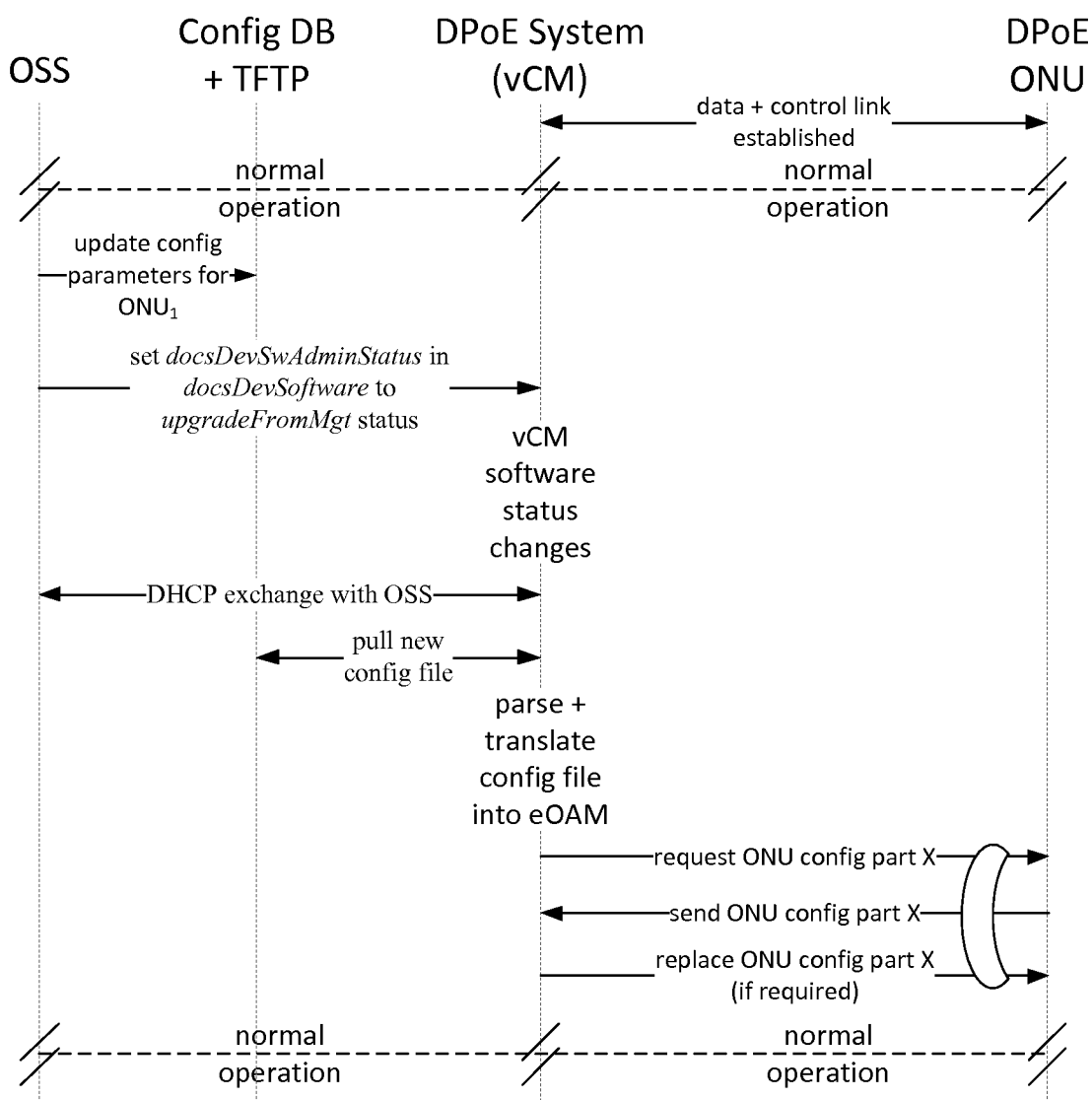


Figure 5: Graphical illustration of the MECHANISM 4, with incremental ONU config upgrade

MECHANISM 5

This method is derived from the method described in section MECHANISM 2 and

- 5 MECHANISM 3, where the OSS retrieves the current ONU₁ config file from a different location in the system i.e. from the configuration database directly or from the designated (T)FTP server(s) where the said file has been stored for vCM retrieval.

Step 1

- 10 At some time, the network administrator decides to introduce changes into one of the services currently provisioned for the selected ONU₁. In such a case, the OSS retrieves the config file associated with the given ONU₁ from one of the designated (T)FTP servers in the form of a config file or from the config database in the form of a series of configuration records. Once retrieved, the configuration information is verified (when e.g. in the form of a config file) and
- 15 the next step is executed only if the verification process is successful.

- Step 2 through step 5 are identical as described in MECHANISM 1, whereas the ONU configuration is updated as a whole, first resetting the ONU configuration and then loading a new data set; or step 2 through step 6 as defined for MECHANISM 3, whereas the ONU
- 20 configuration is updated selectively, where the vCM is capable of performing a differential update by generating list of changes from the previously loaded config file and sending a series of eOAM read/examine/write requests.

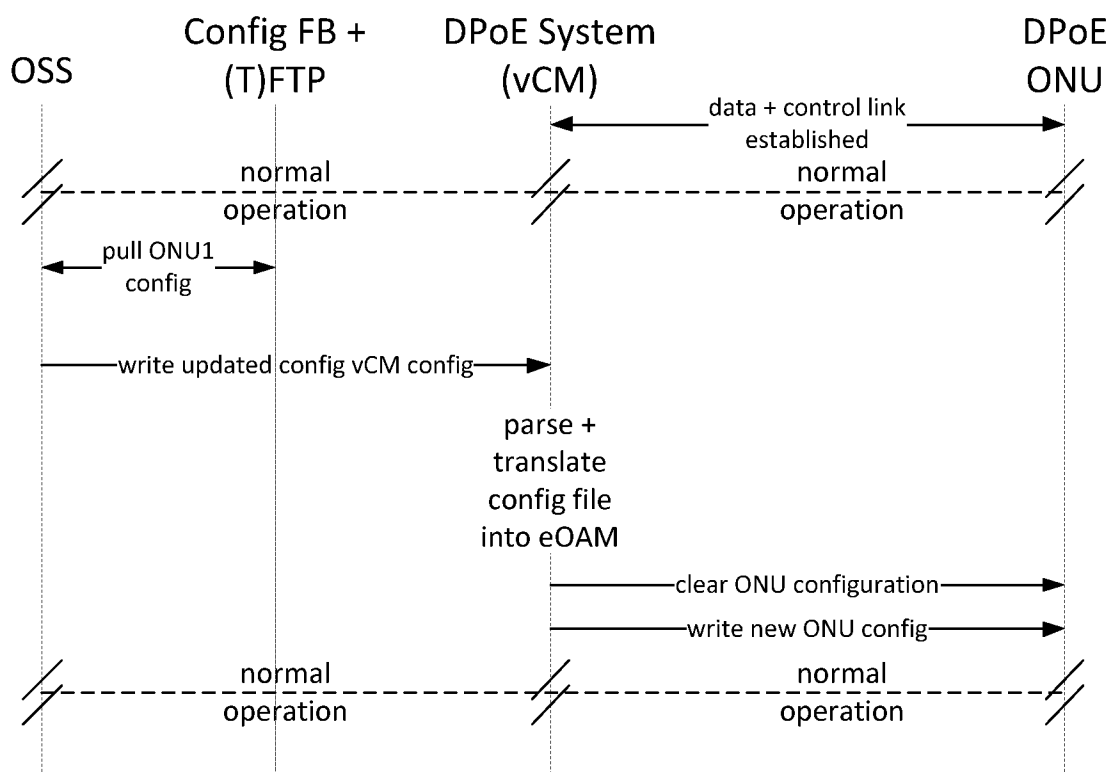


Figure 6: Graphical illustration of the MECHANISM 5, with ONU config clear

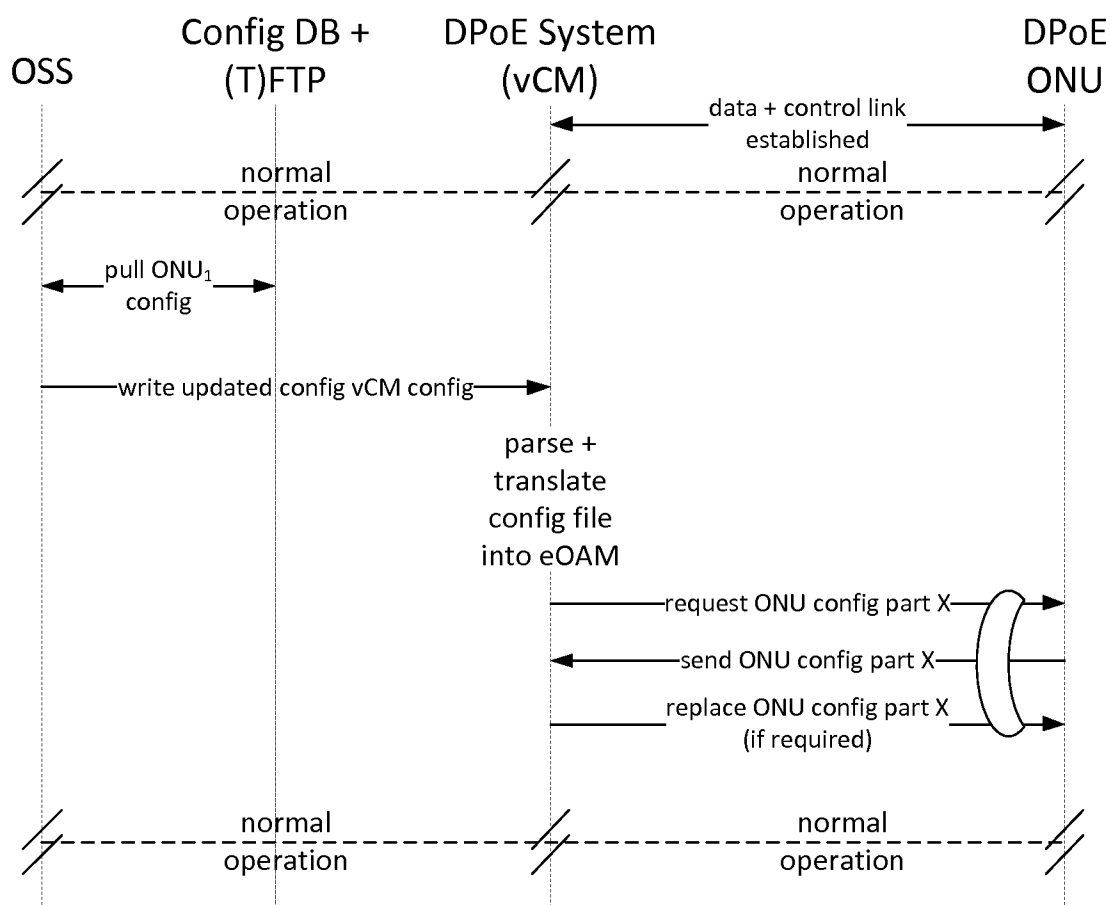


Figure 7: Graphical illustration of the MECHANISM 5, with incremental ONU config upgrade

Mechanism 6

This method is derived from the method described in MECHANISM 1 and MECHANISM2 and MECHANISM 3, where the OSS retrieves the current ONU's configuration file from the DPoE System. Once retrieved, the configuration information will be checked by the OSS and the OSS will only write the corresponding updated parameters to the vCM directly through SNMP command, where the vCM changes the indicated parameters on the associated ONU₁.

Step 1 is identical to as that in MECHANISM 1, where the ONU's current running configuration file is retrieved by the OSS.

Step 2

The OSS checks the retrieved configuration file for the ONU and decides which parameters are to be updated. Then the OSS sets only the parameters to be updated to the vCM in the DPoE System directly through the SNMP command. That is, the OSS finds out what parameters need to be updated compared to the current ONU's configuration uploaded from the vCM and only configure the parameters to be updated to the vCM.

Step 3

Once the vCM gets the parameters to be updated, it translates the parameters into a series of eOAMPDUs that the DPoE ONU could identify and the DPoE System configures the ONU via the eOAM link.

In this way, the running services that do not need any updates will not be affected. Only the updates are set to the ONU.

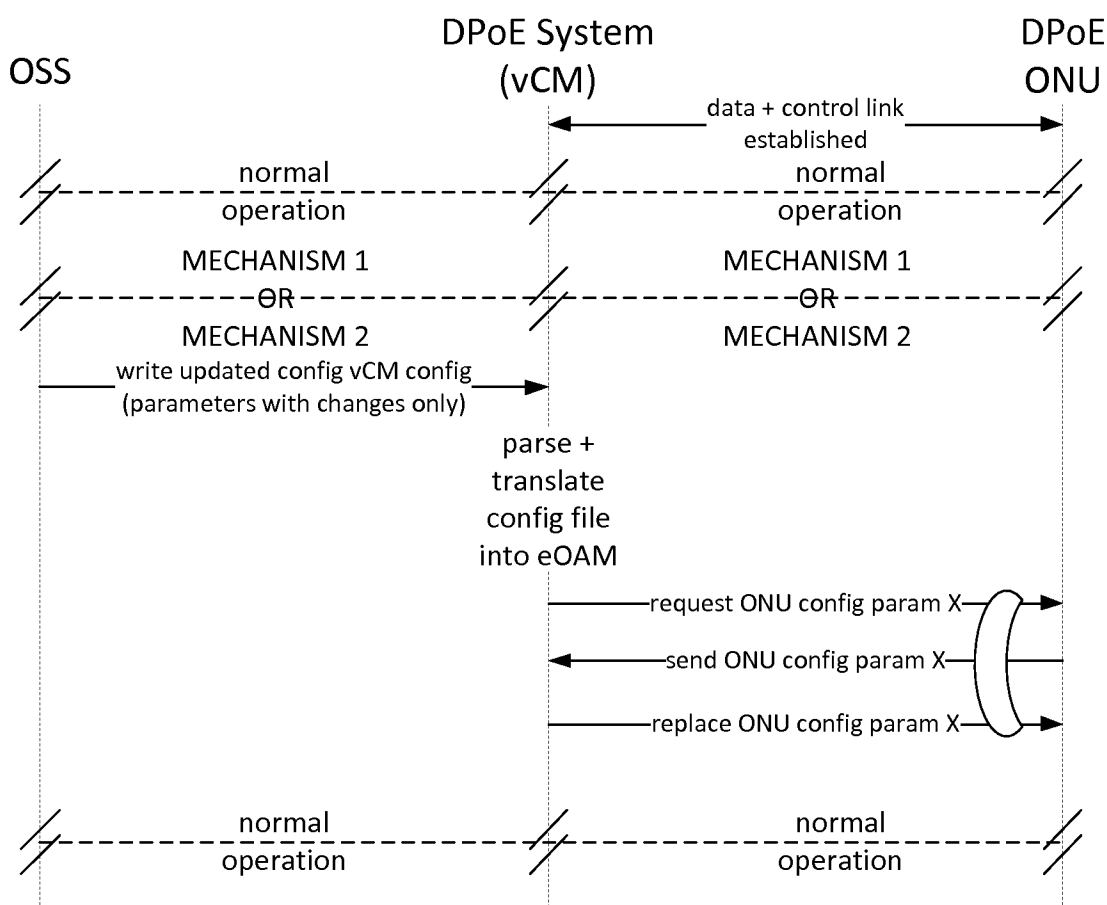


Figure 8: Graphical illustration of the MECHANISM 6

- 5 The disclosed and other embodiments and the functional operations described in this document can be implemented in digital electronic circuitry, or in computer software, firmware, or hardware, including the structures disclosed in this document and their structural equivalents, or in combinations of one or more of them. The disclosed and other embodiments can be implemented as one or more computer program products, i.e., one or more modules of
- 10 computer program instructions encoded on a computer readable medium for execution by, or to control the operation of, data processing apparatus. The computer readable medium can be a machine-readable storage device, a machine-readable storage substrate, a memory device, a composition of matter effecting a machine-readable propagated signal, or a combination of one or more them. The term "data processing apparatus" encompasses all apparatus, devices,

and machines for processing data, including by way of example a programmable processor, a computer, or multiple processors or computers. The apparatus can include, in addition to hardware, code that creates an execution environment for the computer program in question, e.g., code that constitutes processor firmware, a protocol stack, a database management
5 system, an operating system, or a combination of one or more of them. A propagated signal is an artificially generated signal, e.g., a machine-generated electrical, optical, or electromagnetic signal, that is generated to encode information for transmission to suitable receiver apparatus.

10 A computer program (also known as a program, software, software application, script, or code) can be written in any form of programming language, including compiled or interpreted languages, and it can be deployed in any form, including as a stand alone program or as a module, component, subroutine, or other unit suitable for use in a computing environment. A computer program does not necessarily correspond to a file in a file system. A program can be
15 stored in a portion of a file that holds other programs or data (e.g., one or more scripts stored in a markup language document), in a single file dedicated to the program in question, or in multiple coordinated files (e.g., files that store one or more modules, sub programs, or portions of code). A computer program can be deployed to be executed on one computer or on multiple computers that are located at one site or distributed across multiple sites and
20 interconnected by a communication network.

The processes and logic flows described in this document can be performed by one or more programmable processors executing one or more computer programs to perform functions by operating on input data and generating output. The processes and logic flows can also be
25 performed by, and apparatus can also be implemented as, special purpose logic circuitry, e.g., an FPGA (field programmable gate array) or an ASIC (application specific integrated circuit).

Processors suitable for the execution of a computer program include, by way of example, both general and special purpose microprocessors, and any one or more processors of any kind of
30 digital computer. Generally, a processor will receive instructions and data from a read only memory or a random access memory or both. The essential elements of a computer are a

processor for performing instructions and one or more memory devices for storing instructions and data. Generally, a computer will also include, or be operatively coupled to receive data from or transfer data to, or both, one or more mass storage devices for storing data, e.g., magnetic, magneto optical disks, or optical disks. However, a computer need not
5 have such devices. Computer readable media suitable for storing computer program instructions and data include all forms of non volatile memory, media and memory devices, including by way of example semiconductor memory devices, e.g., EPROM, EEPROM, and flash memory devices; magnetic disks, e.g., internal hard disks or removable disks; magneto optical disks; and CD ROM and DVD-ROM disks. The processor and the memory can be
10 supplemented by, or incorporated in, special purpose logic circuitry.

While this document contains many specifics, these should not be construed as limitations on the scope of an invention that is claimed or of what may be claimed, but rather as descriptions of features specific to particular embodiments. Certain features that are described in this
15 document in the context of separate embodiments can also be implemented in combination in a single embodiment. Conversely, various features that are described in the context of a single embodiment can also be implemented in multiple embodiments separately or in any suitable sub-combination. Moreover, although features may be described above as acting in certain combinations and even initially claimed as such, one or more features from a claimed
20 combination can in some cases be excised from the combination, and the claimed combination may be directed to a sub-combination or a variation of a sub-combination. Similarly, while operations are depicted in the drawings in a particular order, this should not be understood as requiring that such operations be performed in the particular order shown or in sequential order, or that all illustrated operations be performed, to achieve desirable results.

25 Only a few examples and implementations are disclosed. Variations, modifications, and enhancements to the described examples and implementations and other implementations can be made based on what is disclosed.

CLAIMS

What is claimed is what is disclosed and illustrated, including:

- 5 1. A method for updating configuration of an optical network unit device in a passive optical network for communications, comprising:
 updating optical network unit device configuration of an optical network unit device without rebooting the optical network unit device.

Electronic Patent Application Fee Transmittal

Application Number:

Filing Date:

Title of Invention:

SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN
ETHERNET PASSIVE OPTICAL NETWORK

First Named Inventor/Applicant Name:

Marek Hajduczenia

Filer:

Bing Ai/Jennifer Canarelli

Attorney Docket Number:

09064-8011.US00

Filed as Large Entity

Provisional Filing Fees

Description

Fee Code

Quantity

Amount

**Sub-Total in
USD(\$)**

Basic Filing:

Provisional application filing

1005

1

220

220

Pages:

Claims:

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				220

Electronic Acknowledgement Receipt

EFS ID:	9757550
Application Number:	61468504
International Application Number:	
Confirmation Number:	8666
Title of Invention:	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK
First Named Inventor/Applicant Name:	Marek Hajduczenia
Customer Number:	97075
Filer:	Bing Ai/Jennifer Canarelli
Filer Authorized By:	Bing Ai
Attorney Docket Number:	09064-8011.US00
Receipt Date:	28-MAR-2011
Filing Date:	
Time Stamp:	19:46:26
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 220
RAM confirmation Number	7330
Deposit Account	505252
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part 7.zip Page 30 of 49	Pages (if appl.)
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1		2011-03-28_Provisional.pdf	355899 628e5afb7a8776f41d347dc3c7c68212bb47292e	yes	27				
	Multipart Description/PDF files in .zip description								
	Document Description		Start	End					
	Transmittal of New Application		1	2					
	Specification		3	27					
Warnings:									
Information:									
2	Fee Worksheet (PTO-875)	fee-info.pdf	30090 5aef32f69c1c08c3889721fe8197188057dec7c	no	2				
Warnings:									
Information:									
Total Files Size (in bytes):			385989						
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.									



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
61/468,504	03/28/2011		220	09064-8011.US00		

CONFIRMATION NO. 8666

97075
Perkins Coie LLP
PO Box 1247
Seattle, WA 98111-1247

FILING RECEIPT



OC0000004715298

Date Mailed: 04/18/2011

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Marek Hajduczenia, Fiaes, PORTUGAL;

Power of Attorney:

Bing Ai--43312

If Required, Foreign Filing License Granted: 04/13/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/468,504**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET
PASSIVE OPTICAL NETWORK

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international

patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and

Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Marek Hajduczenia et al.

Application No.: 61/468,504

Confirmation No.: 8666

Filed: March 28, 2011

For: SEAMLESS CONFIGURATION UPDATE FOR
OPTICAL NETWORK UNIT IN ETHERNET
PASSIVE OPTICAL NETWORK

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION TO CORRECT INVENTORSHIP UNDER § 1.48(d)

Applicants request that the following two additional inventors be added in the above-referenced provisional patent application:

Meiyan Zang

Peng Zhang

Applicants hereby state that the inventorship error occurred without deceptive intention on the part of the omitted inventors.

Applicants submit herewith a Replacement Provisional Application for Patent Cover Sheet and Application Data Sheet reflecting the above corrected inventorship with two additional inventors.

Please apply the required processing fee set forth in § 1.17(q) in the amount of \$50.00, and any charges or credits, to our Deposit Account No. 50-5252.

Respectfully submitted,

Date: November 23, 2011

/Bing Ai/

Bing Ai
Reg. No. 43,312

Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
Telephone: (858) 720-5700
Facsimile: (206) 359-7198

REPLACEMENT PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 1 of 2

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. _____

FILED ELECTRONICALLY

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Marek	Hajduczenia	Fiaes, Portugal
Meiyan	Zang	Shanghai, P.R. China
Peng	Zhang	Shanghai, P.R. China
<i>Additional inventors are being named on the _____ separately numbered sheets attached hereto.</i>		
TITLE OF THE INVENTION (500 characters max):		
SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK		
Direct all correspondence to: CORRESPONDENCE ADDRESS ☒ The address corresponding to Customer Number: 97075 OR ☐ Firm or Individual Name		
Address		
City	State	Zip
Country	Telephone	Email
ENCLOSED APPLICATION PARTS (check all that apply)		
☒ Application Data Sheet. See 37 CFR 1.76 ☐ CD(s), Number of CDs _____ ☐ Drawing(s) Number of Sheets _____ ☐ Other (specify) _____ ☒ Specification (e.g. description of the invention) Number of Pages _____ 25		
Fees Due: Filing Fee of \$220 (\$110 for small entity). If the specification and drawings exceed 100 sheets of paper, an application size fee is also due, which is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).		
METHOD OF PAYMENT OF THE FILING FEE AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT		
☐ Applicant claims small entity status. See 37 CFR 1.27. ☐ A check or money order made payable to the <i>Director of the United States Patent and Trademark Office</i> is enclosed to cover the filing fee and application size fee (if applicable). ☐ Payment by credit card. Form PTO-2038 is attached. ☒ The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Deposit \$220.00		
Account Number: <u>50-5252</u>		
TOTAL FEE AMOUNT (\$)		

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

PROVISIONAL APPLICATION COVER SHEET

Page 2 of 2

PTO/SB/16 (12-08)

Approved for use through 09/30/2010. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.



No.



Yes, the name of the U.S. Government agency and the Government contract number are:

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

SIGNATURE /Bing Ai/

Date March 28, 2011

TYPED or PRINTED NAME Bing Ai

REGISTRATION NO. 43,312
(if appropriate)

TELEPHONE (858) 720-5700

Docket Number: 09064-8011.US00

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	09064-8011.US00
		Application Number	
Title of Invention	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Applicant Information:

Applicant 1					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
Mr.	Marek		Hajduczenia		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Fiaes	Country Of Residenceⁱ	PT		
Citizenship under 37 CFR 1.41(b)ⁱ		PL			
Mailing Address of Applicant:					
Address 1		Rua do Bolhao 298			
Address 2					
City	Fiaes	State/Province			
Postal Code	4505-314	Countryⁱ	PT		
Applicant 2					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
Mr.	Meiyan		Zang		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Shanghai	Country Of Residenceⁱ	CN		
Citizenship under 37 CFR 1.41(b)ⁱ		CN			
Mailing Address of Applicant:					
Address 1		Zhongxing Building			
Address 2		No. 889, Bibo Road, Zhangjiang HiTech			
City	Shanghai	State/Province			
Postal Code	201203	Countryⁱ	CN		
Applicant 3					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
Mr.	Peng		Zhang		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Shanghai	Country Of Residenceⁱ	CN		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	09064-8011.US00	
		Application Number		
Title of Invention	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK			
Citizenship under 37 CFR 1.41(b) i		CN		
Mailing Address of Applicant:				
Address 1	Zhongxing Building			
Address 2	No. 889, Bibo Road, Zhangjiang HiTech			
City	Shanghai	State/Province		
Postal Code	201203	Country ⁱ	CN	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.				Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	97075		
Email Address	patentprocurement@perkinscoie.com	Add Email	Remove Email

Application Information:

Title of the Invention	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK		
Attorney Docket Number	09064-8011.US00	Small Entity Status Claimed	☐
Application Type	Provisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)	N/A		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	09064-8011.US00
		Application Number	
Title of Invention	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK		
Customer Number	97075		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.			
Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).			
			Remove
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☐ Yes ☐ No
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.			
Assignee 1			Remove
If the Assignee is an Organization check here. ☒			
Organization Name	ZTE Portugal-Projetos de Telecomunicações Unipessoal Lda		
Mailing Address Information:			
Address 1	Edifício Amoreiras Plaza		
Address 2	Rua Carlos Alberto da Mota Pinto, nr. 9 - 6 A		
City	Lisbon	State/Province	
Country ⁱ	PT	Postal Code	1070-374
Phone Number		Fax Number	
Email Address			
Assignee 2			Remove
If the Assignee is an Organization check here. ☒			
Organization Name	ZTE Corporation		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	09064-8011.US00
		Application Number	
Title of Invention	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK		

Mailing Address Information:			
Address 1		ZTE Plaza, Keji South Road	
Address 2		Hi-Tech Industrial Park, Nanshan District	
City		Shenzhen	State/Province
Country i	CN	Postal Code	518057
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the Add button.			

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Bing Ai/			Date (YYYY-MM-DD)	2011-11-23
First Name	Bing	Last Name	Ai	Registration Number	43312

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	61468504			
Filing Date:	28-Mar-2011			
Title of Invention:	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK			
First Named Inventor/Applicant Name:	Marek Hajduczenia			
Filer:	Bing Ai/Jennifer Canarelli			
Attorney Docket Number:	09064-8011.US00			
Filed as Large Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Processing Fee for Provis. applications	1807	1	50	50
Total in USD (\$)				50

Electronic Acknowledgement Receipt

EFS ID:	11480239
Application Number:	61468504
International Application Number:	
Confirmation Number:	8666
Title of Invention:	SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET PASSIVE OPTICAL NETWORK
First Named Inventor/Applicant Name:	Marek Hajduczenia
Customer Number:	97075
Filer:	Bing Ai/Jennifer Canarelli
Filer Authorized By:	Bing Ai
Attorney Docket Number:	09064-8011.US00
Receipt Date:	23-NOV-2011
Filing Date:	28-MAR-2011
Time Stamp:	19:42:38
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 50
RAM confirmation Number	7163
Deposit Account	505252
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part .zip	Pages (if appl.)
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1	Petition for review by the Office of Petitions.	2011-11-23_Petition.pdf	76483 9e6862c40befc076757a34221f6f98c6cb7ba02b	no	3
Warnings:					
Information:					
2	Application Data Sheet	2011-11-23_ADS.pdf	895450 e757847cd1b061ac3723df035f99d1d1eb5c91f1	no	5
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30367 b1a6adf63b21015c804e509e0cb0a754f0bdd2fe	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			1002300		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
61/468,504	03/28/2011		220	09064-8011.US00		

97075
Perkins Coie LLP
PO Box 1247
Seattle, WA 98111-1247

CONFIRMATION NO. 8666
CORRECTED FILING RECEIPT



Date Mailed: 12/06/2011

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Marek Hajduczenia, Fiaes, PORTUGAL;
Meiyan Zang, Shanghai, CHINA;
Peng Zhang, Shanghai, CHINA;

Power of Attorney:

Bing Ai--43312

If Required, Foreign Filing License Granted: 04/13/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/468,504**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

SEAMLESS CONFIGURATION UPDATE FOR OPTICAL NETWORK UNIT IN ETHERNET
PASSIVE OPTICAL NETWORK

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing

of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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