UNITED STATES PATENT APPLICATION

For

INFORMATIVE CM DISPLAY

INVENTOR:

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Description

Expand and perhaps standardize the display (like a cheap calculator crystal display) on a CM to indicate a message from the service provider. Messages could include known outages, planned maintenance, details of cause of issues, expected repair time, suggestions to check in home wiring, when and who to call, billing reminders and details, even special offers if opted into. The messages could be indicated by a simple upstream tone during an outage or planned maintenance, through internal troubleshooting capabilities added to the CM (Murphy), messages from the CMTS via MIBS or other signaling mechanisms, or a combination.

Most CMs now serve up a web page from an IP address, say 192.168.199.2, which tells the tech or subscriber things like channels used, signal levels in and out. If the small cost of a display is a concern for operators, maybe a special lit LED that indicates to fetch a message, which could be on the web page or maybe even verbal, like a phone message?

Taking this further, integrate with or replace the home Alexa device to serve this purpose too. The idea then becomes a new software function of the already existing home device. It could even be a smart TV message.

In a very direct way, it can exist as a cell phone application that communicates and interprets messages from the home CM or gateway into a human readable form. This can help with troubleshooting or self-installation. The user can be the customer, or a technician assisting from nearby, as the connection can be via wi-fi or Bluetooth. Unlike the application that Comcast uses for their customers to gain status of their CM, this would work locally, not over the HFC network. It could be extended to use the cell phone network but that would be the idea already filed called CM Phone Home. In a sense, this utilizes the cellphone as the CM display.

Extending this further: The application could be developed to use existing LEDs or an LCD display (like on an inexpensive calculator) to use the camera of the cell phone, detect the LED patterns and colors and use ML to find the pattern to provide an interpretation of what the LEDs mean! Or in the case of the LCD, it should be a code or directly human readable with a word message. This could also be done with audio using the microphone on the cell application or even POTS phone to capture the tones from a speaker on the gateway. Alternately this can just use the cell phone to SMS the information (data or audio file or video) to an application to do the assessment

Method Flow:

V1: Planned outage - the service provider plans maintenance for midnight to 3am. The operator send a broadcast message to the relevant customers by typing the message into the NMS application that allows identification of affected customers and the message to send. The application looks up the MAC addresses associated with the account, and features. Seeing some of these MAC addresses have the rich display, it sends the appropriate message to the IP addresses associated with those MAC addresses by finding them on the CMTSs they associate with. The message is send to those IP addresses with meta data and instructions. The CMs identify the message and instructions to display it. Those with the ability to display in human readable form start displaying the appropriate message. Those without that ability display the code indicated by the metadata. Once the planned outage is over or updated, the same process is used to send a message with an updated display message which may be blank or to remove a previous message. Multiple messages may be displayed in any determined order, sequentially. Note that billing and other messages may be done the same way. Note that displaying a message can also mean Alexa or like device can speak the message when requested, or indicate a new message to hear. Also, a cell phone application can display the message, or an application can read a code or tones from the CM.

In a similar version, the CM message can be triggered by a tone send in the US, say a single carrier QAM, or even a pilot tone, or pilot pattern, which would be interpreted by the CM to display the appropriate message. While not likely to be done, the CM could even display messages like "a sweep for noise is being conducted in the network. this should not impact service." But more likely to be done, the CM could indicate messages like "your modem is seeing noise which may impact service. Please check the connection between your modem and the wall plate to make sure it is properly tightened, then indicate when this is done by...." or a like message. Also, whenever a technician is connecting test equipment that may impact service, this method could be used to send the signal in the DS to the CMs impacted to note that "a technician is making repairs. Your service will return momentarily." or like message.

New mechanism for sharing the information from gateway to cell phone app allows a networked cellphone other device to receive one way communication from the CM and use that to instruct the user as needed, either by translating the messages from the gateway or using the information from the gateway to look up in a database on a network cloud to translate the information into instructions and human readable information.

https://electronics.howstuffworks.com/bluetooth.htm

"Bluetooth LE works differently. Devices may also be paired to form a trusted relationship between them but not all types of product require this. A Bluetooth LE device which wants to be discovered broadcasts special messages (known as packets) in a process called advertising. Advertising packets contain useful information about the advertising device. Another suitable device will find the advertising device by scanning (listening) for advertising packets and selecting those which are from appropriate devices. Usually scanning only happens when the user triggers it by say, pressing a button in a smartphone application. Typically the user is then presented with details of appropriate devices that were discovered and then selects one to connect to."

In our case the triggering can be automated or triggered from a button push.

Background

Today, if there is an outage, the customer doesn't know the cause and doesn't know whether to contact the provider or not, or someone else. They also don't know how long the outage is expected to last, or whether it will be low or high impact. Without service, customers rely on their cellphones mostly and it requires action by the customer. This offering would be much lower effort for the customer.

Also, in a self- or assisted-installation process which fails, the customer can know why, and be directed to troubleshoot or be connected for help.

Abstract

A small, inexpensive message display added to a CM to enable providers to inform customers about service issues, repair, planned maintenance, special offers, and even basic troubleshooting information. alternatively, a mechanism can be built to utilize a computer or cellphone to serve as the display of information via an application over wi-fi connection or Bluetooth connection to the CM-gateway.