# Building Software Licensing Support for Virtual Network Functions (VNF)

## Our Client

A global telecommunications network equipment manufacturer.

## Why they needed us

The telecommunication services industry had started to move towards adopting Network Function Virtualization (NFV) and were offering network functions on a SaaS model. This meant that there was a need for the networking device to offer a software licensing system which would ensure software protection, monetization and compliance for the network functions which were being run as software on virtual platforms offered by multiple vendors.

## What we did

We built a Software Licence Management Program in C++ using FlexNet API. The FlexNet API provides a way to communicate with the FNE server. The FNE server holds the Device Licence ID, list of features enabled, start date and end date for each feature etc. We built a State Machine into the licence management program. The State Machine holds what the current state of the licence is. There are 3 states which it can be in, Trial State, Valid Licence State and Expired State. Based on the information received from the server the program decides what the state of the licence should be and advances the State Machine to that state.
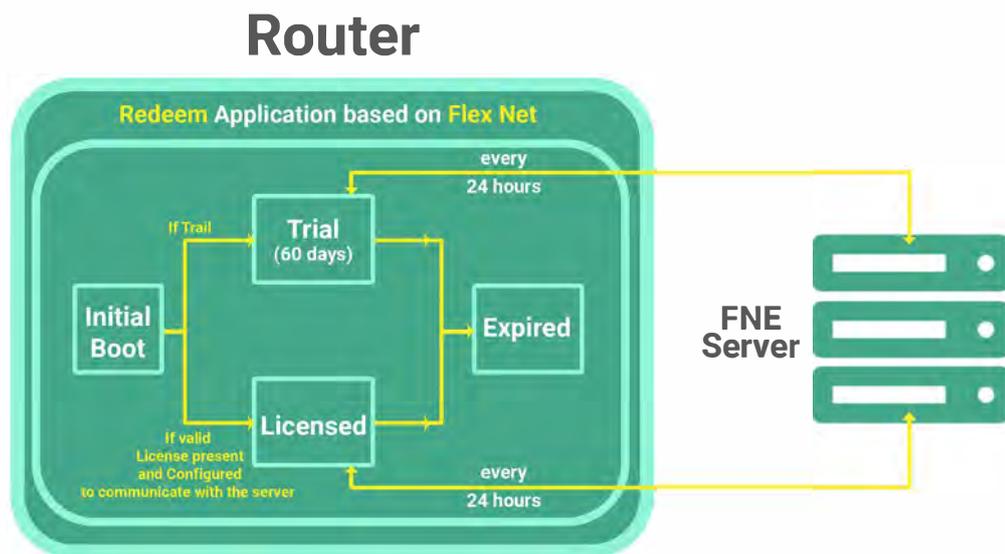


### Types of Licences
The licences are categorised based on the number of cores/processors in the device. There are 6 core options (4 cores, 8 cores, 16 cores, 32 cores, 36 cores and unlimited number of cores)

### Initial Setup
When the device is booted for the first time, there is an option to configure the device to communicate with the FNE server. Configuring is not compulsory during the trial period, but configuring gives the advantage of getting feature updates during the trial period.

### Trial Period
The trial period is for 60 days. During the trial period, our program checks every 10 minutes with the help of a local counter, if the trial period has expired. If the device had been configured to communicate with the FNE server, then it checks with the server once every 24 hours for updates. If the trial period is about to expire the program sends reminders 1 month, 1 week and 1 hour before the expiry, to buy a new licence.

## Licence Period

During the licence period, our program checks for feature updates and the expiry of licence by communicating with the server once every 24 hours. If the licence is about to expire then the program sends reminders 1 month,1 week and 1 hour before the expiry, to either renew the existing licence or to buy a different licence.

## Expired State

When the licence or the trial period has expired the bandwidth would be throttled down to 100 Mbps.

# How they benefited

Their Sales increased as not many OEMs were offering support for licensing Virtual Network Functions (VNF).

### About Redeem Systems

*Redeem Systems is a pure-play Engineering and Digital Services Company with focus on mission critical highly engineered + high availability systems. Our global presence spans Asia-Pacific, Middle-east, Europe and North-America.*

*Our focus verticals include – Tele-communications, Medical Electronics and Aerospace & Strategic Electronics.*

*Our Product Engineering competencies include Product Design and Development, Verification & Validation, Emerging Markets Strategy and Product Life-Cycle Extension through Value Analysis and Value Engineering*

*Our Digital competencies are focused on Industrial Internet-of-Things (IIoT), Engineering Big Data Analytics and Software Defined Networking (SDN)/ Network Functions Virtualization (NFV).*