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- (71) Applicant (for all designated States except US): **ALCATEL LUCENT** [FR/FR]; 3, avenue Octave Gréard, F-75007 Paris (FR).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **LIEKENS, Werner** [BE/BE]; Abeel 10, B-2860 Sint Katelijne Waver (BE). **VERMOESEN, Luc** [BE/BE]; Barelveldweg 148, B-2880 Bornem (BE). **DE LOOF, Jourik** [BE/BE]; Populierenlaan 46, B-2630 Aartselaar (BE).
- (74) Agent: **ALU Antw Patent Attorneys (No 365)**; Copernicuslaan 50, B-2018 Antwerp (BE).
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(54) Title: A NETWORKING DEVICE ADAPTED FOR USE AS A GATEWAY FOR A LOCAL NETWORK, AND ASSOCIATED METHOD

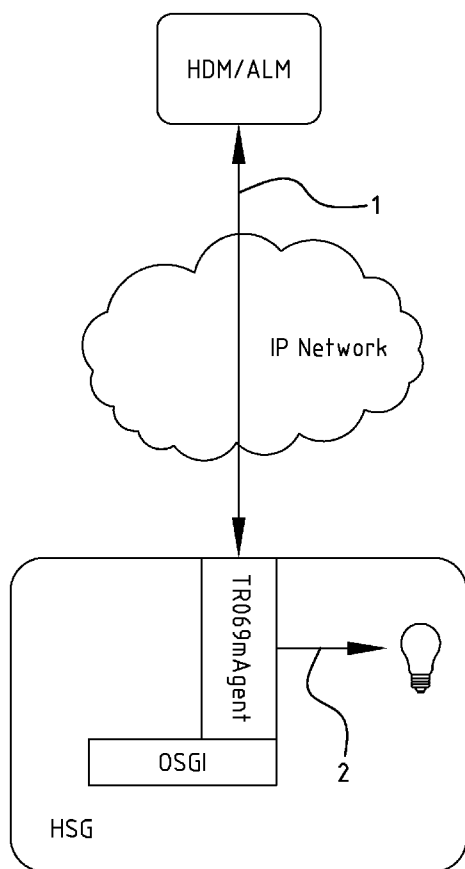


FIG. 1

(57) Abstract: A networking device is disclosed adapted for use as a gateway for a local network, said networking device being adapted for being remotely managed by means of a remote management protocol, wherein said networking device comprises a controller for detecting whether said networking device is taking part in a remote management protocol session, and an indicator for indicating whether said networking device is taking part in a remote management protocol session, being controlled by said controller; a method and a computer program.



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TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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A networking device adapted for use as a gateway for a local network, and associated method

Technical field of the invention

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The present invention relates to the field of a networking device adapted for use as a gateway for a local network, and to an associated method.

10 Background of the invention

Home service gateways or home sensor gateways are network elements which typically form the gateway between a local network, e.g. a home network, and the access network.

15 Today these gateways are capable of being remotely managed by means of a remote management protocol as for instance TR-069.

When a user who tries to physically install a home service gateway (HSG) at home, and encounters a problem in doing so, this may be caused by a failure in the setup of a remote management session between the automatic configuration server (ACS) and the HSG. Today the installer has to contact the operator in order to identify the problem, which is a
25 burden.

Summary of the invention

It is an objective of the present disclosure to disclose a home network server which guides a installer in the
30 detection of problems during the installation process.

According to the present disclosure, the above defined objective is realized by a networking device according to

embodiments of the present invention, the networking device being adapted for use as a gateway for a local network, the local network being adapted for being remotely managed by means of a remote management protocol, wherein the

5 networking device comprises a controller for detecting whether the networking device is taking part in a remote management protocol session, and an indicator controlled by the controller for indicating whether the networking device is taking part in a remote management protocol session.

10

By detecting the participation of the HSG in a remote management protocol session, and indicating the participation of no participation status by an indicator, the user who is installing the HSG is directly informed about a possible failure as to this respect. He is thereby
15 guided in detecting which type of problems are occurring during the installation process. The simple detection of the participation of the HSG in a remote management protocol session may take away the need to contact the operator, e.g. by phone. Contacting the operator can be extremely
20 burdensome for the customer, which is often guided through option menus and/or is put in waiting queues.

The indicator can be any means which allows the user to be
25 directly informed about the status. Preferably the indicator is a visual indicator. It can for instance be a light source. It can be a lamp or LED or similar type of light source.

30 According to preferred embodiments, the the indicator is positioned on the outside of said networking device. It can for instance be provided in or on the outside of the housing of the HSG, such that it can be seen by a user/installer.

According to preferred embodiment of the present invention,
the indicator does not comprise a display. Many CPE's do
comprise a display which can display a variety of
5 information, but this is typically not present or required
for home gateway devices.

According to preferred embodiments of the present invention,
the controller is embodied as a remote management protocol
10 agent running on an OSGI platform. It can be embodied for
instance as a TR-069 management agent running on an OSGI
platform.

According to preferred embodiments, the indicator comprises
15 at least one lighting device which is capable of emitting
light, and the lighting device comprising at least two
emitting states. The two emitting states can for instance
vary in intensity or color. A first emitting state can for
instance be a non-emitting state, while a second emitting
20 state can be a brightly emitting state, such that the
difference between two emitting states can easily be
recognised by a user. The lighting device may also be
adapted for having more than two emitting states, for
instance green - red - yellow, or dark - half intensity,
25 full intensity.

According to preferred embodiments, the networking device
comprises a plurality of lighting devices, each lighting
device comprising at least two emission states. The emitting
30 states can for each device be according to the description
in the previous paragraph.

According to preferred embodiments, the controller is further adapted for identifying different states of the remote management protocol session, and for controlling the one or the plurality of lighting devices to correspond to the different states of the remote management protocol session by generating different emitting patterns for the different states. Some of the different states of the remote management protocol session can be for instance BOOT (or init), UP (or Connected, DOWN (or Disconnected). The different emitting patterns may be defined by using different emitting states of a single, or of a plurality of lighting devices. The different emitting patterns may correspond to a variation of light emission in time of the one or more lighting devices. For instance a pattern may be defined by the frequency of flickering of a single lighting device.

According to preferred embodiments, the indicator can be used to indicate another state of the networking device, the other state being not related to the participation in a remote management protocol session. One or more lighting devices may also be used to indicate other states of the networking device, as for instance main power on or off state, IP connectivity or not, etc. The controller can then be adapted for detecting these other states, and for controlling the indicator accordingly in order to indicate such other states.

According to preferred embodiments, the networking device is adapted for use with a remote management protocol being TR-069 as defined by the Broadband Forum.

According to preferred embodiments of the present invention, the remote management protocol session is one of a TR-069, SNMP or OMA-DM management session.

5 According to preferred embodiments, the controller is further adapted for receiving signalling instructions from a remote management server, the signalling instructions defining how the step of indicating whether the networking device is taking part in a remote management protocol
10 session is to be indicated by the indicator.

According to preferred embodiments, the controller is adapted for communicating information describing the capabilities of the indicator to a remote management server.
15

A remote management server is hereby also described which is adapted for receiving information describing the capabilities of and indicator of a home service gateway and for signalling instructions to said HSG, the signalling
20 instructions defining how the step of indicating whether the networking device is taking part in a remote management protocol session is to be indicated by the indicator, based on said capabilities.

25 According to a further aspect of the present invention, a method is disclosed for providing remote management protocol session information about a networking device to a user, comprising at the networking device:

- detecting whether the networking device is taking part in
30 a remote management protocol session; and
- based on the detection, indicating whether the networking device is taking part in a remote management protocol

session, by means of an indicator comprised in the networking device.

According to preferred embodiments, indicating comprises
5 controlling the emission of light of at least one lighting device which is capable of emitting light, between at least two light emitting states.

According to preferred embodiments, indicating comprises
10 controlling the emission of light of a plurality of lighting devices, each lighting device comprising at least two emission states.

According to preferred embodiments, detecting comprises
15 identifying different states of the remote management protocol session, and generating different emitting patterns by the one or the plurality of lighting devices corresponding to the different states of the remote management protocol session.

20
According to preferred embodiments, the method further comprises receiving signalling instructions from a remote management server by the controller, the signalling instructions defining how the step of indicating whether the
25 networking device is taking part in a remote management protocol session is to be indicated by the indicator.

According to preferred embodiments, the method further comprises communicating information describing the
30 capabilities of the indicator to a remote management server by the controller. The capabilities can for instance comprise how many LED are comprised in said indicator, and/or how many emitting states a/each LED can emit.

According to a further aspect of the present invention, a computer program is described comprising a code means adapted for performing the above described method, when
5 performed on a networking device adapted for use as a local network gateway. A data storage means comprising such a computer program has also been disclosed.

Further aspects of the present invention are described by the dependent claims. The features from the dependent
10 claims, features of any of the independent claims and any features of other dependent claims may be combined as considered appropriate to the person of ordinary skill, and not only in the particular combinations as defined by the claims.

15

Brief description of the drawings

The accompanying drawings are used to illustrate embodiments of the present invention.

20 Fig. 1 illustrates embodiments according to the present invention.

Description of illustrative embodiments

25 The Broadband Forum is an international industry consortium of service providers, equipment and component manufacturers and other interested parties, focussing on developing multi-service broadband packet networking specifications addressing interoperability, architecture and management.

30 The work enables home, business and converged broadband services, encompassing customer, access and backbone networks. More information about the Broadband Forum is

available from its internet site <http://www.broadband-forum.org/>.

One of those technical specifications is the Broadband
5 forum's Technical report TR-069 (e.g. issue 1, amendment 3,
Issue Date: November 2010 Protocol Version: 1.2). The TR-069
Management Protocol and corresponding network architectures
allow communication between a Customer Premises Equipment
(CPE) and an automatic configuration server (ACS). It
10 defines a mechanism that encompasses secure auto-
configuration of a CPE and also incorporates other CPE
management functions into a common framework.

Also other remote management protocols methods do exist, as
15 for instance SNMP (Simple Network Management Protocol) and
OMA-DM (Open Mobile Alliance Device Management).

The description of aspects of the present invention is
performed by means of particular embodiments and with
20 reference to certain drawings but the invention is not
limited thereto. Depicted figures are only schematic and
should not be considered as limiting.

According to an example, illustrated in Fig. 1, a Home
25 Service Gateway (HSG) being the gateway between a home
network and an access network, is connected to an automatic
configuration server over an IP based network.

The automatic configuration server (1) can be for instance
the remote management server defined in the framework of the
30 TR-069 protocol. When the HSG establishes a TR-069
connection with the automatic configuration server (HDM
(Home Device Manager)/ALM (application lifecycle
management)), the TR-069 agent running in the HSG, for

instance running on an OSGI platform, controls a management indication light which is positioned on the housing of the HSG in order to indicate that the management session is active (2). It can for instance cause a LED light to start
5 flickering. The home service gateway can for instance comprise a dedicated LED, or can use a different emission pattern for a multi-purpose LED, in which different variations of emitting states of the LED correspond to different indicators. The installer can then easily be
10 informed about the status of the network management session.

While some embodiments described herein include some but not other features included in other embodiments, combinations of features of different embodiments are meant to be within
15 the scope of the invention, and form different embodiments, as would be understood by the skilled person.

Claims

1. A networking device adapted for use as a gateway for a local network, said networking device being adapted for
5 being remotely managed by means of a remote management protocol, wherein said networking device comprises a controller for detecting whether said networking device is taking part in a remote management protocol session, and an indicator controlled by said controller for indicating
10 whether said networking device is taking part in a remote management protocol session.

2. Networking device according to claim 1, wherein said indicator is positioned on the outside of said networking
15 device.

3. Networking device according to any of the previous claims, wherein said controller is embodied as a remote management protocol agent running on an OSGI platform.
20

4. Networking device according to any of the previous claims, wherein said indicator comprises at least one lighting device which is capable of emitting light, and said lighting device comprising at least two emitting states.
25

5. Networking device device according to claim 4, comprising a plurality of lighting devices, each lighting device comprising at least two emittion states, said emitting states comprising a non-light-emitting state and a light
30 emitting state.

6. Networking device according to claim 4 or 5, wherein said controller is further adapted for identifying different

states of said remote management protocol session, and for
controlling said one or said plurality of lighting devices
to correspond to said different states of said remote
management protocol session by generating different emitting
5 patterns for said different states.

7. Networking device according to any of the previous claims
4 to 6, wherein said controller is further adapted for
controlling said indicator to indicate another state of said
10 networking device, said other state being not related to
remote management protocol sessions.

8. Networking device according to any of the previous
claims, wherein said controller is further adapted for
15 receiving signalling instructions from a remote management
server, said signalling instructions defining how the step
of indicating whether said networking device is taking part
in a remote management protocol session is to be indicated
by said indicator.

20

9. Networking device according to any of the previous
claims, wherein said controller is adapted for
communicating information describing the capabilities of
said indicator to a remote management server.

25 10. Networking device according to any of the previous
claims, wherein said a remote management protocol is one of
TR-069, SNMP and OMA-DM.

11. A method for providing remote management protocol
30 session information about a networking device to a user,
comprising at said networking device:

a. detecting whether said networking device is taking
part in a remote management protocol session; and

b. based on said detection, indicating whether said networking device is taking part in a remote management protocol session, by means of an indicator comprised in said networking device.

5

12. Method according to claim 11, wherein indicating comprises controlling the emission of light of one or of a plurality of lighting devices, each lighting device comprising at least two emitting states.

10

13. Method according to claim 11 or 12, wherein detecting comprises identifying different states of said remote management protocol session, and generating different emitting patterns by said one or said plurality of lighting devices corresponding to said different states of said remote management protocol session.

15

14. Method according to any of the claims 11 to 13, further comprising communicating information describing the capabilities of said indicator to a remote management server by said controller, and receiving signalling instructions from said remote management server by said controller, said signalling instructions defining how the step of indicating whether said networking device is taking part in a remote management protocol session is to be indicated by said indicator.

20

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15. A computer program comprising a code adapted for performing a method according to any of the claims 11 to 14, when performed on a networking device adapted for use as a local network gateway.

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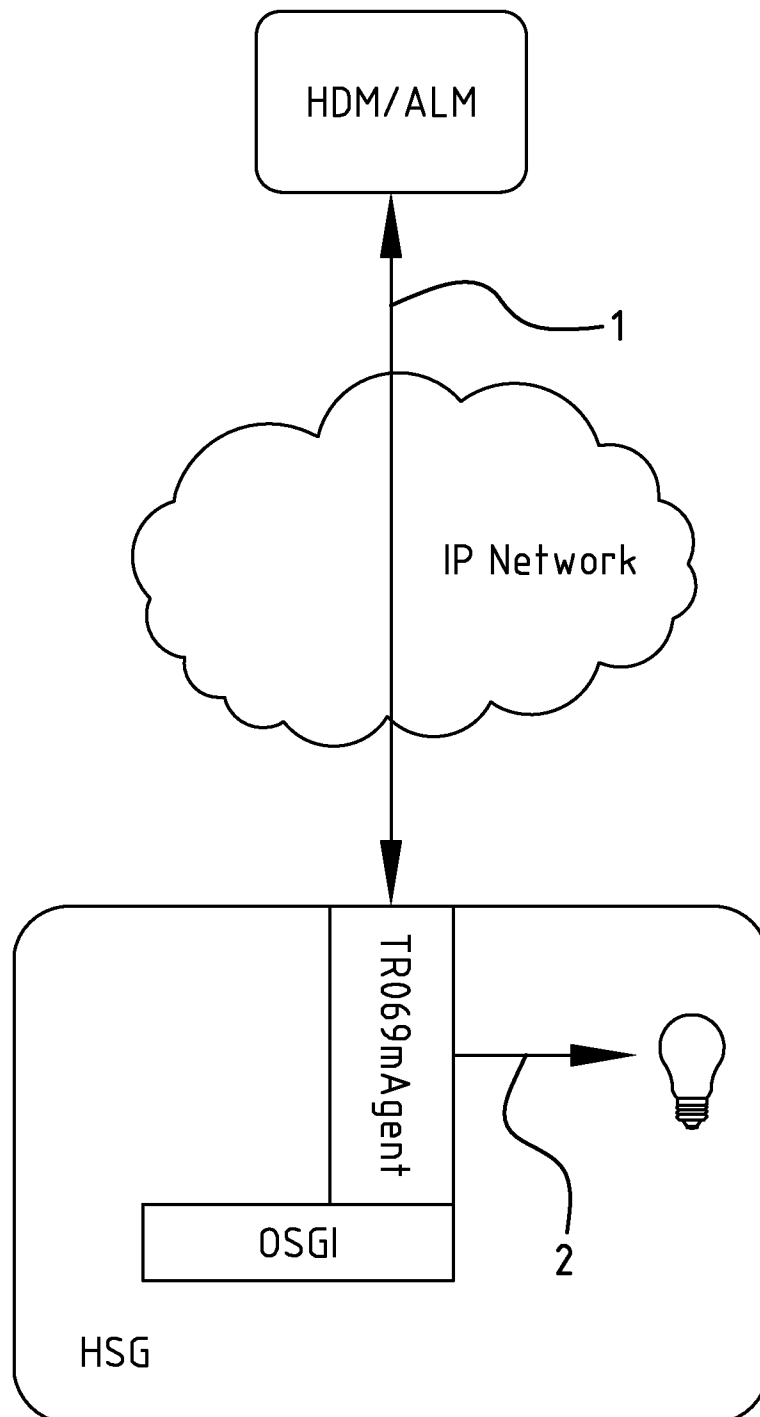


FIG. 1

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/051949

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/114496 A1 (FANG ZHENG [US] ET AL) 26 May 2005 (2005-05-26) paragraph [0005] - paragraph [0007] paragraph [0017] paragraph [0020] - paragraph [0032] paragraph [0035] figures 1,3	1-15
X	WO 2007/089895 A1 (VONAGE HOLDINGS CORP [US]; SMIRES DANIEL THOMAS [US]; RAO JAYAKUMAR [U] 9 August 2007 (2007-08-09) paragraph [0006] - paragraph [0021] paragraph [0027] ----- -/-	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Cankaya, Sukru

INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008/256471 A1 (OKAMOTO KAZUHIRO [JP]) 16 October 2008 (2008-10-16) paragraph [0017] - paragraph [0018] paragraph [0039] paragraph [0042] paragraph [0050] paragraph [0058] paragraph [0061] paragraph [0070] -----	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2012/051949

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