

Jak samochody elektryczne dogadują się z infrastrukturą?

Czyli dlaczego Filip Chajzer nie naładował swojego elektryka

0 nas



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Software Engineer

O co chodzi z Filipem Chajzerem?



Filip Chajzer wkurzył się,
bo 6 ładowarek do auta
elektryka mu nie działa

Krótką historia elektryków

- Tesla Motors, startup z Doliny Krzemowej, ogłasza, że wyprodukuje luksusowy elektryczny samochód sportowy o zasięgu ponad 350 kilometrów.
- Inni producenci samochodów pracują nad własnymi projektami, przyspieszając pracę nad własną ofertą. General Motors z Chevrolet Volt i Nissan Leaf.



Czym jest ładowarka?

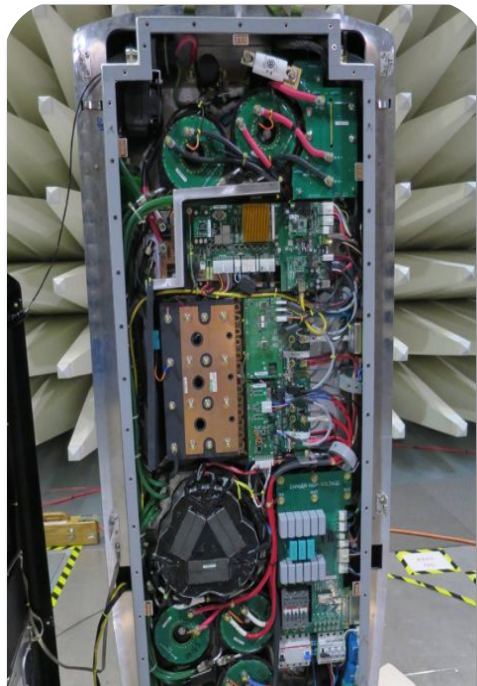


Szybka ładowarka DC

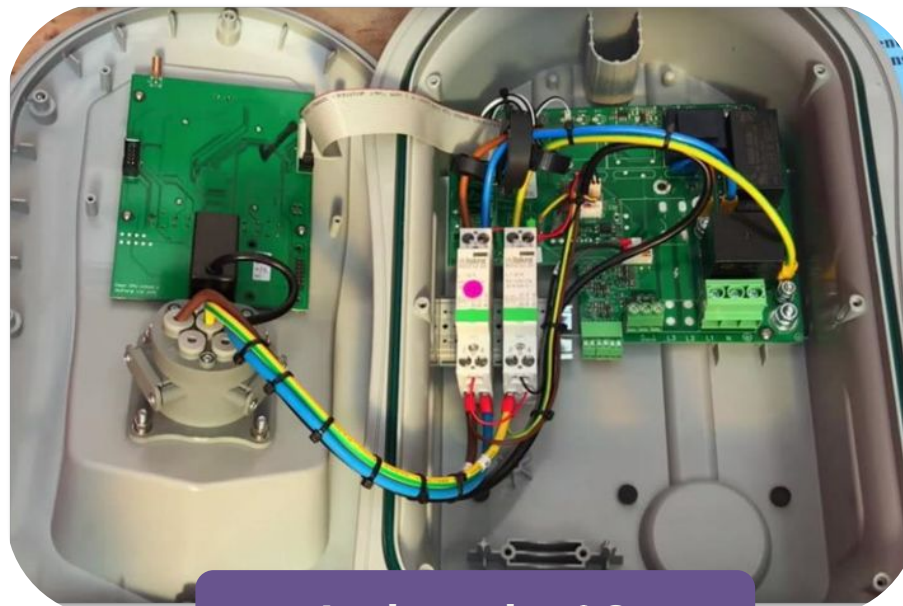


Ładowarka AC

Czym jest ładowarka?



Szybka ładowarka DC



Ładowarka AC

Komunikacja z ładowarką

- **Basic Charging**
IEC 61851, SAE J1772
 - PWM
- **High Level Comm**
ISO 15118-2; -20
 - HomePlug GreenPHY PLC
 - Single Pair Ethernet
 - WiFi
- **Cloud communication**
OCPP, IEC 63584 (OCPP 2.0), IEC 63110
 - Cellular network





Wtyczki i gniazda ładowania

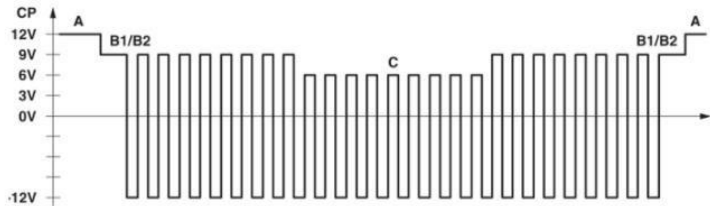
	N.America	Japan	EU and the rest of markets	China	All Markets except EU
AC	 J1772 (Type 1)	 J1772 (Type 1)	 Mennekes (Type 2)	 GB/T	 Tesla
DC	 CCS1	 CHAdeMO	 CCS2	 GB/T	





Komunikacja EV ładowarka

- 1kHz PWM signal
- +12VDC/-12VDC plus resistor
- 8 different states



PWM	SAE continuous	SAE short term
50%	30A	30A peak
40%	24A	22A peak
30%	18A	20A peak
25%	15A	
16%	9.6A	
10%	6A	

Base status	Charging status	Resistance, (CP-PE)	Resistance, R2	Voltage, CP-PE
State A	Standby	Open, or $\infty \Omega$		+12V
State B	Vehicle connected	2740 Ω		+9V
State C	Ready (charging)	882 Ω	1300 Ω	+6V
State D	With ventilation	246 Ω	270 Ω	+3V
State E	No power (shut off)			0V
State F	Error			-12V

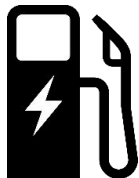


Komunikacja EV Ładowarka

OSI layer	Protocol suites		
Application	SDP	AC charging	DC charging
Presentation	XML		
	EXI		
Session	V2GTP		
Transport	UDP	TCP	
Network	IPv6, DHCPv6, SLAAC		
Data link	Control Pilot PWM	Control Pilot SLAC, PLC	
Physical link	±12V	HomePlug Green PHY	

Komunikacja EV ↔ ładowarka

Charger



ISO 15118



Vehicle



```
<?xml version="1.0"?>
<ns4:supportedAppProtocolRes
  xmlns:ns4="urn:iso:15118:2:2010:AppProtocol"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns3="http://www.w3.org/2001/XMLSchema">
  <ResponseCode>OK_SuccessfulNegotiation</ResponseCode>
  <SchemaID>0</SchemaID>
</ns4:supportedAppProtocolRes>
```

```
<?xml version="1.0"?>
<ns4:supportedAppProtocolReq xmlns:ns4="urn:iso:15118:2:2010:AppProtocol"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns3="http://www.w3.org/2001/XMLSchema">
  <AppProtocol>
    <ProtocolNamespace>urn:din:70121:2012:MsgDef</ProtocolNamespace>
    <VersionNumberMajor>2</VersionNumberMajor>
    <VersionNumberMinor>0</VersionNumberMinor>
    <SchemaID>1</SchemaID>
    <Priority>2</Priority>
  </AppProtocol>
  <AppProtocol>
    <ProtocolNamespace>urn:iso:15118:2:2013:MsgDef</ProtocolNamespace>
    <VersionNumberMajor>2</VersionNumberMajor>
    <VersionNumberMinor>0</VersionNumberMinor>
    <SchemaID>0</SchemaID>
    <Priority>1</Priority>
  </AppProtocol>
</ns4:supportedAppProtocolReq>
```

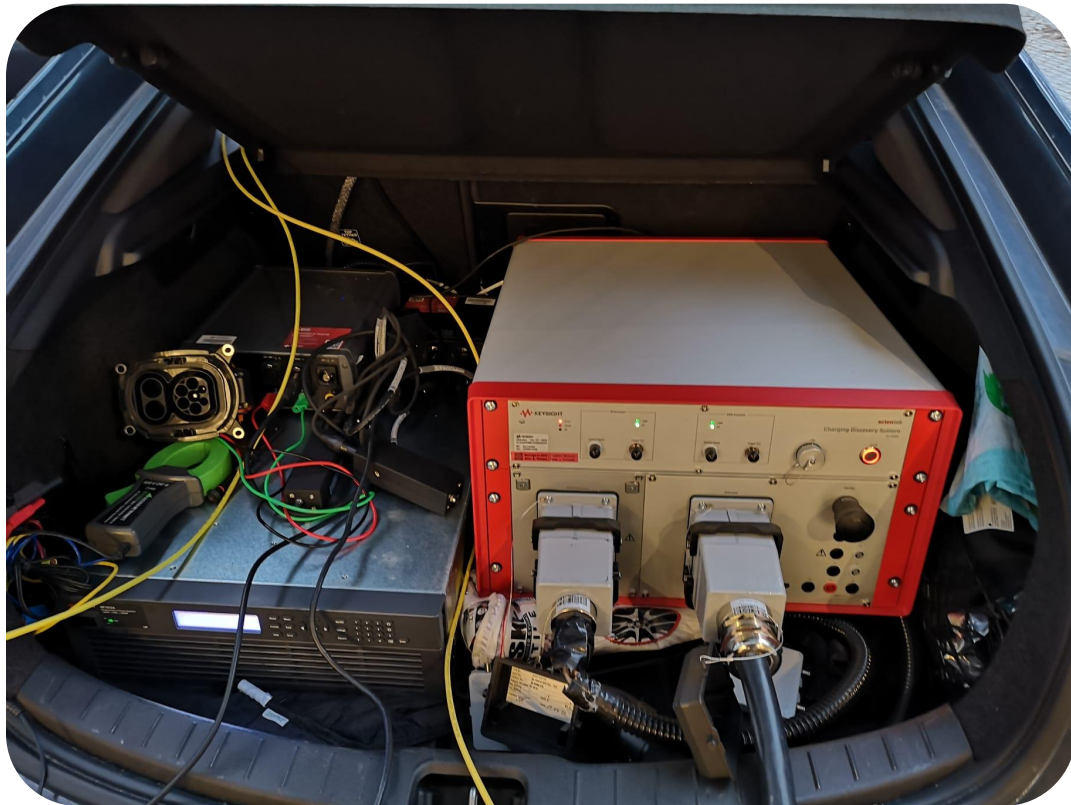
Komunikacja

3.7kW – 7.4kW – 11kW – 22kW
Wireless electric vehicle charging technology



- Wireless Power Transfer
- Bi-directional Power Transfer
- Plug and Charge

Jak testujemy?



Wireshark demo - dSPACE V2Gshark Wireshark Plugin

The screenshot displays the Wireshark network protocol analyzer interface. The main window shows a list of captured packets, with the selected packet (No. 838) highlighted. The packet details pane on the right shows the structure of the selected packet, including the MAC Management Header, PEV MAC Address, and Average Attenuation of group (dB). The packet bytes pane at the bottom shows the raw data of the selected packet.

No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
809	601.401245	LumissilMicr_00:00:01	LumissilMicr_Fd:a8:ed	HomePlug AV	60	CM_SET_KEY.CNF (Set Key Confirmation)	
810	601.642977	LumissilMicr_00:00:01	Broadcast	HomePlug AV	60	OUI:0x16e8	
811	601.643119	LumissilMicr_00:00:01	Broadcast	HomePlug AV	60	OUI:0x16e8	
812	603.512380	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	60	CM_SLAC_PARM_REQ	
813	603.512951	LumissilMicr_Fd:a8:ed	DeltaElectro_0f:96:90	HomePlug AV	60	CM_SLAC_PARM.CNF	
814	603.514448	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	60	CM_SLAC_PARM_REQ	
815	603.515051	LumissilMicr_Fd:a8:ed	DeltaElectro_0f:96:90	HomePlug AV	60	CM_SLAC_PARM.CNF	
816	603.709933	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	60	CM_START_ATTEN_CHAR_IND	
817	603.749967	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	60	CM_START_ATTEN_CHAR_IND	
818	603.790045	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	60	CM_START_ATTEN_CHAR_IND	
819	603.830306	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
820	603.830475	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
821	603.870438	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
822	603.870545	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
823	603.910584	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
824	603.910674	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
825	603.950364	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
826	603.950477	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
827	603.990416	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
828	603.990527	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
829	604.030419	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
830	604.030581	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
831	604.070435	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
832	604.070539	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
833	604.110340	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
834	604.110456	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
835	604.150487	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
836	604.150600	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
837	604.190505	DeltaElectro_0f:96:90	Broadcast	HomePlug AV	71	CM_MNBC_SOUND_IND	
838	604.190691	LumissilMicr_00:00:01	Broadcast	HomePlug AV	85	CM_ATTEN_PROFILE_IND	
839	604.191957	LumissilMicr_Fd:a8:ed	DeltaElectro_0f:96:90	HomePlug AV	129	CM_ATTEN_CHAR_IND	
840	604.199190	DeltaElectro_0f:96:90	LumissilMicr_Fd:a8:ed	HomePlug AV	70	CM_ATTEN_CHAR_RSP	
841	604.920614	DeltaElectro_0f:96:90	LumissilMicr_Fd:a8:ed	HomePlug AV	85	CM_SLAC_MATCH_REQ	

Frame 838: 85 bytes on wire (680 bits), 85 bytes captured (680 bits) on interface 0
Ethernet II, Src: LumissilMicr_00:00:01 (00:16:e8:00:00:01), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
HomePlug AV protocol
MAC Management Header
PEV MAC Address: DeltaElectro_0f:96:90 (00:18:23:0f:96:90)
Number of Groups: 0x3a
Average Attenuation of group (dB): 41
Average Attenuation of group (dB): 41
Average Attenuation of group (dB): 42
Average Attenuation of group (dB): 42
Average Attenuation of group (dB): 39
Average Attenuation of group (dB): 40

Ethernet
Destination
Source
Type

HomePlug AV protocol
Packets: 1360
Profile: Default

SECC Discovery protocol

demo.pcap

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter: <Ctrl>/

No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
842	604.920659	LumissilMicr_fd:a8:ed	DeltaElectro_0f:96:90		HomePlug AV	109	CM_SLAC_MATCH.CNF
843	605.085902	LumissilMicr_00:00:01	Broadcast		HomePlug AV	60	OUI:0x16e8
844	605.099000	LumissilMicr_00:00:01	Broadcast		HomePlug AV	176	OUI:0x16e8
845	605.191543	::	ff02::1:ff0f:9690		ICMPv6	78	Neighbor Solicitation for fe80::218:23ff:fe0f:9690
846	605.285034	LumissilMicr_00:00:01	Broadcast		HomePlug AV	60	OUI:0x16e8
847	605.553233	fe80::218:23ff:fe0f:9690	ff02::1	55677 15118	V2GMSG (SDP)	72	SDP request message, Secured with TLS
848	605.554077	fe80::218:23ff:fe0f:9690	ff02::1	15118 55677	V2GMSG (SDP)	90	SDP response message, No transport layer security
849	606.021139	fe80::218:23ff:fe0f:9690	ff02::2		ICMPv6	62	Router Solicitation
850	606.211135	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		ICMPv6	86	Neighbor Solicitation for fe80::218:23ff:fe0f:a8ed from
851	606.211212	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		ICMPv6	86	Neighbor Advertisement fe80::218:23ff:fe0f:a8ed (sol,
852	606.220400	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	78	55678 → 62277 [SYN] Seq=0 Win=4000 Len=0 MSS=1440
853	606.220492	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	78	62277 → 55678 [SYN, ACK] Seq=0 Ack=1 Win=64800 Len=0
854	606.230277	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	55678 → 62277 [ACK] Seq=1 Ack=1 Win=4000 Len=0
855	606.280347	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (SAP)	150	supportedAppProtocolReq
856	606.280426	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	62277 → 55678 [ACK] Seq=1 Ack=77 Win=64724 Len=0
857	606.282355	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (SAP)	86	supportedAppProtocolRes
858	606.291746	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	55678 → 62277 [ACK] Seq=77 Ack=13 Win=3988 Len=0
859	606.310296	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=77 Ack=13
860	606.380669	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (ISO-2)	103	SessionSetupReq
861	606.385270	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (ISO-2)	130	SessionSetupRes
862	606.400591	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	55678 → 62277 [ACK] Seq=106 Ack=75 Win=3938 Len=0
863	606.410593	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=106 Ack=75
864	606.428239	DeltaElectro_0f:96:90	LumissilMicr_00:00:01		HomePlug AV	60	CM_STA_IDENTIFY_IND
865	606.480238	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (ISO-2)	95	ServiceDiscoveryReq
866	606.484861	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (ISO-2)	102	ServiceDiscoveryRes
867	606.500601	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	55678 → 62277 [ACK] Seq=127 Ack=103 Win=3972 Len=0
868	606.510511	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=127 Ack=103
869	606.600517	fe80::218:23ff:fe0f:9690	ff02::1:fffd:a8ed		V2GMSG (ISO-2)	98	PaymentServiceSelectionReq

Frame 847: 72 bytes on wire (576 bits), 72 bytes captured (576 bits)

Ethernet II, Src: DeltaElectro_0f:96:90 (00:18:23:0f:96:90), Dst: IPv6mcast_01 (33:33:00:00:00:01)

Internet Protocol Version 6, Src: fe80::218:23ff:fe0f:9690, Dst: ff02::1

0110 = Version: 6

.... 0000 0000 = Traffic Class: 0x00 (DSCP: CS0, ECN: Not-ECT)

.... 0000 0000 0000 0000 = Flow Label: 0x000000

Payload Length: 18

Next Header: UDP (17)

Hop Limit: 64

Source Address: fe80::218:23ff:fe0f:9690

Destination Address: ff02::1

[Source SLAAC MAC: DeltaElectro_0f:96:90 (00:18:23:0f:96:90)]

[Stream index: 2]

User Datagram Protocol, Src Port: 55677, Dst Port: 15118

V2G Transfer Protocol

V2G SECC Discovery Protocol Request

Ethernet

0 15 16 32

Destination

Source

Type

Internet Protocol Version 6

0 15 16 32

Version Traffic Class Flow Label

Payload Length Next Header Hop Limit

Packets: 1360 Profile: Default

Supported App Protocol

demo.pcap

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Apply a display filter: <Ctrl>/

No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
842	604.920659	LumissilMicr_fd:a8:ed	DeltaElectro_0f:96:90		HomePlug AV	109	CM_SLAC_MATCH.CNF
843	605.085902	LumissilMicr_00:00:01	Broadcast		HomePlug AV	60	OUI:0x16e8
844	605.099000	LumissilMicr_00:00:01	Broadcast		HomePlug AV	176	OUI:0x16e8
845	605.191543	::	ff02::1:ff0f:9690		ICMPv6	78	Neighbor Solicitation for fe80::218:23ff:fe0f:9690
846	605.285034	LumissilMicr_00:00:01	Broadcast		HomePlug AV	60	OUI:0x16e8
847	605.553233	fe80::218:23ff:fe0f:96...	ff02::1	55677 15118	V2GMSG (SDP)	72	SDP request message, Secured with TLS
848	605.554077	fe80::218:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	15118 55677	V2GMSG (SDP)	90	SDP response message, No transport layer security
849	606.021139	fe80::218:23ff:fe0f:96...	ff02::2		ICMPv6	62	Router Solicitation
850	606.211135	fe80::218:23ff:fe0f:96...	ff02::1:fffd:a8ed		ICMPv6	86	Neighbor Solicitation for fe80::216:e8ff:fe0f:a8ed fr
851	606.211212	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690		ICMPv6	86	Neighbor Advertisement fe80::216:e8ff:fe0f:a8ed (sol,
852	606.220400	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	78	55678 → 62277 [SYN] Seq=0 Win=4000 Len=0 MSS=1440
853	606.220492	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690		TCP	78	62277 → 55678 [SYN, ACK] Seq=0 Ack=1 Win=64800 Len=0
854	606.230277	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	55678 → 62277 [ACK] Seq=1 Ack=1 Win=4000 Len=0
855	606.280347	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (SAP)	150	supportedAppProtocolReq
856	606.280426	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690		TCP	74	62277 → 55678 [ACK] Seq=1 Ack=77 Win=64724 Len=0
857	606.282355	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690		V2GMSG (SAP)	86	supportedAppProtocolRes
858	606.291746	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	55678 → 62277 [ACK] Seq=77 Ack=13 Win=3988 Len=0
859	606.310296	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=77 Ack=13
860	606.380669	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	103	SessionSetupReq
861	606.385270	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690		V2GMSG (ISO-2)	130	SessionSetupRes
862	606.400591	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	55678 → 62277 [ACK] Seq=106 Ack=75 Win=3938 Len=0
863	606.410593	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=106 Ack=75
864	606.428239	DeltaElectro_0f:96:91	LumissilMicr_00:00:01		HomePlug AV	60	CM_STA_IDENTIFY_IND
865	606.480238	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ServiceDiscoveryReq
866	606.484861	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690		V2GMSG (ISO-2)	102	ServiceDiscoveryRes
867	606.500601	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	55678 → 62277 [ACK] Seq=127 Ack=103 Win=3972 Len=0
868	606.510511	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=127 Ack=103
869	606.600517	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	98	PaymentServiceSelectionReq

Decoded XML [...]: <?xml version="1.0" encoding="UTF-8"?><ns1:supportedAppProtocolReq xmlns:ns1="urn:iso:15118:2:2010:AppProtocol" Message Validation: Successful Schema: urn:iso:15118:2:2010:AppProtocol

- supportedAppProtocolReq
 - [XML Attributes: xmlns:ns1="urn:iso:15118:2:2010:AppProtocol"]
 - AppProtocol
 - ProtocolNamespace: urn:din:70121:2012:MsgDef
 - VersionNumberMajor: 2
 - VersionNumberMinor: 0
 - SchemaID: 1
 - Priority: 2
 - AppProtocol
 - ProtocolNamespace: urn:iso:15118:2:2013:MsgDef
 - VersionNumberMajor: 2
 - VersionNumberMinor: 0
 - SchemaID: 0
 - Priority: 1

Ethernet

0 15 16 32

Destination

Source

Type

Internet Protocol Version 6

0 15 16 32

Version Traffic Class Flow Label

Payload Length Next Header Hop Limit

(v2gmsg.entry) Packets: 1360 Profile: Default

Session Setup

demo.pcap

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter: <Ctrl>/

No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
851.006	211212	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	ICMPv6	86	Neighbor Advertisement fe80::216:e8ff:fe0f:a8ed (sol...
852.006	220400	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	78	55678 → 62277 [SYN] Seq=0 Win=4000 Len=0 MSS=1440
853.006	220492	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	TCP	78	62277 → 55678 [SYN, ACK] Seq=0 Ack=1 Win=64800 Len=0
854.006	230277	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=1 Ack=1 Win=4000 Len=0
855.006	280347	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	V2GMSG (SAP)	150	supportedAppProtocolReq
856.006	280426	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	TCP	74	62277 → 55678 [ACK] Seq=1 Ack=77 Win=64724 Len=0
857.006	282355	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	V2GMSG (SAP)	86	supportedAppProtocolRes
858.006	291746	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=77 Ack=13 Win=3988 Len=0
859.006	310296	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=77 Ack=13
860.006	380669	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	103	SessionSetupReq
861.006	385270	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	136	SessionSetupRes
862.006	400591	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=106 Ack=75 Win=3938 Len=0
863.006	410593	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=106 Ack=75
864.006	428239	DeltaElectro_0f:96:91	LumissilMicr_00:00:01	DeltaElectro_0f:96:91 LumissilMicr_00:00:01	HomePlug AV	60	CM_STA_IDENTIFY_IND
865.006	480238	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	95	ServiceDiscoveryReq
866.006	484861	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	102	ServiceDiscoveryRes
867.006	500601	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=127 Ack=103 Win=3972 Len=0
868.006	510511	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=127 Ack=103
869.006	600517	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	98	PaymentServiceSelectionReq
870.006	600413	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	96	PaymentServiceSelectionRes
871.006	620604	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=151 Ack=125 Win=3978 Len=0
872.006	630586	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=151 Ack=125
873.006	700497	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
874.006	742886	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	TCP	74	62277 → 55678 [ACK] Seq=125 Ack=172 Win=64629 Len=0
875.007	705910	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699	fe80::216:e8ff:fe0f:a8... fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	97	AuthorizationRes
876.007	720163	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=172 Ack=148 Win=3977 Len=0
877.007	730502	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=172 Ack=148
878.008	300462	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	fe80::218:23ff:fe0f:96... fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq

V2G Transfer Protocol

V2G Message

Metadata

EXI: 8098020680FCD5735D68A51E0208D0D20A9150D5515615D2CCCCD92905394930CD694D38D51128C3929694D

Message: SessionSetupRes

Decoded XML [...]: <?xml version="1.0" encoding="UTF-8"?><ns1:V2G_Message xmlns:ns1="urn:iso:15111" Message Validation: Successful Schema: urn:iso:15118:2:2013:MsgDef

V2G_Message

[XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"]

Header

SessionID: 1A03F3695CD75A29

Body

SessionSetupRes

ResponseCode: OK_NewSessionEstablished

EVSEID: CH*ECUEXWK336JANRL3ZSN5DJ2NJZSSQS

EVSETimeStamp: 1732577652

Ethernet

0 15 16 3

Destination

Source

Type

Internet Protocol Version 6

0 15 16 3

Version Traffic Class Flow Label

Payload Length Next Header Hood Limit

Packets: 1360 Profile: Default

(v2gmsg.entry)

Service Discovery

demo.pcap

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No.	Time	Source	Destination	Source Destination Protocol	Length	Info
851.006	2.11212	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	ICMPv6	86	Neighbor Advertisement fe80::216:e8ff:fe0f:a8ed (sol...
852.006	2.20400	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	78	55678 → 62277 [SYN] Seq=0 Win=4000 Len=0 MSS=1440
853.006	2.20492	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	TCP	78	62277 → 55678 [SYN, ACK] Seq=0 Ack=1 Win=64800 Len=0
854.006	2.30277	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=1 Ack=1 Win=4000 Len=0
855.006	2.80347	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	V2GMSG (SAP)	150	supportedAppProtocolReq
856.006	2.80426	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	TCP	74	62277 → 55678 [ACK] Seq=1 Ack=77 Win=64724 Len=0
857.006	2.82355	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	V2GMSG (SAP)	86	supportedAppProtocolRes
858.006	2.91746	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=77 Ack=13 Win=3988 Len=0
859.006	3.10296	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=77 Ack=13
860.006	3.80669	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	103	SessionSetupReq
861.006	3.85270	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	V2GMSG (ISO-2)	136	SessionSetupRes
862.006	4.00591	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=106 Ack=75 Win=3938 Len=0
863.006	4.10593	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=106 Ack=75
864.006	4.28239	DeltaElectro_0f:96:91	LumissilMicr_00:00:01	HomePlug AV	60	CM_STA_IDENTIFY_IND
865.006	4.80238	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	95	ServiceDiscoveryReq
866.006	4.84861	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	V2GMSG (ISO-2)	102	ServiceDiscoveryRes
867.006	5.00601	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=127 Ack=103 Win=3972 Len=0
868.006	5.10511	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=127 Ack=103
869.006	6.00517	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	98	PaymentServiceSelectionReq
870.006	6.00413	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	V2GMSG (ISO-2)	96	PaymentServiceSelectionRes
871.006	6.20604	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=151 Ack=125 Win=3978 Len=0
872.006	6.30586	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=151 Ack=125
873.006	7.00497	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
874.006	7.42886	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	TCP	74	62277 → 55678 [ACK] Seq=125 Ack=172 Win=64629 Len=0
875.007	7.05910	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9690	V2GMSG (ISO-2)	97	AuthorizationRes
876.007	7.20163	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	55678 → 62277 [ACK] Seq=172 Ack=148 Win=3977 Len=0
877.007	7.30502	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=172 Ack=148
878.008	3.00462	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq

Schema: urn:iso:15118:2:2013:MsgDef

- V2G_Message
 - [XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"]
 - Header
 - SessionID: 1A03F3695CD75A29
 - Body
 - ServiceDiscoveryRes
 - ResponseCode: OK
 - PaymentOptionList
 - PaymentOption: ExternalPayment
 - ChargeService
 - ServiceID: 1
 - ServiceCategory: EVCharging
 - FreeService: false
 - SupportedEnergyTransferMode
 - EnergyTransferMode: AC_single_phase_core
 - EnergyTransferMode: AC_three_phase_core

Ethernet

0 15 16 32

Destination

Source

Type

Internet Protocol Version 6

0 15 16 32

Version Traffic Class Flow Label

Payload Length Next Header Hop Limit

Packets: 1360 Profile: Default

(v2gmsg.entry)

Authorization

demo.pcap

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No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
869	606.600517	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	98	PaymentServiceSelectionReq
870	606.608413	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		V2GMSG (ISO-2)	96	PaymentServiceSelectionRes
871	606.626004	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	55678 → 62277 [ACK] Seq=151 Ack=125 Win=3978 Len=0
872	606.630586	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=151 Ack=1
873	606.700497	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	95	AuthorizationReq
874	606.742886	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		TCP	74	62277 → 55678 [ACK] Seq=125 Ack=172 Win=64629 Len=0
875	607.705010	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	97	AuthorizationRes
876	607.720163	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	55678 → 62277 [ACK] Seq=172 Ack=148 Win=3977 Len=0
877	607.730502	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=172 Ack=1
878	608.300462	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	95	AuthorizationReq
879	608.300541	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		TCP	74	62277 → 55678 [ACK] Seq=148 Ack=193 Win=64608 Len=0
880	609.304686	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		V2GMSG (ISO-2)	97	AuthorizationRes
881	609.326274	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	55678 → 62277 [ACK] Seq=193 Ack=171 Win=3977 Len=0
882	609.330557	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=193 Ack=1
883	609.900445	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	95	AuthorizationReq
884	609.900537	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		TCP	74	62277 → 55678 [ACK] Seq=171 Ack=214 Win=64587 Len=0
885	610.031239	fe80::218:23ff:fe0f:96...	ff02::2		ICMPv6	70	Router Solicitation from 00:18:23:0f:96:90
886	610.907931	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		V2GMSG (ISO-2)	97	AuthorizationRes
887	610.920237	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	55678 → 62277 [ACK] Seq=214 Ack=194 Win=3977 Len=0
889	610.930649	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=214 Ack=1
889	611.500540	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	95	AuthorizationReq
890	611.500630	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		TCP	74	62277 → 55678 [ACK] Seq=194 Ack=235 Win=64566 Len=0
891	612.508144	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		V2GMSG (ISO-2)	97	AuthorizationRes
892	612.520326	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	55678 → 62277 [ACK] Seq=235 Ack=217 Win=3977 Len=0
893	612.530714	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		TCP	74	[TCP Window Update] 55678 → 62277 [ACK] Seq=235 Ack=2
894	613.100362	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8d		V2GMSG (ISO-2)	95	AuthorizationReq
895	613.100446	fe80::216:e8ff:fedd:a8d	fe80::218:23ff:fe0f:969		TCP	74	62277 → 55678 [ACK] Seq=217 Ack=256 Win=64545 Len=0
896	614.040590	fe80::218:23ff:fe0f:96...	ff02::2		ICMPv6	70	Router Solicitation from 00:18:23:0f:96:90

[PDU Size: 23]

- V2G Transfer Protocol
 - V2G Message
 - Metadata
 - EXI: 8098020680FCD5735D68A50100200
 - Message: AuthorizationRes
 - Decoded XML [...]: <?xml version="1.0" encoding="UTF-8"?><ns1:V2G_Message xmlns:ns1="urn:iso:15118:2:2013:MsgDef"
 - Message Validation: Successful
 - Schema: urn:iso:15118:2:2013:MsgDef
 - V2G_Message
 - [XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"]
 - Header
 - SessionID: 1A03F3695CD75A29
 - Body
 - AuthorizationRes
 - ResponseCode: OK

EVSEProcessing: Ongoing_WaitingForCustomerInteraction

(v2gmsg.entry)

Ethernet

0 15 16 32

Destination

Source

Type

Internet Protocol Version 6

0 15 16 32

Version Traffic Class Flow Label

Payload Length Next Header Hop Limit

Packets: 1360 Profile: Default

Authorization - finished

demo.pcap

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No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
1007	1033.914567	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
1008	1033.914651	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	TCP	74	62277 → 52129 [ACK] Seq=171 Ack=214 Win=64587 Len=0
1009	1034.923725	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	97	AuthorizationRes
1010	1034.934650	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	52129 → 62277 [ACK] Seq=214 Ack=194 Win=3977 Len=0
1011	1034.944952	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=214 Ack=194
1012	1035.514615	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
1013	1035.514792	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	TCP	74	62277 → 52129 [ACK] Seq=194 Ack=235 Win=64566 Len=0
1014	1036.526330	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	97	AuthorizationRes
1015	1036.526753	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	52129 → 62277 [ACK] Seq=235 Ack=217 Win=3977 Len=0
1016	1036.545114	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=235 Ack=217
1017	1037.114927	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
1018	1037.115911	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	TCP	74	62277 → 52129 [ACK] Seq=217 Ack=256 Win=64545 Len=0
1019	1037.885515	fe80::218:23ff:fe0f:96...	ff02::2	ff02::2	ICMPv6	70	Router Solicitation from 00:18:23:0f:96:90
1020	1038.120451	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	97	AuthorizationRes
1021	1038.134644	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	52129 → 62277 [ACK] Seq=256 Ack=240 Win=3977 Len=0
1022	1038.144967	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=256 Ack=240
1023	1038.715352	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
1024	1038.715437	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	TCP	74	62277 → 52129 [ACK] Seq=240 Ack=277 Win=64524 Len=0
1025	1039.720831	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	97	AuthorizationRes
1026	1039.734793	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	52129 → 62277 [ACK] Seq=277 Ack=263 Win=3977 Len=0
1027	1039.745048	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=277 Ack=263
1028	1040.314845	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	V2GMSG (ISO-2)	95	AuthorizationReq
1029	1040.314926	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	TCP	74	62277 → 52129 [ACK] Seq=263 Ack=298 Win=64593 Len=0
1030	1040.318116	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	97	AuthorizationRes
1031	1040.327108	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	52129 → 62277 [ACK] Seq=298 Ack=286 Win=3977 Len=0
1032	1040.345264	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=298 Ack=286
1033	1040.434966	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fedd:a8ed	fe80::216:e8ff:fedd:a8ed	V2GMSG (ISO-2)	113	ChargeParameterDiscoveryReq
1034	1040.468908	fe80::216:e8ff:fedd:a8...	fe80::218:23ff:fe0f:9699	fe80::218:23ff:fe0f:9699	V2GMSG (ISO-2)	121	ChargeParameterDiscoveryRes

[PDU Size: 23]

- V2G Transfer Protocol
- V2G Message
 - Metadata
 - EXI: 0098022AE1CAF34446C12D0100000
 - Message: AuthorizationRes
 - Decoded XML [...]: <?xml version="1.0" encoding="UTF-8"?><ns1:V2G_Message xmlns:ns1="urn:iso:15118:2:2013:MsgDef"
 - Message Validation: Successful
 - Schema: urn:iso:15118:2:2013:MsgDef
 - V2G_Message
 - [XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"]
 - Header
 - SessionID: AB072BF4D111B04B
 - Body
 - AuthorizationRes
 - ResponseCode: OK

EVSEProcessing: Finished

(v2gmsg.entry)

Ethernet

0 15 16 32

Destination

Source

Type

Internet Protocol Version 6

0 15 16 32

Version Traffic Class Flow Label

Payload Length Next Header Hood Limit

Packets: 1360 Profile: Default

Charge Parameter Discovery

demo.pcap

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Apply a display filter ... <Ctrl>/

No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
1022	1038.144967	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=256 Ack=2...
1023	1038.715352	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	AuthorizationReq
1024	1038.715437	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		TCP	74	62277 → 52129 [ACK] Seq=240 Ack=277 Win=64524 Len=0
1025	1039.720831	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	97	AuthorizationRes
1026	1039.734793	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=277 Ack=263 Win=3977 Len=0
1027	1039.745048	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=277 Ack=2...
1028	1040.314845	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	AuthorizationReq
1029	1040.314926	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		TCP	74	62277 → 52129 [ACK] Seq=263 Ack=298 Win=64503 Len=0
1030	1040.318116	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	97	AuthorizationRes
1031	1040.327108	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=298 Ack=286 Win=3977 Len=0
1032	1040.345264	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=298 Ack=2...
1033	1040.434966	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	113	ChargeParameterDiscoveryReq
1034	1040.468980	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	121	ChargeParameterDiscoveryRes
1035	1040.485209	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=337 Ack=333 Win=3953 Len=0
1036	1040.514968	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=337 Ack=3...
1037	1040.675209	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	105	PowerDeliveryReq
1038	1040.716641	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	99	PowerDeliveryRes
1039	1040.727035	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=368 Ack=358 Win=3975 Len=0
1040	1040.745063	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=368 Ack=3...

V2G_Message

[XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"]

- Header
 - SessionID: AB872BF4D11B04B
- Body
 - ChargeParameterDiscoveryReq
 - RequestedEnergyTransferMode: AC_three_phase_core
 - AC_EVChargeParameter
 - DepartureTime: 0
 - EAmount: 600.0Wh
 - Multiplier: 0
 - Unit: Wh
 - Value: 600
 - EVMaxVoltage: 280.0V
 - Multiplier: 0
 - Unit: V
 - Value: 280
 - EVMaxCurrent: 48.0A
 - Multiplier: 0
 - Unit: A
 - Value: 48
 - EVMinCurrent: 0.0A
 - Multiplier: 0
 - Unit: A
 - Value: 0

Ethernet

0 15 16 3

Destination

Source

Type

Internet Protocol Version 6

0 15 16 3

Version Traffic Class Flow Label

Payload Length Next Header Hop Limit

Source Address

Destination Address

Transmission Control Protocol

0 15 16 3

Packets: 1360 Profile: Default

(v2gmsg.entry)

Charging Status

demo.pcap

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No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
1043	1040.847804	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=389 Ack=420 Win=3938 Len=0
1044	1040.865239	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=389 Ack=420
1045	1041.935027	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq
1046	1041.943529	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	136	ChargingStatusRes
1047	1041.954899	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=410 Ack=482 Win=3938 Len=0
1048	1041.965539	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=410 Ack=482
1049	1043.934981	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq
1050	1043.944815	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	136	ChargingStatusRes
1051	1043.955227	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=431 Ack=544 Win=3938 Len=0
1052	1043.965282	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=431 Ack=544
1053	1044.135014	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq
1054	1044.140021	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	136	ChargingStatusRes
1055	1044.147068	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=452 Ack=606 Win=3938 Len=0
1056	1044.165328	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=452 Ack=606
1057	1045.235017	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq
1058	1045.240651	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	136	ChargingStatusRes
1059	1045.255071	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=473 Ack=668 Win=3938 Len=0
1060	1045.265383	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=473 Ack=668
1061	1046.335077	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq

[SEQ/ACK analysis]
TCP payload (62 bytes)
[PDU Size: 62]
V2G Transfer Protocol
V2G Message
Metadata
EXI: 8098022AE1CAF034446C12D8C0080D020A9150D5515615D2CCCCD92905394930CD694D38D51128C93929694D
Message: ChargingStatusRes
Decoded XML [...]: <?xml version="1.0" encoding="UTF-8"?><ns1:V2G_Message xmlns:ns1="urn:iso:15118:2:2013:MsgDef"
Message Validation: Successful
Schema: urn:iso:15118:2:2013:MsgDef
V2G_Message
[XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"]
Header
SessionID: AB872BF4D11B04B
Body
ChargingStatusRes
ResponseCode: OK
EVSEID: CH*ECUEXMK336JANRL3ZSN5DJ2NZSSQS
SAScheduleTupleID: 1
ReceiptRequired: false
AC_EVSEStatus
NotificationMaxDelay: 0
EVSENotification: None
RCD: false

Ethernet
0 15 16 3
Destination
Source
Type

Internet Protocol Version 6
0 15 16 3
Version Traffic Class Flow Label
Payload Length Next Header Hop Limit
Source Address
Destination Address

Transmission Control Protocol
0 15 16 3

(v2gmsg.entry) Packets: 1360 Profile: Default

Session Stop

demo.pcap

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No.	Time	Source	Destination	Source Destination	Protocol	Length	Info
1327	1114.618465	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=1796 Ack=4574 Win=3938 Len=0
1328	1114.627630	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=1796 Ack=
1329	1115.697435	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq
1330	1115.704693	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	136	ChargingStatusRes
1331	1115.717385	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=1817 Ack=4636 Win=3938 Len=0
1332	1115.727730	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=1817 Ack=
1333	1116.797424	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	95	ChargingStatusReq
1334	1116.805050	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	136	ChargingStatusRes
1335	1116.818103	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=1838 Ack=4698 Win=3938 Len=0
1336	1116.827877	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=1838 Ack=
1337	1116.897532	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	105	PowerDeliveryReq
1338	1116.906067	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	99	PowerDeliveryRes
1339	1116.917278	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=1869 Ack=4723 Win=3975 Len=0
1340	1116.927661	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=1869 Ack=
1341	1116.997511	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		V2GMSG (ISO-2)	96	SessionStopReq
1342	1117.019469	fe80::216:e8ff:fe0f:a8...	fe80::218:23ff:fe0f:9699		V2GMSG (ISO-2)	96	SessionStopRes
1343	1117.027495	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	52129 → 62277 [ACK] Seq=1891 Ack=4745 Win=3978 Len=0
1344	1117.047751	fe80::218:23ff:fe0f:96...	fe80::216:e8ff:fe0f:a8ed		TCP	74	[TCP Window Update] 52129 → 62277 [ACK] Seq=1891 Ack=
1345	1117.071888	LumissilMicr_fd:a8:ed	AtherosCommu_00:00:01		HomePlug AV	60	CM_SET_KEY.REQ (Set Key Request)

Window: 4000
 [Calculated window size: 4000]
 [Window size scaling factor: -2 (no window scaling used)]
 Checksum: 0xdcbf [unverified]
 [Checksum Status: Unverified]
 Urgent Pointer: 0
 [Timestamps]
 [SEQ/ACK analysis]
 TCP payload (22 bytes)
 [PDU Size: 22]

V2G Transfer Protocol
 V2G Message
 Metadata
 EXI: 8098022AE1CAF034446C12D1F000
 Message: SessionStopReq
 Decoded XML [...]: <?xml version="1.0" encoding="UTF-8"?><ns1:V2G_Message xmlns:ns1="urn:iso:15118:2:2013:MsgDef" Schema: urn:iso:15118:2:2013:MsgDef
 V2G_Message
 [XML Attributes: xmlns:ns1="urn:iso:15118:2:2013:MsgDef" xmlns:ns2="urn:iso:15118:2:2013:MsgDef"
 Header
 SessionID: AB872BF4D11B04B
 Body
 SessionStopReq
 ChargingSession: Terminate

Ethernet
 0 15 16 3
 Destination
 Source
 Type

Internet Protocol Version 6
 0 15 16 3
 Version Traffic Class Flow Label
 Payload Length Next Header Hop Limit
 Source Address
 Destination Address

Transmission Control Protocol
 0 15 16 3

Packets: 1360 Profile: Default

(v2gmsg.entry)



Pizza!