

This document presents the basic information regarding the classification of CSN contract types and helps you to make your choice for the appropriate CSN network connection to the partner network of Volkswagen resp. Audi by means of a decision matrix.

This information is completed by details regarding the variety of network access, facts of a possible OFTP communication and a model calculation.

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CSN first information

**1. Which contracts exist?**

The preparation of your CSN network connection to Volkswagen resp. Audi could lead to several contracts with several contractual partners. Below you will find a summary of these contract types.

**1.1. CSN contract with operational services**

The CSN-contract is a prerequisite for the connection to the partner network of Volkswagen resp. Audi. Contracting parties are your company and operational services GmbH & Co. KG. Subject of the contract are services regarding the following parts:

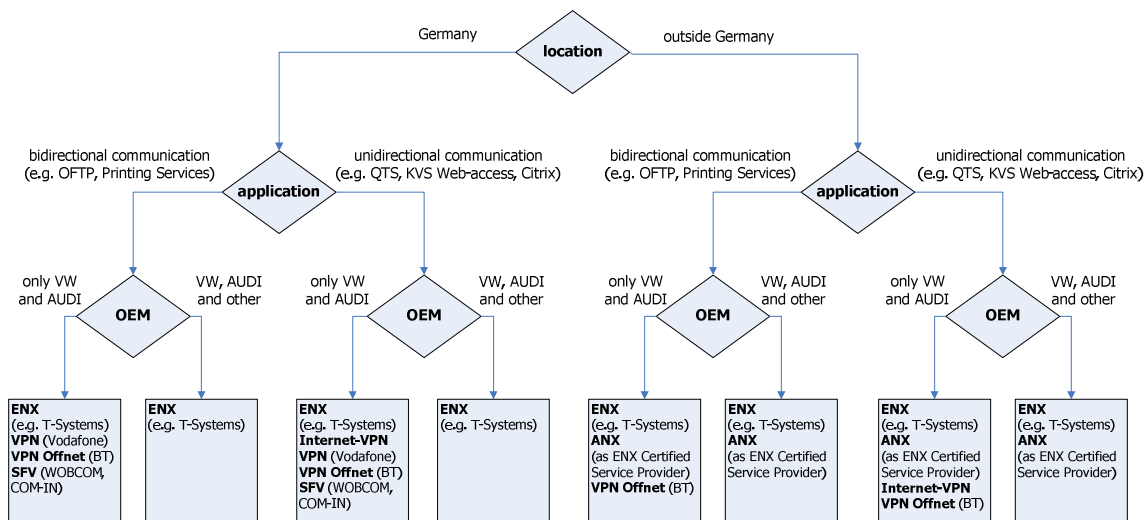
- **CSN Basic Services (§1)**  
This integral part of the contract includes the set up of your network access and the final connection test. After placing into operation the Service Support Center is your single point of contact (spoc) for all requests and problems regarding your network access to Volkswagen resp. Audi.
- **Provider Services (§2)**  
This integral part of the contract is necessary if choosing operational services as provider of the network access (e.g. via internet VPN). There is also the possibility to choose an external provider (see chapter 1.2).
- **CSN Applikations Services for HyperKVS (§3)**  
This integral part of the contract is necessary in case of using the online access to the HyperKVS of Volkswagen resp. Audi. For using only OFTP-File transfer this contract is not necessary.

**1.2. Provider contract with external providers as contractual partner**

In order to exchange data with Volkswagen resp. Audi you need a network connection. This access is only possible via special VPNs resp. access technologies. Therefore a special portfolio was defined by Volkswagen and Audi. In most cases a separate provider contract is necessary. This contract will be concluded directly between the company that requires the access and the provider. In case of using particular applications an internet based VPN connection can be prepared without the need for a provider contract (please see chapter 1.1). In this case the technical solution is provided by operational services GmbH & Co. KG and the contractual part is covered by the CSN-contract.

The following chart should assist you by selecting the most suitable network connection depending on several conditions. Therefore please answer the following three important questions.

1. Where is the **location** of the company that needs the access?
2. Which **application** should be used (bidirectional or unidirectional communication)?  
If you want to use applications with bidirectional communication and applications with unidirectional communication, please choose "bidirectional communication".
3. Do you plan to reach only **Volkswagen resp. Audi** via this network connection or also other **OEM's resp. partners**? The network connection to other OEM's resp. partners is not provided by operational services. Please contact the corresponding provider.



Hints: Please be aware of the limited regional availability of the provider WOBCOM and COM-IN (please see chapter 2.5).

### 1.3. Summary of contract types

In addition to the information on the first page, please find in the chart below more detailed information of the contract types.

	1. CSN contract part §1: CSN Basic Services	1. CSN contract part §2: CSN Provider Services	1. CSN contract part §3: CSN Application Services	2. Provider contract
<b>Contractual partner of the company</b>	operational services GmbH & Co. KG			provider of network access
<b>necessity of contract</b>	contract is mandatory	contract is mandatory, except in case of using an internet VPN connection	contract is mandatory in case of using the online access to the HyperKVS	contract is mandatory, except in case of using an internet VPN connection
<b>reflection to Volkswagen and Audi</b>	For Volkswagen and Audi separate contracts are necessary (price reduction for second contract 50%).	Only one contract for Volkswagen and Audi necessary (accounting per user).	For Volkswagen and Audi separate contracts are necessary (price reduction for second contract 50%).	Only one contract for Volkswagen and Audi necessary (depending on external provider).
<b>services in relation to this contract (in extracts)</b>	Single Point of Contact (SPOC) by our Service Support Center (SSC) for all your questions regarding the network access to Volkswagen resp. Audi.			Preparation of physical network- connection (e.g. router and lines) with several service levels.
	Preparation, operation and services of network connection with close collaboration of chosen provider.	Preparation, operation and associated service provision of physical network access for connection type internet VPN.	System and hotline services for the complete KVS EDP system. Free KVS training (one day and one user per company per year, trainings take place on several locations.	

For further Information regarding the contracts or details of network connections please check the next pages in this document or the contract documents.

## 2. Summary of network access types

### 2.1. Technical requirements

Network access is provided on the basis of the TCP/IP protocol. It is a prerequisite, that the given contractor supports this communication protocol. This is an important fact in case of OFTP data exchange, which is only supported on the basis of the TCP/IP-protocol. At the moment we offer the following connection types for the Volkswagen resp. Audi partner network:

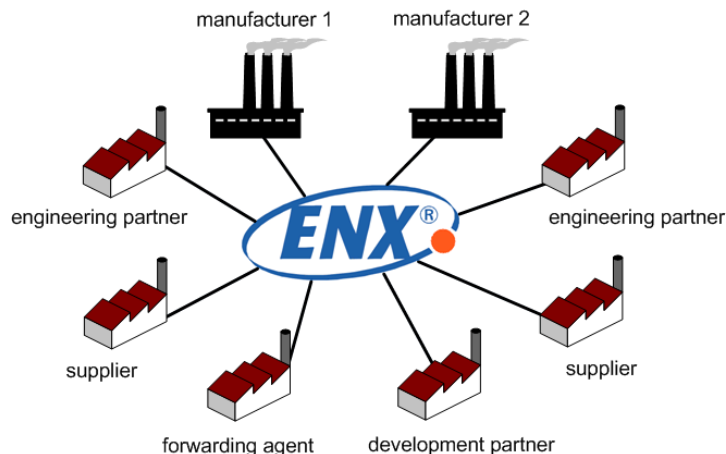
- **ENX** (European Network Exchange), the communication network for European automobile industry (e.g. by Provider T-Systems)
- **ANX** (Automotive Network Exchange) based on xDSL and MPLS in America as ENX-CSP (Certified Service Provider)
- **VPN** (Virtual Private Network) network connection by Provider Vodafone (only available within Germany)
- **VPN** Offnet network connection by Provider BT (for companies in foreign countries outside Germany)
- **SFV** (a leased line, standard fixed line), e.g. by Provider Vodafone, WOBKOM or COM-IN
- **Internet VPN**

## CSN first information

### 2.2. Access via ENX

ENX (European Network Exchange) is the European automobile industry's communication network. It is operated as virtual private network on an IP basis.

This connection is the favored one if you want to get access to the partner network of Volkswagen or Audi.



ENX is the preferred solution for companies that set a high value on data encoding, in case of need for larger bandwidth or in case of communication with other OEM's at the same time, that are using ENX too.

ENX is offered with demand-actuated connection types (dial connect, ficex connect, with and without QoS – quality of service -) on basis of DSL, Frame Relay and ATM (Asynchronous Transfer Mode).

In addition to Volkswagen and Audi, other automotive manufacturers e.g. BMW, DaimlerChrysler, Ford, Porsche, PSA Peugeot-Citroën and Renault are linked to ENX. Development partners and suppliers working with ENX are e.g. Bosch, SiemensVDO, Hella, IAV, Porsche and Karmann.

Regarding the communication with Volkswagen or Audi via ENX several fixed-connect accessions (various types of fixed / leased lines) and dial-connect accessions can be used.

For ENX registration please visit the webpage: <http://www.enxo.com>.

Operational services is an integrated part of T-Systems, so you can mandate operational services for your ENX connection and your CSN network access at the same time. Thus you will have a competent partner for all questions regarding your access to the partner network of Volkswagen and Audi.

**ANX** has met all the requirements and passed audit review by German TÜV Rheinland Group, which allows ANX to act as an ENX Certified Service Provider (CSP).

### 2.3. Access via VPN Company Net

VPN Company Net is a MPLS-based network providing an exclusive connection to the Partner Network of Volkswagen and Audi (contrary to ENX). Data exchange with other OEMs or engineering suppliers is not possible. VPN Company Net is offered by the external provider Vodafone. Several connection types based on ISDN and DSL are possible:

- VPN Company Dialog ISDN, bandwidth from 64kBit/s up to 128 kBit/s
- VPN Company Dialog ADSL flat and SDSL flat, typical DSL-bandwidths
- VPN Company Net Leased Line, bandwidth from 64 Kbit/s up to 2 Mbit/s

### 2.4. Access via BT

In particular companies from foreign countries will be connected to the Partner Networks of Volkswagen and Audi via BT. BT is a leading provider of global communication services, offering a secure and scalable network connection to Volkswagen and Audi. For further information please see the separate BT information sheet.

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### 2.5. Access via leased line

If two locations frequently communicate large volumes of information between each other, a leased line (fixed line) for transmitting data as well as voice and image information is a viable option. Such lines can be used 24h a day, are never busy and connect immediately. A fixed price is charged for their provision and is payable at the end of the agreed billing period. A standard fixed line is a special line type and marks a digital leased line offering bandwidths of 64 kBit to 34 Mbit.

For the connection to the partner network of Volkswagen and Audi, following providers are considered:

- Company Net Leased Line by Vodafone
- WOBCOM (Volkswagen – Wolfsburg and surrounding countryside)
- COM-IN (Audi – Ingolstadt and surrounding countryside)

### 2.6. Access from Simultaneous Engineering (SE-) centres

#### 2.6.1. SE-centre Wolfsburg

Companies that want to get a connection within the SE-centre of Volkswagen at Wolfsburg please contact regarding the access:

Torsten Böttcher, phone: 0049-5361-920580, e-mail: [extern.torsten.boettcher@volkswagen.de](mailto:extern.torsten.boettcher@volkswagen.de)

For further questions (contract documents, etc.) please contact:

Service Support Center of operational services  
Phone: 0800 5877 877  
Phone: +49-375-3542-8978  
Fax: +49-1805-3344 905 370  
e-Mail: [csn.service@o-s.de](mailto:csn.service@o-s.de)

#### 2.6.2. SE-centre Neckarsulm and Ingolstadt

Companies that want to get a connection within the SE-centre Audi at Neckarsulm resp. Ingolstadt please contact regarding all questions:

Service Support Center of operational services  
Phone: 0800 5877 877  
Phone: +49-375-3542-8978  
Fax: +49-1805-3344 905 370  
e-Mail: [csn.service@o-s.de](mailto:csn.service@o-s.de)

### 2.7. Access via Internet VPN

The technical requirement for the Internet VPN connection is an internet access by any internet provider. This can be setup via a Router (VPN pass-through must be enabled) or via a local internet access on the selected PC (e.g. ISDN-adaptor). For encryption the IPSec protocol is used together with a CA-certificate (trusted certificate authority) and a hardware-token with username and PIN for authentication.

At the moment this kind of network connection can only be used for unidirectional network traffic from the company to the OEM (e.g. QTS, Host, Citrix, E-Portal and KVS Web-Access). The use of OFTP with this kind of network connection is not possible and therefore not approved.

In case of using the Internet-VPN connection a one-time charge for the Hardware-Token is due plus a monthly charge per user. The license model requires one hardware-token per user. For details please see document annex-2 CSN pricelist and service-contents.

### 3. CAD data exchange via HyperKVS

#### 3.1. Software requirements

##### 3.1.1. Internet browser

Partner companies have to use a standard internet browser to work with HyperKVS, e.g. Netscape Navigator or Microsoft Internet Explorer. The used browser need to support encryption via https with a key length of not less than 128 Bit, otherwise access to the HyperKVS is not possible. With access via browser all functions of the KVS system are usable.

Internet browsers can generally be downloaded from the Internet for free. Possible additional costs in this connection are to be paid by the relevant company.

##### 3.1.2. MONA Applet

For saving (upload) and downloading of documents (CAD-models, describing documents, drawings, etc.) into the persistent file area of HyperKVS and into the temporary file area you need the tool MONA Applet. With the new MONA Applet the functions import, export, upload, and download can now be introduced into the HyperKVS with usage of new technologies (signed applet).

##### 3.1.3. Viewer

HyperKVS offers the possibility of viewing drawings on the directly screen for the users. In this case, the drawing is implicitly converted into TIFF format. Normally the viewer supplied as standard with Windows NT under "Imaging for Windows NT" is adequate for this purpose.

In case of problems regarding visualization due to the file size, we recommend to install the software "ZGView" for Windows (local administration rights are required). The relevant company is responsible for the program installation.

The TIFF viewer "CADview" is recommended for UNIX users.

#### 3.2. Installation and configuration

For changing the configuration on company servers that run HyperKVS, network skills are necessary. Please pay attention to the following items, explained in details below:

1. HyperKVS dialogue servers that should be used
2. name resolution
3. routing
4. firewall configuration

##### 3.2.1. Configuration for access to HyperKVS of Volkswagen and Audi

###### 3.2.1.1. HyperKVS dialogue server

The following HyperKVS servers are available for companies using KVS of Volkswagen and Audi:

###### **Volkswagen**

<https://kvspfv1.pfn.vwg:8081>  
<https://kvspfv2.pfn.vwg:8081>

###### **Audi**

<https://kvs.ras.audi.vwg:8081>

###### 3.2.1.2. Name resolution of HyperKVS dialog server

To work with HyperKVS dialogue servers, the server names need to be resolved in an IP address. There are 2 possibilities:

1. DNS name resolution. You can find the following DNS servers on the partner network of Volkswagen:

1. **Volkswagen**  
 193.23.100.200  
 193.23.101.200

**Audi**  
 143.164.6.220

To assure that the DNS application won't be transmit to the internet DNS, in certain circumstances a "conditional forwarder" for the domain suffix \*.pfn.vwg and/or \*.audi.vwg needs to be setup.

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- Local name resolution. Therefore you have to edit the host file of the affected PCs or workstations. Following settings need to be done:

<b>Volkswagen</b>		<b>Audi</b>	
kvspfv1.pfn.vwg	193.23.100.92	kvs.ras.audi.vwg	143.164.6.110
kvspfv2.pfn.vwg	193.23.101.92		

You can find the host files in the directories mentioned below:

Windows NT, 2000, XP	<WINDIR>\system32\drivers\etc\hosts
Unix systems	/etc/hosts

### 3.2.2. Configuration of routing

For working with HyperKVS dialog servers from your PC or workstation, you have to assimilate the routing under some circumstances. If the routing to the HyperKVS is not assured by a still configured default gateway, there must be an adequate routing entry for every HyperKVS server.

Please find below an example for the configuration of a Windows NT, 2000 or XP PC:

- push the "start" button -> "execute".. -> cmd
- enter the command: route -p add <IP-address of the HyperKVS dialog server> <IP-address of the gateway>

On Unix systems the configuration will be done analog with help of the route command or with a service program like for example Smitty on AIX.

### 3.2.3. Configuration of firewall

The following ports are used by HyperKVS, if necessary they need to be enabled on the firewall:

- HyperKVS with browser
  - http – port 8080
  - https – port 8081
- HyperMona
  - SunRPC – Port 111
  - HyperMona –Port 31917

## 4. CAD data exchange via OFTP

With CSN network access a high-performance and scalable access for the OFTP data exchange is available to you. Only TCP/IP is available as a network protocol. For this reason, your OFTP software must support the TCP/IP protocol. For further information please see your software documentation or ask your software supplier directly. The following information will help you to prepare your new OFTP receiving station.

In case your company does not have any OFTP software yet, we recommend the product rvs® of T-Systems. More information about rvs as well as contact details and a product description you could find on the internet:

<https://servicenet.t-systems.de> → Datenaustausch → rvs® → rvs® Home

## CSN first information

### 4.1. OFTP installation of a company

If a company exchanges OFTP data with Volkswagen or Audi for the first time, an OFTP station entry on the OFTP server systems of VW and Audi needs to be generated. This entry will be set by operational services after presenting the completed documents and naming of the company's Odette-ID.

After that, you will get a triple-digit identification code and the passwords for sending and receiving data. These settings must be configured in your OFTP software. For the preparation of an OFTP station entry an Odette-ID is absolutely necessary. You will get your Odette-ID from:

Verband der Automobilindustrie e.V. (VDA)  
POB 17 05 63  
60079 Frankfurt/M.  
Germany  
phone.: +49-69 9 75 07 – 0  
fax: +49-69 9 75 07 – 261  
E-Mail: [info@vda.de](mailto:info@vda.de)  
Internet: [www.vda.de](http://www.vda.de)

### 4.2. OFTP server at Volkswagen

There is one OFTP server available for you within the partner network of Volkswagen. Normally your software supplier will set up the OFTP server RF3 in your communication software. Therefore the following information is required:

Odette-ID for RF3: O001300001VW.....RF3 (first sign is the letter "O"; 6 blanks in front of RF3)

TCP/IP address for RF3 = 193.23.100.21

### 4.3. OFTP server at Audi

There is one OFTP server available for you within the partner network of Audi. Normally your software supplier will set up the OFTP server RSB in your communication software. Therefore the following information is required:

Odette-ID for RSB: O0013000057AUDI-INGRSB (first sign is the letter "O")

TCP/IP address for RSB = 143.164.6.113

### 4.4. Configuration of routing

To establish a TCP/IP connection from your OFTP server to the OFTP servers of Volkswagen or Audi you may need to accommodate the routing. If your routing is not backed up by an existing configured default gateway, there must be a routing entry for every OFTP server. Please find below an example for the configuration of a routing on Windows NT, 2000 or XP PC:

1. push "start" -> "execute" -> cmd -> [OK]
2. enter the command: route -p add <IP address of OFTP server> <IP address of gateway>

The configurations on unix systems is analog using the route command resp. other service programs like smitty for AIX.

### 4.5. Configuration of firewall

The TCP port 3305 will be used for the OFTP data exchange. This port must be enabled on the firewall.

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### 4.6. Default settings / ENGDAT parameter

All files are always sent gzip packed and must be unpacked upon receipt! The following OFTP parameters should be set:

- FLAGCOMP=0
- EERP\_OUT=immediate

Volkswagen and Audi only receive and send files via ENGDAT. While sending via ENGDAT, please pay attention to the following information:

- The ENGDAT transmission address must not be copied to the ENGDAT file name!
- The transmission address must be entered in UNB-0014 segment of the abstract file.

### 4.7. ComSecure

Volkswagen and Audi are strived to protect the exchanged company CAD data against unauthorised access and manipulation as well as implementing an authentication.

Therefore VW and Audi decided to use the T-Systems software ComSecure for this purpose. ComSecure was developed for encrypting and compressing such data. Please find below the most important steps for implementing ComSecure.

- You will receive the following information from your OFTP-software supplier
  - ComSecure Software
  - documentation and instructions
  - public keys for OFTP server RF3 as well as Audi OFTP server RSB

According to the instructions manual you need to import the public keys of VW resp. Audi to your own key administration.

- You have to apply for a server certificate for partner companies. Please send this application form via e-mail to [ZentraleKAMAdministration.RKAM@volkswagen.de](mailto:ZentraleKAMAdministration.RKAM@volkswagen.de) and in addition via fax to +49-5361-275624. For further information please see the appropriate documentation.
- You will receive 3 certificates of VW / Audi as confirmation for your implementation. Please keep those certificates at a safe place.
- If you already run encrypted data exchange with ComSecure to one of the group brands Volkswagen or Audi, you only need to import the public key of the new communication partner (VW or Audi) into your own key administration. A new registration of the server certificate is not necessary.

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**4.8. Handover to operation support / connection test**

During the final connection test (appointments are arranged with Service Support Center of operational services), the following items will be tested:

1. TCP/IP connection of router to router
2. TCP/IP connection of OFTP server to OFTP server
3. OFTP communication between the OFTP server of companies and the OFTP servers at Volkswagen or Audi is established via a "LOOPTEST". To this effect, a file with arbitrary content (volume not to exceed 10 kB) is sent to the receiver station at Volkswagen or Audi with the name <LOOPTEST>. If successfully received, the file is automatically sent back to the sender. After the receipt of the LOOPTEST, the file data transfer in both directions is guaranteed. You can utilize your newly installed connection for data exchange after a successful "LOOPTEST".
4. If you implement a communication with Volkswagen and Audi, ComSecure must be tested in addition. You can use the same file from step 3, but instead of sending this with the name "LOOPTEST", please use right now the name "GDCSTESTLOOP". This file will be received, decrypted, again encrypted and send back to the sender by the Volkswagen / Audi OFTP-servers. Upon receipt the content of both file versions must be the same. After testing ComSecure successfully you are able to exchange CAD data.

**5. Model calculation**

**5.1. Minimum model calculation**

Regarding the network access to Audi, you have decided for CSN contract type basic. You also want to get access to the application QTS via Internet VPN (VPN Token) by provider operational services.

	<b>CSN Basic Service Charge</b>	<b>CSN provider charge</b>	<b>CSN application Service charge</b>	<b>Total amount</b>
<b>Element of costs (first contract Audi)</b>	Contract type basic	VPN-Internet	application QTS	/
<b>Set-up charge (first contract Audi)</b>	195,00 € + 150,00 € <sup>1</sup>	90,00 € + 70,00 €	Free of charge	<b>One-time charge 505,00 €</b>
<b>User fee (first contract Audi)</b>	58,00 € / month	30,00 € / month	Free of charge	<b>Charge per month 88,00 €</b>

<sup>1</sup> The charge of 150,00 € is only necessary in case of processing a self-assessment for information security and will not be necessary in case of existing certificate in accordance with ISO 27001.