

White paper MVNE

Covering best practices of a MVNO strategy and pros and cons of the different commercial and technical MVNO models



Version 1.0: 15-2-2016
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Management summary

Two decades of MNO experience with serving MVNOs have led to best practices for this business model with MVNEs. Some of these models are discussed here and a best practice model is presented in more detail.

Introduction

MNOs have been adopting and evolving their MVNO strategies. Complex structures and dynamics in this part of the MNO market are driving new insights and require a flexible approach. Possible cannibalisation versus brand name pollution mixed with a “prisoners dilemma” like decision of defensive tactics fuelled by regulation make a fascinating playing field. The MVNO market will continue to grow driven by market maturity and saturation¹. This trend is amplified by regulators looking for ways to stimulate telecoms competition.

Looking at the success of the different strategies, best practices have emerged both for the partnership models as well as the technical models between MNO, MVNE and MVNO.

Best practice Partnership models

MNOs in different countries have tried different partnership models to address the complex market dynamics around MVNOs. In most markets, specialist MVNEs service the majority of MVNOs. The different partnership models can be explained as follows:

1	2	3
MVNOs buy both airtime and MVNE services from MNO	MVNOs buy airtime from MNO and contracts MVNE directly	MVNOs buy airtime and services directly from MVNE (aka MVNA)
<p>Comments:</p> <p>The MNO tends to dictate too much of the MVNE set up, trying to “paint it</p>	<p>Comments:</p> <p>The right mix of contractual control and flexibility for MVNO and</p>	<p>Comments:</p> <p>The MNO has too little control and tend to suffocate the MVNOs with</p>

¹ Latest report published by Grand View Research in March 2015 suggests, Global Mobile Virtual Network Operator (MVNO) Market Size was \$35.92 Billion in 2013 and is expected to reach \$73.20 Billion by 2020, the market is Growing at CAGR of 9.4% from 2014 to 2020, increasing adoption in applications across Asia Pacific and Latin America will support market

blue". This reduces agility and flexibility.	MVNE to innovate	high airtime costs
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Best practice 1: A direct airtime agreement between MNO and MVNO works best.

This model gives the MNO full contractual control over the what the MVNO can and can not do. This normally also reduces the number of MVNOs that lack the (financial) strength to become successful.

Best practice Technical models

Just like our insights with regards to commercial MVNO models have developed, so has our view of the best practices for the technical set up. The choice for a particular set up should be made with a clear view of what kind of flexibility MVNE/Os need to be successful in the long run.

Best Practice 2: Work with a dedicated MVNE

Most MNOs seem to go through a number of stages in adopting a MVNO strategy. Typically start by implementing first MVNOs on existing MNO infrastructure. Quickly discovering that it is slow, expensive and not fit for fast moving MVNOs trying to re engineer an existing OSS/BSS environment into a multi-tenant MVNO platform. Whereas some MNOs now elect to create their own MVNE team and platforms, it is faster and more economical to work with a dedicated MVNE.

Best Practice 3: Do not (ab)use the technical set up to manage the MVNE capabilities.

Use the contract in stead. Business dynamics for MNOs developing their MVNO portfolio are complex and both strategic insights and local market conditions will keep on evolving. We have come across some set ups where the technical set up with the MVNE/O was used to restrict the capabilities. This bad practice as these concerns can always be managed through the MNO – MVNO contract. Contracts can much more easily be adapted as conditions evolve.

Best Practice 4: Real time rating and charging is essential.

We consider the capability to manage voice, text and data sessions in real time using an OCS/PCRF to be the cornerstone of every proposition. It is the heart of the MVNE/O.

Best Practice 4: Create a MVNE set up that can implement MVNOs without MNO touch points.

High pressure MVNO launch projects never fit the MNO Network and IT roadmaps.

Pro's & con's of the different models

There are many design options to be made to set up the MVNE capability on the MNO network. Broadly, the different models fall into one of the following categories.

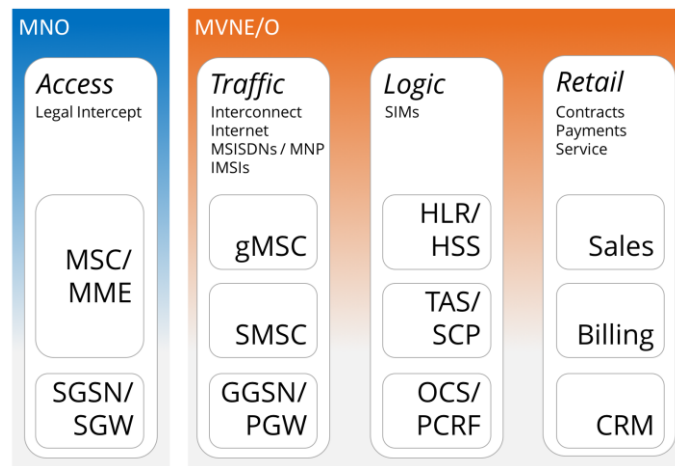
1. National roaming MVNE
2. Session control and charging MVNE



3. BSS only MVNE

Model 1: “National roaming” MVNE

This is a clean, standards based set up and creates the utmost flexibility for the MVNE to not only build branding based MVNO propositions. The MVNE can also develop much more complex network based services, unique corporate solutions, content based propositions and more without the need to involve the host MNO in those implementations. Another benefit is also that the wholesale billing can use the existing clearing house processes.

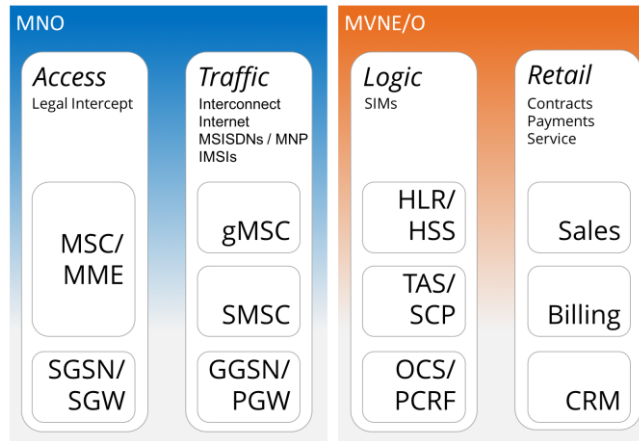


The main issues with this model is the huge effort required to set everything up. New interconnects, SMS interworkings, number portability, premium rates services and legal intercept all need to be negotiated, build and tested with a number of different 3rd parties next to all contract and integration work between MNO and MVNE. And then the real work starts to build and launch the MVNOs.

Most of these concerns are addressed in the “session control and charging” model.

Model 2: “Session control and charging” MVNE

This model uses MNO infrastructure and agreements where possible while letting the MVNE flexibly create service and proposition innovations. It leverages as much as possible those agreements and infrastructure which are needed to handle traffic and focusses the effort on those parts that are needed to build the unique service logic and propositions to launch successful MVNOs.

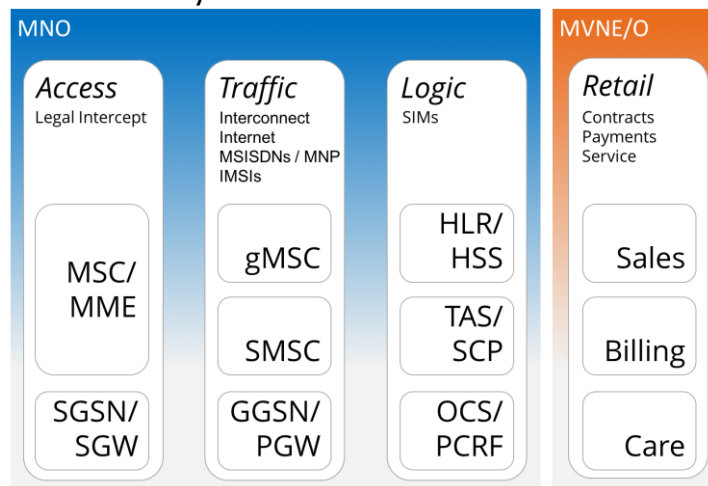


Compared to the “national roaming” model this set up sacrifices some of the degrees of freedom for the MVNE. As an example for “ethnic MVNOs” it lacks the flexibility to build new international interconnects typically required to reduce costs. Similar restrictions exist for data services.

This model also requires a closer cooperation between the MVNE and the MNO. A very simple example that a new APN for an MVNO will need to be implemented by the MNO. But all these concerns can be addressed on a case by case basis when the specific MVNO opportunity is big enough for the MNO.

Model 3: “BSS only” MVNE

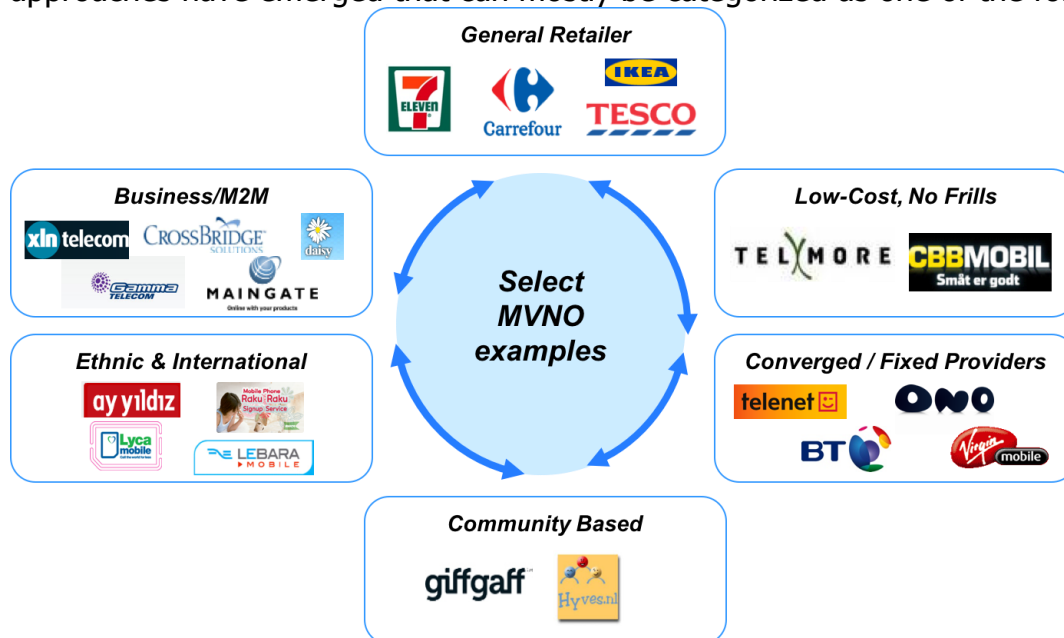
This model reduces the role of the MVNE to IT integrator. There is very little added value by the MVNE and the MNO could just as well expose the functionality directly to the MVNO customers directly.



This model is best suited for branded re-sale. It does not leave much room for service innovation. The initial set up requires the MNO to expose a library with APIs to the MVNE for all required provisioning and CRM functionality. The MVNE then needs to expose this to the MVNOs. All this APIs are not based on any standards and require significant IT integration effort. Every MVNO implementation also still requires a big effort from both the MNO and the MVNE. It is the least efficient option. This model is considered obsolete by now.

MVNO examples

In countries where MVNOs have had a chance to develop a variety of different approaches have emerged that can mostly be categorized as one of the following.



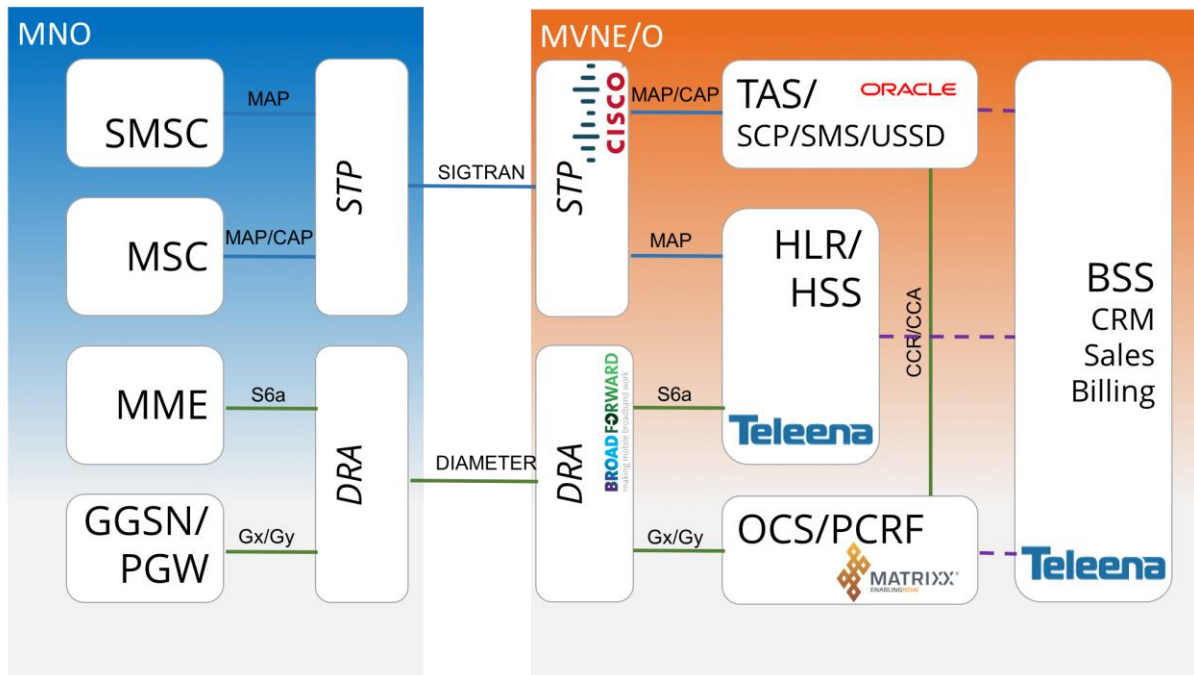
Apart from maybe the “General Retailer” type of MVNO each of the other categories require a flexible setup and are best served by either of the two technical models discussed above. Therefore, as a minimum functionality, the MVNE must be able to support the “session control and charging” functionality.

Template technical implementation of a “session control and charging MVNE”

This section gives a more technical view of how a “session control and charging” MVNE can be implemented on the MNO network. All traffic is handled by the host MNO, the MVNE implements all service and charging logic. The entire integration is based on standard 3GPP interfaces typically used to implement 2G/3G and 4G roaming partners. The set up assumes both a 2G/3G integration for voice and text (using MAP/CAP signalling) as well as Diameter based integration for 4G data access. Also assuming that IMSIs and MSISDNs are provided by the MNO. As an outline, the following interfaces need to be implemented:

- MAP/CAP signaling (SS7) / Diameter S6a
 - All signaling for IMSI/MSISDN routed to MVNE
 - HLR/HSS, TAS and OCS/PCRF control logic and charging
 - TAS/SMS-router implements SMS logic,
- Voice control (CAMEL O-CSI/T-CSI)

- Voice MO: Call control by MVNE TAS (O-CSI)
- Voice MT: MSISDNs at MNO switch (T-CSI)
- Voice termination via MNO interconnects
- MNP by MNO
- Data traffic at MNO
 - Charging & policy by MVNE (OCS/PCRF via Gy/Gx to MNO PGW/GGSN)
 - IP upstream by MNO



MVNE platform components

The Teleena MVNE platform uses the following main components:

	<i>Main functions</i>
Oracle OCNCC	SCP/IN Proposition service logic USSD gateway SMS-Router Real time charging interface to OCS
MATRIXIX OCS/PCRF	Product catalogue Propositions Subscriber proposition management CDRs
Teleena HLR/HSS	Teleena HLR/HSS on OpenCloud JAIN SLEE TAS 3GPP R8 compliant HLR/HSS
Teleena BSS	Sales, CRM, Billing, 3 rd party integrations

Teleena management voucher	Voucher creation and redemption
Teleena gateway provisioning	Provisioning/orchestration of all required network elements
STP/ITP	Relay of all MAP/CAP signalling between core network and Teleena MVNE platform
DEA/DRA	Relay of all Diameter signalling (charging and policies) between PGW/GGSN and PCEF and Teleena MATRIX OCS/PCRF

MVNE platform implementation

The Teleena platform fully runs on virtual machines and can be easily deployed in country. Regulatory requirements in most countries demand most/all systems containing user data to be physically implemented in the country of service. Teleena will build a full service stack hosted in a (redundant) data centre set up in Australia.

Conclusions

A “session control and charging” model for MVNEs to serve MVNOs has emerged as the best practice in the industry. It strikes the right balance between an optimal use of resource of the host network whilst creating a flexible platform for the MVNE. After the initial implementation, the MVNE can deliver MVNO solution without the technical

About Teleena

Teleena is a leading Full MVNE with global GSM/UMTS coverage headquartered in The Netherlands. We own and operate our own core mobile & IT network. Our customers include tier-1 MNOs, CableCos, Telcos, Banks, Supermarkets, OEMs
www.teleena.com

Glossary

Note: For better clarity it is recommended that the terms mentioned in the Glossary are read and understood as the document will make frequent references to these terms.

Term	Definition of Term
MSC / MME	Main Switching Centre / Mobility Management Entity
SGSN / SGW	Serving GPRS Support Node / Service Gateway
gMSC	Gateway MSC
SMSC	Short Message Service Centre

OCS / PCRF	Online Charging System / Policy Control Resource Function
TAS / SCP	Telecom Application Server / Service Control Point
HLR / HSS	Home Location Register / Home Subscriber Server
GGSN / PGW	Gateway GPRS Support Node / Packet Gateway
MNO	Mobile Network Operator
MVNO	Mobile Virtual Network Operator
MVNE	Mobile Virtual Network Enabler
MVNA	Mobile Virtual Network Aggregator