Data Plan Throttling

6310-DX

Data Plan Throttling

Design

This creates a rudimentary, but stable, data plan throttle that will disable any/all LAN traffic on a device if it detects that it has gone over its monthly data usage limit. This is achieved by leveraging the data usage API available on aView. The main benefit is the API tracks data usage across reboots, so we can accurately measure the data usage over time.

This feature is implemented using a custom script. See example setup below. Note that the user must specify their API token in the custom script. They can also adjust the data limit (default is 100MB) and the rollover day for the data plan (default is the first day of the month).

If the data plan limit is reached for the month, this script will disable the LAN interface by default (you can change script to disable passthrough mode instead). Similarly, when the device is within/under its data plan limit for the month, this script will ensure the LAN (or passthrough, if specified) interface is disabled.

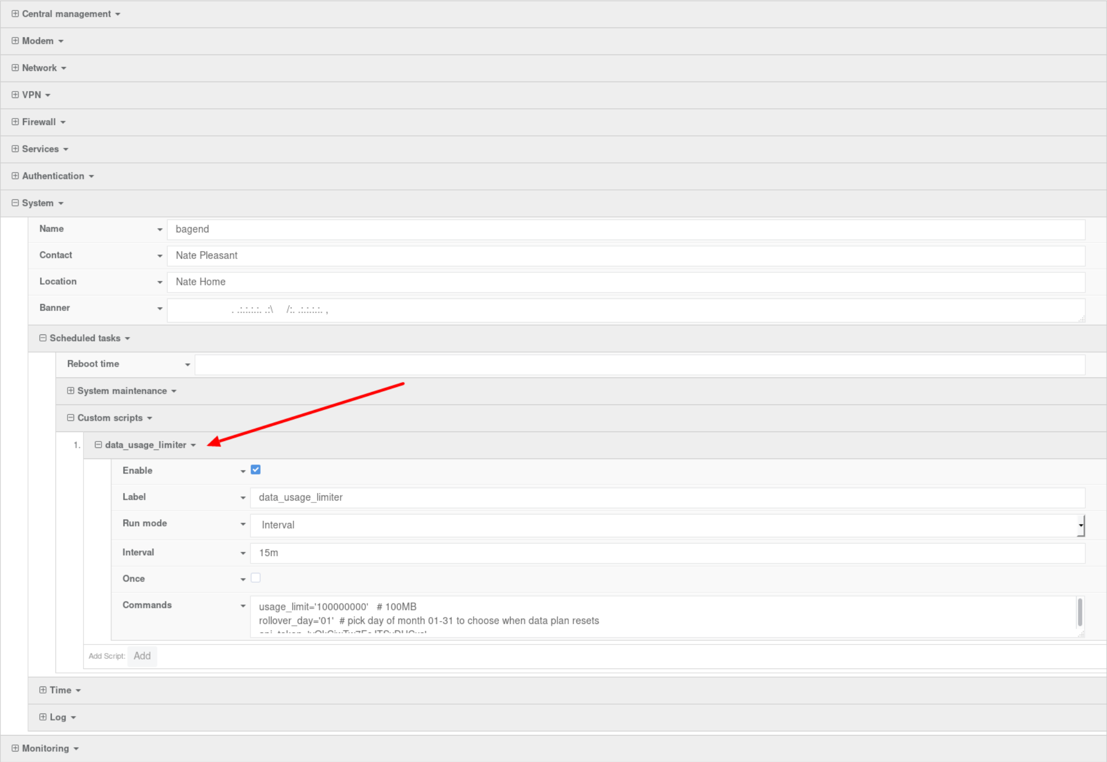
Config Setup

Create a new custom script under ***System -> Scheduled tasks -> custom scripts***, and enter in the following. The top three lines should be adjusted to put in the users API token from aView, the desired data plan limit in bytes, and the rollover day of the month.

Keep in mind that each user in aView only gets 100 API requests every 15 minutes, so don't adjust this interval down so low to the point that the user runs out of API queries (e.g. running this script on 100 devices every 5 minutes equals 300 requests per 15-min, which is more than the API limit).

```
usage_limit='100000000'   # 100MB
rollover_day='01'  # pick day of month 01-31 to choose when data plan resets
api_token='xxxxxxxxxx'
mac=$(runt get system.mac)
intf=$(runt dump network.modem | grep intf | tail -n 1 | cut -f2 -d'=')
network_to_enable_disable='network.interface.lan'  # set to modem.passthrough if device in passthrough mode
network_enabled="$(config get $network_to_enable_disable.enable)"

bugout() {
  accns_log w config "$@"
  exit
}

var_is_number(){
  [ "$1" ]  || return 1
  case $1 in
    ''|*[!0-9]*) return 1 ;;
    *) return 0 ;;
  esac
}

# Main
end_date=$(date "+%Y-%m-%d")
cur_year=$(date "+%Y")
cur_month=$(date "+%m")
if [ "$rollover_day" -lt "$(date +%d)" ]; then
  start_date="$cur_year-$cur_month-$rollover_day"
else
  case "$cur_month" in
    01)
      last_year=$((cur_year - 1))
      start_date="$last_year-12-$rollover_day"
      ;;
    02|03|04|05|06|07|08|09|10)
      last_month=$((cur_month - 1))
      start_date="$cur_year-0$last_month-$rollover_day"
      ;;
    *)
      last_month=$((cur_month - 1))
      start_date="$cur_year-$last_month-$rollover_day"
      ;;
  esac
fi

url="https://aview.accns.com/api/v4/devices/usage.json?auth_token=${api_token}&
device_id=${mac}&start_date=${start_date}&end_date=${end_date}&interface=${intf}"

request_result=$(curl -kL -w %{http_code} -sfo /tmp/results.txt $url)

[ "$request_result" -eq '200' ] || bugout "error obtaining cellular usage from aView
API ($request_result)"

upload_usage=$(grep -o "upload\":[0-9]\{1,12\}"  /tmp/results.txt | cut -f2 -d':' | awk
'{s+=$1} END {print s}')
download_usage=$(grep -o "download\":[0-9]\{1,12\}" /tmp/results.txt | cut -f2 -d':' |
awk '{s+=$1} END {print s}')

usage=$((upload_usage + download_usage))
var_is_number "$usage" || bugout "Usage not available from aView API ($upload_usage,
$download_usage)"

if [ "$usage" -ge "$usage_limit" ]; then
  accns_log w config "Data usage limit exceeded ($usage out of $usage_limit bytes).
 Disabling LAN traffic until monthly rollover date."
  [ "$network_enabled" = '0' ] || config set $network_to_enable_disable.enable false
```

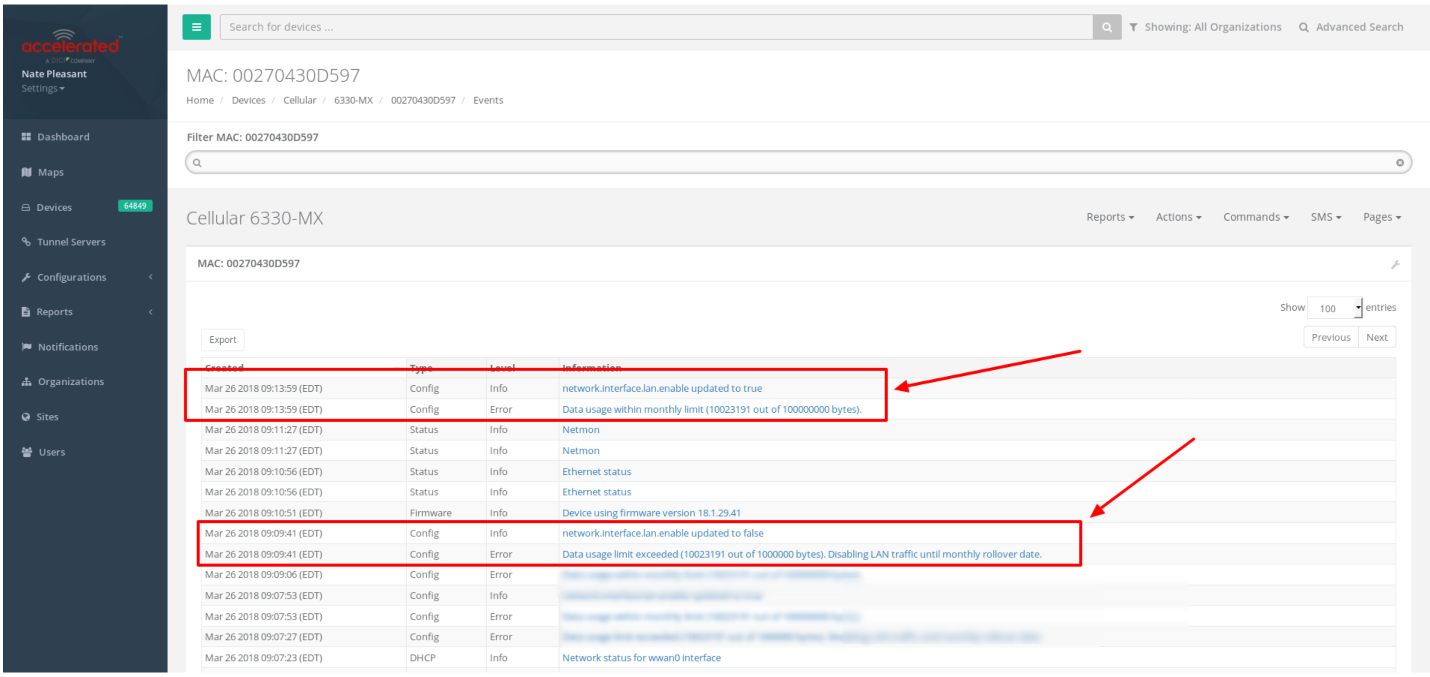
```
else
  accns_log w config "Data usage within monthly limit ($usage out of $usage_limit
bytes)."
  [ "$network_enabled" = '0' ] && config set $network_to_enable_disable.enable true
fi
```



Name	bagend
Contact	Nate Pleasant
Location	Nate Home
Banner	. .:.:.:.:. .:\ /:. .:.:.:.:. ,

Enable	☑
Label	data_usage_limiter
Run mode	Interval
Interval	15m
Once	□
Commands	usage_limit='100000000' # 100MB rollover_day='01' # pick day of month 01-31 to choose when data plan resets

Example alert notifying data plan throttle enable and disable



MAC: 00270430D597

Home / Devices / Cellular / 6330-MX / 00270430D597 / Events

Filter MAC: 00270430D597

Cellular 6330-MX

MAC: 00270430D597

Created	Type	Level	Information
Mar 26 2018 09:13:59 (EDT)	Config	Info	network.interface.lan.enable updated to true
Mar 26 2018 09:13:59 (EDT)	Config	Error	Data usage within monthly limit (10023191 out of 100000000 bytes).
Mar 26 2018 09:11:27 (EDT)	Status	Info	Netmon
Mar 26 2018 09:11:27 (EDT)	Status	Info	Netmon
Mar 26 2018 09:10:56 (EDT)	Status	Info	Ethernet status
Mar 26 2018 09:10:56 (EDT)	Status	Info	Ethernet status
Mar 26 2018 09:10:51 (EDT)	Firmware	Info	Device using firmware version 18.1.29.41
Mar 26 2018 09:09:41 (EDT)	Config	Info	network.interface.lan.enable updated to false
Mar 26 2018 09:09:41 (EDT)	Config	Error	Data usage limit exceeded (10023191 out of 1000000 bytes). Disabling LAN traffic until monthly rollover date.
Mar 26 2018 09:09:06 (EDT)	Config	Error	[redacted]
Mar 26 2018 09:07:53 (EDT)	Config	Info	[redacted]
Mar 26 2018 09:07:53 (EDT)	Config	Error	[redacted]
Mar 26 2018 09:07:27 (EDT)	Config	Error	[redacted]
Mar 26 2018 09:07:23 (EDT)	DHCP	Info	Network status for wwan0 interface