



GUIDE TO ROAMING IN EV CHARGING



INTRODUCTION

We're all familiar with roaming when it comes to our mobile phones. You'll notice it when travelling to another country; your phone automatically connects to a local mobile phone network without purchasing another network contract. Convenient, right? Roaming in electric vehicle (EV) charging works similarly.





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WHAT DOES ROAMING IN EV CHARGING MEAN?

Same as when mobile customers have a single mobile contract, EV drivers can have a single EV charging account that gives them access to charging stations world-wide. In the background, this happens because a network of service providers band together to provide their customers with an optimal user experience.

EV ROAMING LAYERS

Roaming networks comprise multiple layers:

1. The first layer is your own charging network.
2. Outside your network, there is typically a more extensive local or public EV charging network, like the Virta network.
3. The third layer consists of hub and peer-to-peer contracts made to other charging networks.





EV ROAMING OPPORTUNITIES

In addition to providing ease and convenience to the end-user, there are also benefits to the EV charging service providers. Similarly to telecom roaming, EV roaming creates opportunities for:

- Revenue growth & new revenue streams
- Expanded network visibility and access
- Attracting new customers
- Increased utilisation of your existing charging points
- Strengthening the loyalty of your existing customers
- Opening up the world to your customers

WHY IS EV ROAMING A VITAL PART OF EV DRIVING?

With the EU's decision to ban the sales of fossil fuel-powered vehicles from 2035, the number of electric cars on our roads is set to explode. Already by 2030, [low estimates mention 33 million EVs, while high estimates talk about 40 million EVs](#) roaming around Europe at the same time. Thanks to EV roaming, EV charging providers will be able to handle the EV boom and deliver seamless and hassle-free charging experiences to EV drivers everywhere.



The goal is that most charging stations are accessible with only one customer account – just like most payment cards are accepted in most grocery stores.





2 HOW DOES EV ROAMING WORK?

Charging at charging stations of various charging networks doesn't have to be a matter of subscribing to various network operators anymore. With EV roaming, charging is possible anywhere with only one network contract.

For EV roaming to be successful, a standard communication protocol needs to be implemented, so CPOs, EMPs and a third-party platform can easily communicate with each other.

Even though EV roaming is gaining popularity and becoming a must in EV charging, the sector is yet to set one communication protocol and EV roaming standard.

OCPP (OPEN CHARGE POINT PROTOCOL)

The [OCPP](#) is the industry's communication standard between EV chargers and back-

end EV charging management systems. This protocol serves as a common language and enables an exchange of charging data.

Virta's back-end system follows the OCPP protocol and can communicate with all charging devices following the OCPP protocol. We currently follow OCPP 1.5, 1.6 and 2.0 versions and keep updating as new versions come out.

The Open Charge Alliance created this protocol in 2009.

OCPI (OPEN CHARGE POINT INTERFACE)

The [OCPI protocol](#) enables a connection between CPOs, who operate EV chargers and EMSPs, who manage a network of EV drivers.

This open protocol for peer-to-peer roa-





ming enables automated roaming for EV drivers across multiple charging networks.

OCPI, developed in 2014, is being constantly maintained and updated by the EVRoaming Foundation to address changing needs.

EV ROAMING PLATFORMS

With the massive predicted increase in electric vehicle sales, an EV roaming platform that facilitates and secures data exchanges, is more than needed.

Virta is a member of the two leading EV roaming platforms, also known as hubs, [Hubject](#) and [Gireve](#). This enables Virta customer's end-users to charge at more than 580 000 charging points in Europe, Asia and the US.

EV ROAMING TRENDS & THE FUTURE

With new EV charging trends, for example, fast charging or the importance of creating a seamless user experience, EV roaming will continue to gain prominence.

Therefore, it's crucial to work on harmoni-

sing the roaming protocols, cross-border payments and VAT regulations. The European Commission has been focusing on this since 2020.

It's also important for the market to agree on a fair and reasonable roaming pricing. Currently, there is unfortunately no legisla-

tion regarding roaming pricing.

When it comes to EV roaming trends, one identified trend are peer-to-peer agreements and their increasing popularity. Those agreements are usually between two major players looking to consolidate their position in the market.





3 THE ADVANTAGES FOR EV CHARGING BUSINESS OWNERS (CPOs AND EMSPs)

CHARGE POINT OPERATORS (CPO)

- **Increase utilisation of your existing charging points** – By expanding to roaming customers, you'll increase your revenue and build a business case for the future.
- **Attract new customers** – When roaming is enabled, your stations can be found and accessed by customers of other charging networks.
- **Open up a new revenue stream** – Expand your reach and attract new customers with Virta's end-to-end EV roaming solution.

E-MOBILITY SERVICE PROVIDERS (EMSP)

- **Strengthen the loyalty of your existing customers** – Your customers won't have to swap operators when they travel out of their own charging network.
- **Open up the world to your customers** – Allow your EV driving customers to charge anywhere effortlessly.
- **Open up a new revenue stream** – Expand your reach in a fast and scalable way with Virta's end-to-end EV roaming solution.

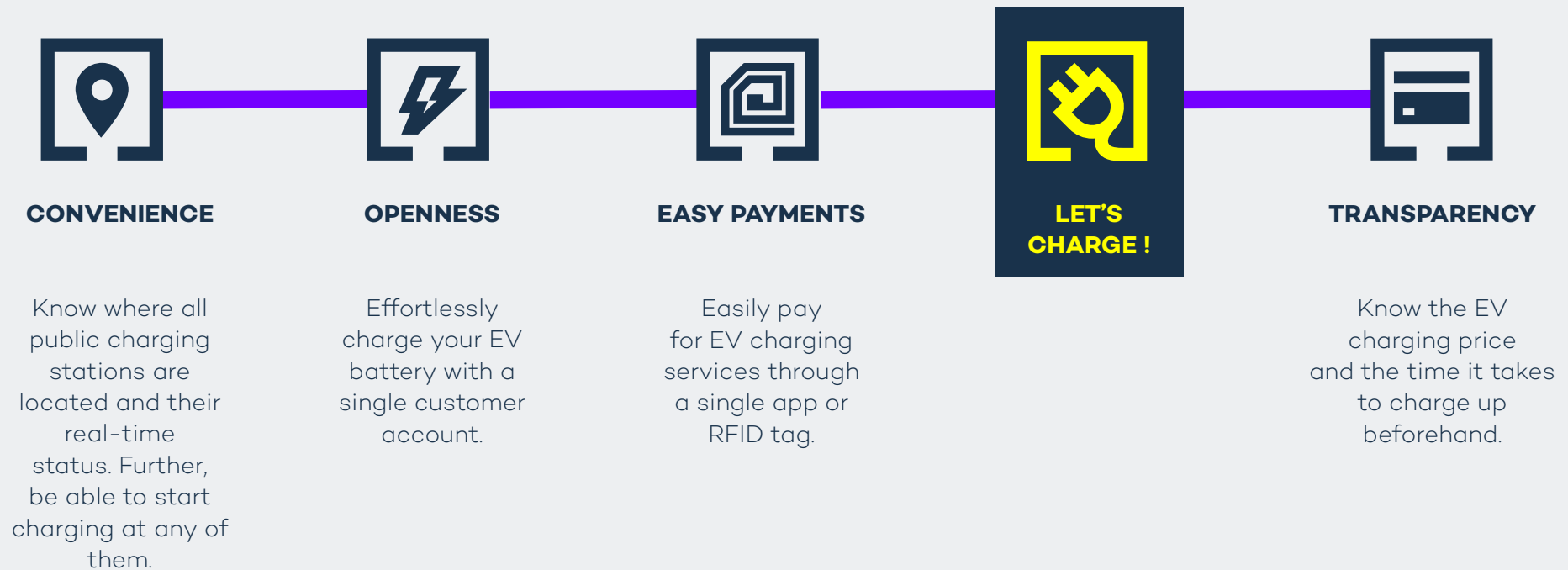




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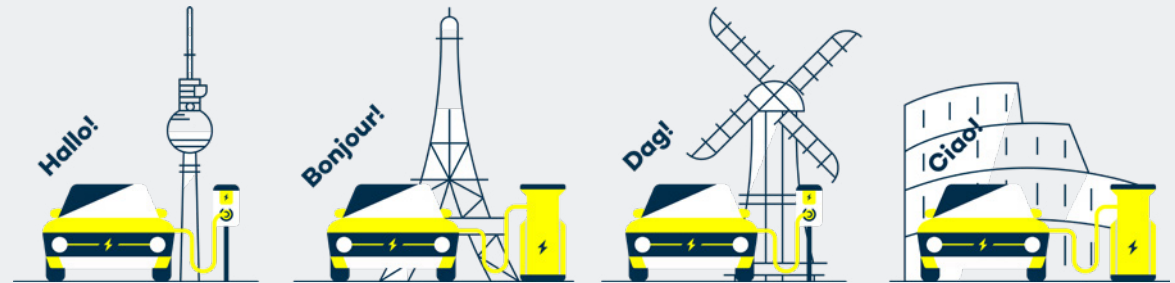
THE ADVANTAGES FOR EV DRIVERS

EV roaming puts the EV driver at the centre. It provides them with convenience, openness, ease, and pricing transparency.





5 EV ROAMING WITH VIRT



EV ROAMING IS EASY WITH VIRT

Would you like to start your own roaming operations, but are unsure how?

At Virta, we offer an end-to-end roaming solution to help CPOs and EMSPs get started and grow their EV charging business.

Instead of negotiating your own roaming agreements, you can sign an agreement directly with Virta, and we will take care of the rest:

- Roaming network development
- Roaming contract management
- Transaction processing
- Settlements
- Risk management
- VAT handling
- Reporting

LAYERS OF EV ROAMING

As mentioned earlier, there are different

layers of roaming. When you run an EV charging business with Virta, your EV drivers will gain access to all charging stations powered by Virta. And vice versa, your charging network will become visible and accessible to our extensive network of Virta customers.

To further broaden EV charging access, you also have the option to expand to Virta's roaming networks. Roaming networks consist of hub and peer-to-peer contracts made to other charging networks.

TYPES OF EV ROAMING EXPLAINED

Virta Charging Network

Within the Virta Charging Network, EMSPs and CPOs work within one platform service provider. All payments are settled under the same system.

For example, a Finnish EMP customer would be able to drive to Sweden and charge at

a Virta Charging Network's Swedish CPO's charging point and vice versa.

Within the Virta Charging Network, all charging points are public by default unless the CPO has defined otherwise. Customers can automatically access all the public charging points connected to the Virta Charging Network.

Roaming through hubs

The CPO and EMSP are connected to a central hub in this type of roaming. All the related data go through a hub which forwards them to the necessary parties.

Access to the external networks is managed through offers and subscriptions. A CPO sets up the offers for charging network access, and an EMSP can subscribe to these offers. These offers can be public ("offer to all") or bilateral.

In this type of roaming, payments are han-



dled separately, not through the hubs.

By default, Virta's platform packages include access to the Virta Charging Network and enable connections with the biggest European roaming platforms (hubs) - [Hubject](#) and [Gireve](#).

Peer-to-peer roaming

With peer-to-peer roaming, the CPO and EMSP build a direct connection. This is where OCPI comes into play, as it is the most commonly used peer-to-peer protocol.

This model has no central party to monitor or forward any data. Access is managed through traditional contracts and the exchange of access keys (tokens).

Contracts are always bilateral, which means every new connection needs a new contract and payments are handled outside the protocol.

If you prefer to go this route and make your own roaming contracts, the Virta platform can be used to handle contract management and process each roaming event. You would need to take care of the end-to-end money flow, but you'll have all the necessary data based on the Virta Platform admin reports.

HOW TO GET STARTED?

If you're interested in Virta's roaming services, we'll start with a consultation to determine if this option is right for you.

During the consultation, we will:

- Layout your EV charging foundations
- Accelerate your time to market
- Future-proof your business plan
- Limit your risks
- Increase your revenue

And afterwards, there are a few ways you can decide to go:



Finalise the agreement and start the service



Build a proof of concept (PoC)



Start a pilot programme



Decide that now is not the right time



CONCLUSION

The optimal charging ecosystem lets EV drivers effortlessly charge their batteries anywhere. Not only does EV roaming make this happen, but it also brings an abundance of benefits to charging service providers. You'll attract more customers and create an entirely new revenue stream.

Virta can completely handle the contracts, payments, documentation, and all financial aspects of roaming. Or, if you prefer to make your own roaming contracts – Virta can provide you with the necessary tools. Either way, Virta is here for all your EV roaming needs.





VIRTA - THE DIGITAL PLATFORM FOR ELECTRIC VEHICLE CHARGING

Virta is a global leader in electric vehicle (EV) charging platform technologies. Our vision is to enable the transition towards sustainability. We bring electric mobility to businesses and people's everyday lives while making EVs a crucial part of tomorrow's energy system.

Virta was founded in 2013 and is now one of the fastest-growing platform companies in the industry. Virta future-proofs over 1000 partners and more than 50 brands around the world in over 30 countries. Our award-winning multisided platform connects all the key players in the EV ecosystem in a fast, easy, cost-efficient, and scalable way.

[Book your free consultation](#)