MirrorServer/2 and DMS-Backbone 4
Rollout Information for Importers

Rollout Project

Content

Document Intention

Document Intention

The aim of this document is to provide you as the Importer an overview of the Volkswagen Group project regarding the global market-rollout of the MirrorServer/2 and DMS-Backbone 4 solution.

As this presentation outlines, this company-solution is absolutely necessary for the servicing of cars in the future, and this not only involves the VW brand, but covers all brands of the Volkswagen Group.

Within this document you will receive sufficient information on application features and benefits, solution options and technical details.

You will also be informed about the main stakeholders, support services and points of contact.

Finally, this document provides you with a guideline on how to start the project by describing the major steps and roll-out activities for a successful implementation of MirrorServer/2 in your market.

In the Appendix you will find further input regarding technical information.

Definition of used Abbreviations and Terms within the Rollout Project

BTAC Box	• Hardware appliance at service partner level • Independent of the solution you choose at importer/wholesale level (either IA Light Box or IA Light Online) each of your Service Partners will need the BTAC Box (one per service workshop location)
DMS-BB4	• Dealer Management System-Backbone 4 • Provides a universal data communication interface between local VW SP applications and central OEM systems • Delivered (pre-installed together with MS/2) in the BTAC Box
IA Light	• You can choose between two solutions at importer level: the IA Light Box and the IA-Light Online (MS/2 via internet) solution.
IA Light Box	• Standard 19' server with preinstalled importer versions of MirrorServer/2 and DMS-BB4
IA Light Online	• Hosted (via the provider OS) Online Solution, as an alternative to the IA Light Box. Only covers MS/2
Importer	• Any importer of automobiles of the Volkswagen Group • Can be a direct importer, an importer who imports on behalf of other importers, a group-independent importer, a NSC or NSU • Note that an Importer can be a VW SP at the same time.
MQB	• Refers to the German expression: Modularer Querbaukasten or Modularer Querbauweise • Can be loosely translated as "Modular Transverse Matrix" • Intended to allow Volkswagen Group to design a wide variety of transverse, front-engined, front-wheel drive models using the same set of components
MS/2	• MirrorServer/2 • Refers to the new software as the global enterprise solution, which is delivered with the IA Light Box and the BTAC Box
ODIS	• Offboard Diagnostic Information System • Software development of a new vehicle diagnosis system for vehicle diagnostics across all brands within the Volkswagen Group • The ODIS-Tester will replace the previous diagnostic tool VAS-Tester
OEM	• Original Equipment Manufacturer • VW OEM or OEM in this document refers to the Volkswagen Group
VW SP	• Volkswagen Service Partner(s), VW Service Partner(s) • Refers to any service partner of the Volkswagen Group, independent of the brand and independent of whether the service partner is a dealership at the same time or not.

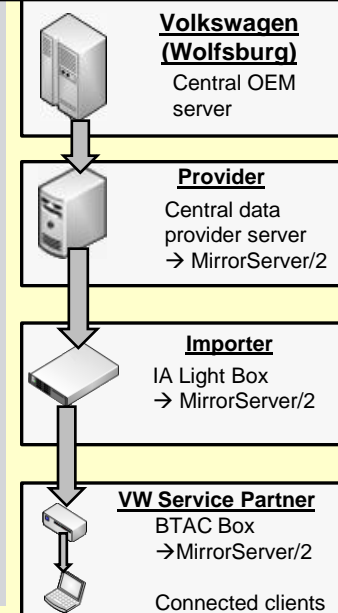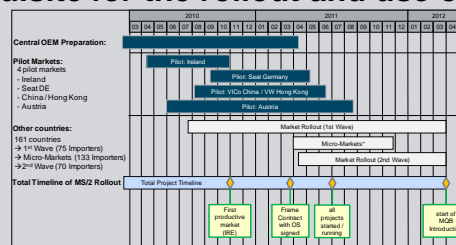| 1. Introduction	2. Rollout Components	3. Solution Options	4. Support Concept	5. Approach

Management Summary – Overview and aim of project and rollout solution

The new necessary global solution **MirrorServer/2** and **DMS-Backbone 4** enables **fast delivery of large application data files** to Volkswagen Service Partners worldwide in a **reliable and cost-efficient way**, and will replace the current solution (MirrorServer/1 and DMS-Backbone 3). The **two main reasons** for the switch are: Firstly only MirrorServer/2 will be able to **manage the expected increase of application data transfer volumes** and secondly MirrorServer/2 is a **prerequisite for the rollout and use of the Offboard Diagnostic Information System (ODIS).**

We are aiming to roll out MirrorServer/2 in several waves into all Volkswagen markets worldwide and to go live.

The key benefits of MirrorServer/2 are:

- Massive reduction & optimization of network usage
- Enablement of ODIS – this is required for new after-sales mgmt (strictly necessary e.g. for new Audi A3)
- In-time delivery of required data from OEM to VW SP necessary for service and repair processes
- Easy maintenance of MirrorServer/2 and reporting of data distribution

Volkswagen (Wolfsburg)
Central OEM server

Provider
Central data provider server
→ MirrorServer/2

Importer
IA Light Box
→ MirrorServer/2

VW Service Partner
BTAC Box
→MirrorServer/2

Connected clients

1. Receive initial information from central rollout team, central rollout coordinator assigned

2. Setup and start local rollout project, assign local project manager and sign Memorandum of Understanding (MoU)

3. Analyze market, identify all VW SP in scope, plan technical realization and purchase hardware/services from provider + contract required services

4. Setup of MirrorServer/2 and DMS-BB 4 at importer level and execute Pilot project with identified pilot Service Partners

Market Rollout

After successful Pilot, plan and prepare* Rollout of MirrorServer/2 and DMS-BB 4 to rest of VW Service Partners in market (*e.g. organization of sufficient manpower for project execution, establishment of necessary support, training measures, translations, manuals)

The worldwide MirrorServer/2 rollout is coordinated and supported by the central OEM rollout team. In your particular market, you as the importer are responsible for the rollout and continued support of MirrorServer/2 to connected brand partners.

This document's intention is two-fold: to inform and to provide guidance. On the one hand you will get information regarding MirrorServer/2 application features, benefits, solution options and technical details, on the other hand this document provides guidance by describing the major steps and activities for the implementation of MirrorServer/2 in the market.

For further information and support, please contact the central OEM rollout team:
MirrorServer2@volkswagen.de

| 1. Introduction | 2. Rollout Components | 3. Solution Options | 4. Support Concept | 5. Approach |

Project Scope

The worldwide rollout of MirrorServer/2 and DMS-Backbone 4 covers 7 brands and 161 countries

Project Objectives

- Rollout of MirrorServer/2 and DMS-Backbone 4 into Volkswagen markets worldwide
- Go-live of MirrorServer/2 before the start of ODIS rollout
- Complete rollout finalized until 2012

Worldwide Rollout

- 161 countries
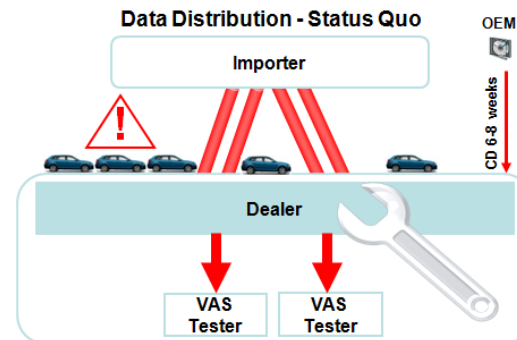- 275 Volkswagen Group wholesale partners and National Sales Companies
- 7 Volkswagen brands

161 Countries

New Toolset required by Business Strategy

The MQB introduction requires the next generation toolset to service VW Group cars

The new VW Group production strategy is based on the MQB	A serious risk for the existing After Sales capabilities	A new BTAC solution prepares workshops worldwide for service

Fundamental Business Requirement

- New models MQB coming soon ...
  - Audi A3
  - VW Golf 7
  - Skoda Yeti
  - Seat Leon
- Servicing new car models (MQB) with a new fully capable diagnosis tool-set (ODIS, MS/2) has become urgent and mandatory.

A New Technical Requirement

- OEM information (data) distribution has reached a new scale of volume
- Guaranteeing full repair capabilities impacts the existing BTAC infrastructure at all levels
  - OEM (Manufacture brands)
  - Wholesale (Importer)
  - Retail (Service Partner)

MirrorServer/2 & Backbone4 Solution

- Two new BTAC components (MS/2, DMS-BB4) resolve infrastructure deficits and provide the technical basis for the new repair tool-set
- Bringing 3 benefits to the SCP
  - Prevention of repair accumulation (data distribution in 48h)
  - Shortened repair cycles (faster diagnosis, direct data access)
  - Continuous monitoring and alerting.

1. Introduction	2. Rollout Components	3. Solution Options	4. Support Concept	5. Approach

High-Level Timeline – Pilot Markets, Market Rollout Waves

Gantt chart timeline:

	2010										2011												2012					
	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07

Central OEM Preparation: (bar from 03/2010 to ~04/2011)

Pilot Markets:
- Ireland
- Seat DE

Pilot: Ireland (bar from 05/2010 to ~10/2010)

Pilot: Seat Germany (bar from ~09/2010 to ~07/2011)

All countries:
161 countries
→ 1st Wave (75 Importers)
→ Micro-Markets
(133 Importers)
→ 2nd Wave (67 Importers)

Market Rollout (1st Wave) (bar from 12/2010 to ~04/2012)

Micro-Markets* (bar from ~06/2011 to ~01/2012)

Market Rollout (2nd Wave) (bar from ~07/2011 to ~04/2012)

Total Timeline of MS/2 Rollout:

Total Project Timeline (bar spanning 04/2010 to ~07/2012)

Milestones:
- First productive market (IRE)
- Frame Contract with OS signed
- all projects started / running
- start of MQB Intro-duction
- End of Rollout

Content

MirrorServer/2 Overview – Services, Setup and Key Benefits

MirrorServer/2 Services

The new enterprise solution MirrorServer/2 has the goal to deliver large application data files to Volkswagen Service Partners worldwide in a timely, reliable and cost-efficient way.
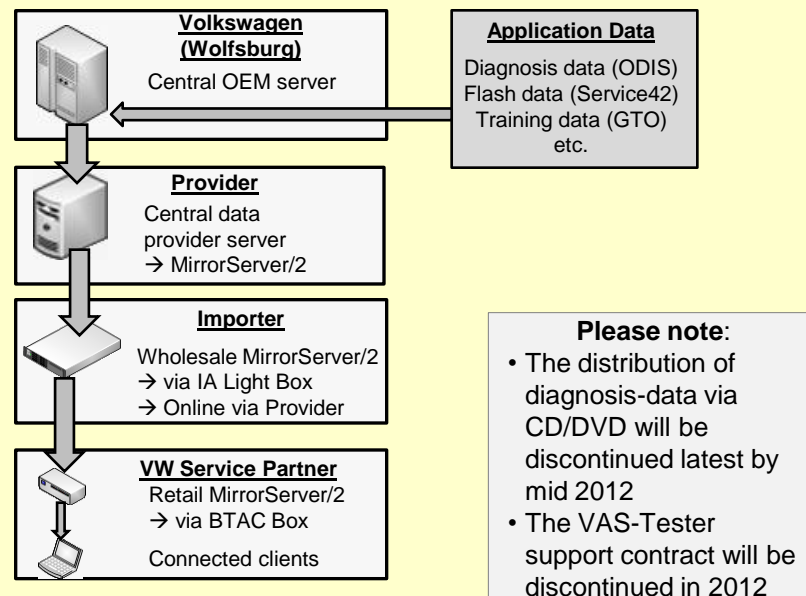
MirrorServer/2 is delivered via:

- IA Light Box/IA Light Online at the importer level (regional)
- BTAC Box at the VW SP level (local)

MirrorServer/2 currently provides data for (list expanding):

- Service42 (Flashing), Service42-MMI
- GTO (Group Training Online)
- ODIS (Offboard Diagnostic Information System)
- ServiceKey
- SLI-Client

Solution Setup (MS/2 delivered on IA Light and BTAC Box)

Volkswagen (Wolfsburg)
Central OEM server

Application Data
Diagnosis data (ODIS)
Flash data (Service42)
Training data (GTO)
etc.

Provider
Central data provider server
→ MirrorServer/2

Importer
Wholesale MirrorServer/2
→ via IA Light Box
→ Online via Provider

VW Service Partner
Retail MirrorServer/2
→ via BTAC Box
Connected clients

Please note:
- The distribution of diagnosis-data via CD/DVD will be discontinued latest by mid 2012
- The VAS-Tester support contract will be discontinued in 2012

Key Benefits

IN TIME DELIVERY OF DATA FOR REPAIR PROCESS	Updated flash and diagnosis data available much faster at VW SP → no delay during repair process → faster market readiness for new car versions compared to current flash data shipment via CD/DVD (48h worldwide vs. 6-8 weeks)
REDUCTION & OPTIMIZATION OF NETWORK USAGE	Massive reduction of wide area network usage due to use of local caching → reliability & speed → prevents overload of importer to VW SP connection and increases application performance Optimized network usage through scheduling of synchronization traffic to off-peak hours → efficiency
SIMPLIFIED MAINTENANCE AND REPORTING	Central monitoring/reporting possible → easy check if all necessary flash files are available in the market → remote support and error prevention based on health status alerts possible

MirrorServer/2 Basic Drivers

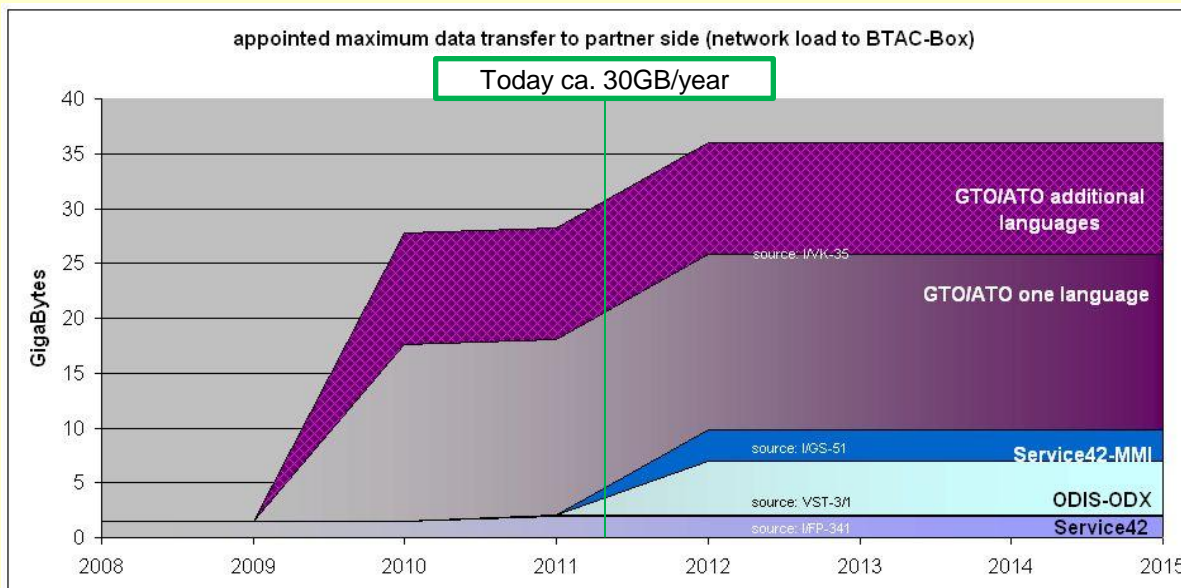## Data transfer via MirrorServer/2 will be necessary to cope with future data volumes

Increasing data transfer volume

Depending on the individual needs of the VW Service Partner, the volume of required application date varies. In any case, i.e. even if a VW Service Partner only uses basic options, the existing MirrorServer/1 solution will be outdated and will not be capable of transferring the associated data volumes. E.g. ODIS itself already requires a high capacity, which currently only MirrorServer/2 offers.

Graphical forecast of data transfer volume

The chart to the right depicts the expected maximum volume of application data to any single VW SP. The infrastructure of a VW SP needs to be prepared accordingly.

Graphical Forecast of Data Transfer Volume (maximum network load)

appointed maximum data transfer to partner side (network load to BTAC-Box)

Today ca. 30GB/year

GTO/ATO additional languages
source: I/VK-35
GTO/ATO one language
source: I/GS-51
Service42-MMI
source: VST-3/1
ODIS-ODX
source: I/FP-341
Service42

Basic Drivers	**INCREASING DATA TRANSFER VOLUME**	Expected growth in using service applications (ODIS, GTO, Service42) to support VW Service Partner business activities will lead to a heavy increase of application data transfer volumes.
	PREREQUISITE FOR ODIS	With the rollout of the Offboard Diagnostic Information System (ODIS), the existing MirrorServer/1 capabilities are no longer sufficient. Thus, the MirrorServer/2 infrastructure is a prerequisite for ODIS.

MirrorServer/2 Application Features & Benefits

Main Application Features	Associated Benefits
Application data is structured in collections, allows demand-based subscription and filtering	Saves bandwidth, transfer time and potential associated network-costs
MirrorServer/2 is ready to manage large amounts of data	MirrorServer/2 is set up to be a long-term solution Wholesale MirrorServer/2 offers the possibility of distributing additional local market-data from the importer server to Service Partners (up to 200MB/day)
MirrorServer/2 uses RFC-conform standard protocols	Enables usage of clients/products that support implemented standards
MirrorServer/2 offers intelligent data management	Reduces synchronization effort Optimized usage of the available bandwidth through downloading during off-peak times
MirrorServer/2 is able to use the internet (use of certificates)	Potential cost advantages by utilizing (cheaper) internet Usable at independent service partners as well
Simplified web-based interface	Lower administration efforts
Central reporting of data distribution status	Transparency of data distributed into the markets

DMS-Backbone 4 Overview

Integration of Volkswagen Service Partner, Importer and OEM Systems

Overview

DMS-Backbone 4 provides a universal data communication interface between local VW SP applications and central OEM systems, as well as enables a secure, reliable communication and interoperability amongst these.

① CPN / Internet

This solution connects DMS-BB4 of VW SP (retail version) and CPNBB (Central DMS-BB at OEM level) via CPN; and DMS-BB4 of Importer (wholesale version) to IA OEM via Internet
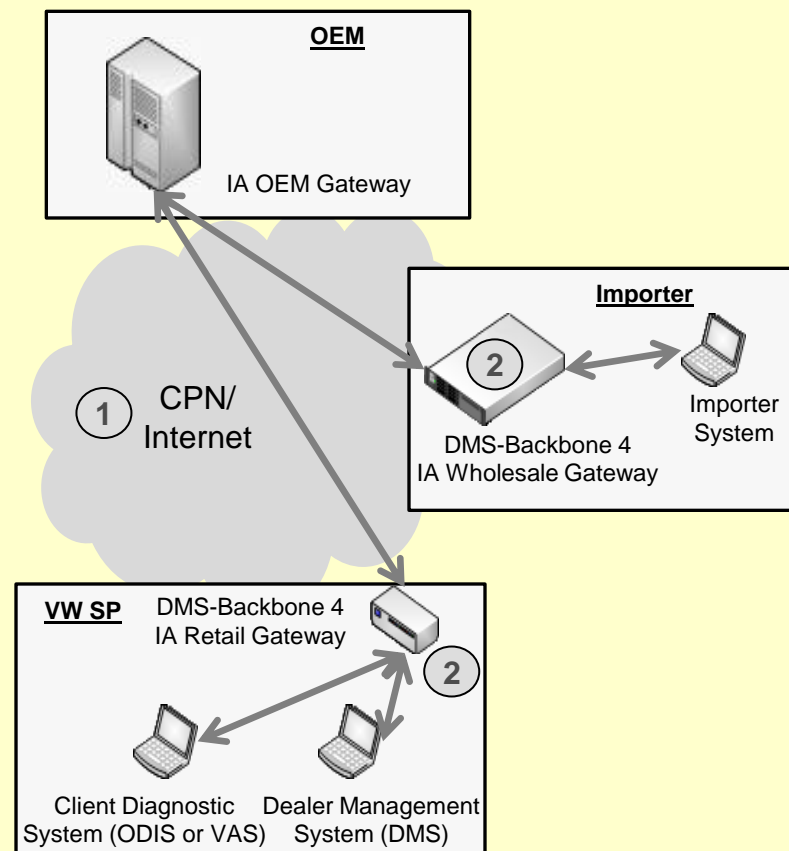
② DMS-Backbone 4

DMS-BB4 is delivered (preinstalled together with MS/2) in the following appliances:

• IA Light Box at the importer level (IA Wholesale Gateway)

• BTAC Box at the VW SP level (IA Retail Gateway)

It connects to the following services:

SAGA/2, ELSA Pro, NADIN, RESERVE, ETKA, ET 2000, ISA, EVA, CRM (KUBA), RECALL

DMS-BB4 Communication Setup: OEM, Importer and VW SP

OEM

IA OEM Gateway

Importer

① CPN/ Internet

② DMS-Backbone 4
IA Wholesale Gateway

Importer System

VW SP DMS-Backbone 4
IA Retail Gateway ②

Client Diagnostic System (ODIS or VAS) Dealer Management System (DMS)

DMS-BB4 Features and Advantages

Comparison of DMS-BB3 and DMS-BB4 → please see chapter 4. Approach (Migrating DMS-BB3 to DMS-BB4)

Main Application Features	Associated Benefits
DMS-BB4 connects current clients like VAS tester to the standard protocol based MirrorServer/2	Downward compatibility of MirrorServer/2 to MirrorServer/1
Improved diagnostic tools provide an optimal support capability	Reduces support effort
Simplified web based interface	Lower administration efforts
Only the relevant settings have to be configured. Everything else is automatic- even multi-site configuration.	Reduces configuration effort
Automatic software update of DMS-BB4 with MirrorServer/2, maintenance-free software management operations	Increases flexibility, reduces overall maintenance effort for VW Service Partners, Importer and OEM
DMS-BB4 offers new Services (OMD, NADIN, KANSAS, …)	Supports new services
Future services can be provided (e.g. access to RECALL and RESERVE) on importer level	Supports new services on importer level
Decreasing of communication traffic for the connection of ElsaPro with DMS	Reduces network traffic
DMS-BB4 uses standard X.509 certificates	DMS-BB installation compliant to security policies

Appliance Overview

Solution Setup: HW-Appliances at Importers and VW SPs

IA Light Box at Importer Level, BTAC Box at SP-Level

Importer Level – IA Light Box:

The IA Light Box is an industrial 19" rack server, pre-installed with MirrorServer/2 and DMS-BB4 with a state of the art RAID and power supply architecture. Operating system is a security-hardened Linux for reduced vulnerability.
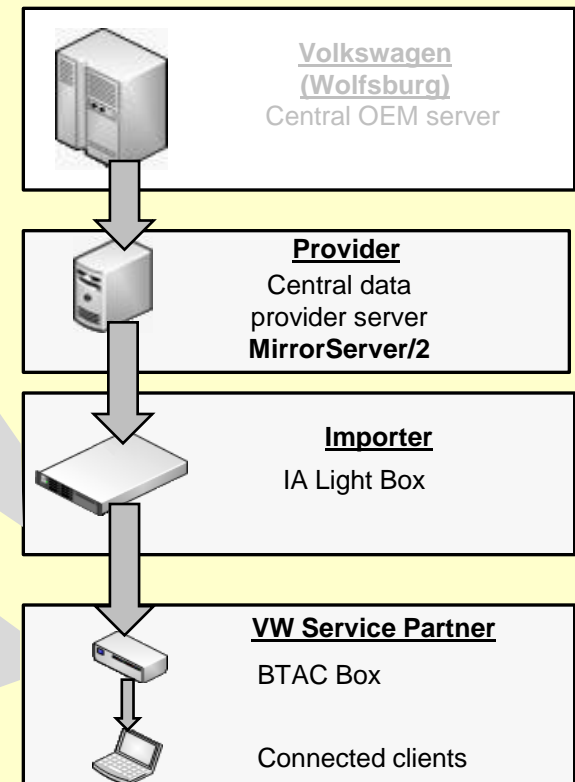
A Service Level Agreement with the provider covers maintenance, monitoring, response and recovery times.

Note: There is no appliance necessary at the wholesale level for the IA Light Online Solution (see Solution Options).

VW Service Partner Level – BTAC Box:

The BTAC Box is an easy plug-and-play solution packed in a Mini ITX Casing 192x210x62mm. It runs a security-hardened Linux based software (as above for reduced vulnerability) and additionally includes the BTAC components MirrorServer/2, DMS-BB4, optionally also DNS and DHCP services.

Key features are central monitoring of distribution and storage status as well as of the system health status, remote support and the possibility of remote software updates.

Volkswagen (Wolfsburg)
Central OEM server

Provider
Central data provider server
MirrorServer/2

Importer
IA Light Box

VW Service Partner
BTAC Box

Connected clients

For further details and requirements see appendix "Technical Information"

Content

Solution Options – Overview and Scope of Services by OS (Provider)

→ For details and further questions w.r.t. OS-Services, please contact mirrorserver2@o-s.de

BTAC Box	IA LIGHT Box	IA LIGHT ONLINE
Standard Services: • BTAC Box Provision • Service Desk / SPOC • 3rd-Level Support • Monitoring of Hardware (BTAC Box) • Monitoring of Data-Synchronization • Management of Certificates • Service-Level Management and Reporting • Management of Contractual Data	**Standard Services:** • IA Light Box Provision • Installation and Setup: IA Light Box and MirrorServer/2 Services • Service Desk / SPOC • 1st, 2nd and 3rd-Level Support • Administration, Monitoring and Maintenance of HW (IA Light Box) • Monitoring of Data-Synchronization • Management of Certificates • Service-Level Management and Reporting • Distribution of Market-Specific Content • Software Maintenance • On-Site Servicing of Hardware • Management of Contractual Data	**Standard Services:** • IA Light Online Provision • Installation and Setup: MirrorServer/2 Services • Service Desk / SPOC • 1st, 2nd and 3rd-Level Support • Administration, Monitoring and Maintenance of IA Light Online • Monitoring of Data-Synchronization • Management of Certificates • Service-Level Management and Reporting • Distribution of Market-Specific Content • Software Maintenance • Provision and Distribution of latest Mirror-Server/2 Data • Administration of MirrorServer/2 Services • Management of Contractual Data
Note that all fees to OS are independent from and **not covered** by existing Volkswagen AG BTAC license fees. **Optional Services** (see Support Concept)**:** • 1st and 2nd Level Support • Rollout Support	**Optional Services:** • HW Replacement within 12 hours • On-Site Installation Service	

Decision process – Which solution setup is best for me?
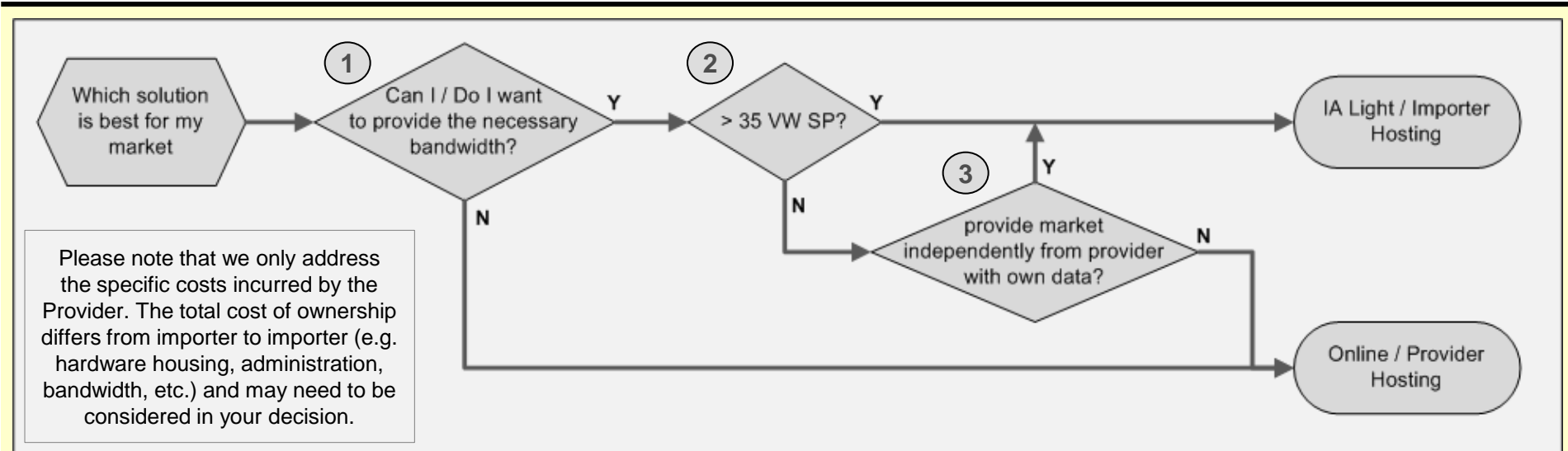
1 — Bandwidth provision capability and costs:

You need to ensure that you can provide the necessary bandwidth for your market. Use of Bandwidth Calculator as a help (example on next slide). You also may want to consider bandwidth costs in your solution decision process. These need to be calculated individually, as bandwidth costs vary from country to country. Note that bandwidth capacity and associated costs generally increase with the number of connected VW Service Partners. If these costs are significant in your country, the Importer-Hosting solution's total costs may exceed the Online solution after a certain point again.

2 — No. of VW Service Partners

Depending on the number of VW SP you deal with, the IA Light Box option may be the better choice from a pure cost perspective. Currently the break-even would occur at around 38 boxes. Regarding bandwidth costs: If your market is extraordinarily large, the online-solution may become more feasible again, if bandwidth costs play a role (see comment 1).

3 — Market-specific Data-provision

With the IA Light Box, you as the importer have the opportunity of providing your own market-specific data to your connected VW SP.

Network Requirements – Have to be calculated individually

Data transfer volumes as well as update frequencies need to be considered

System/ Service	Update frequency	Maximum update size per event
Service42	daily	20 MB
ServiceKey	twice a year	20 MB
ODIS	every 6 weeks	460 MB
SLI-Client	daily	12 MB
Service42-MMI	every 6 weeks	500MB
GTO/ATO	weekly	1000 MB

Importer
IA-Wholesale-MirrorServer

60 Mbit/s (*1)

upload stream to VW SP

...

0,5 ... 0,5 Mbit/s (*2)

VW Service Partner
IA-Retail-MirrorServer

...

Parameters	
maximum amount of data per day in MB	1024 MB
estimated protocol overhead data in %	40 %
available Transfer timeframe per day	8 hours
No. of Partners	150
Calculation	
Required outbound Bandwidth	**60 Mbit/s**

(*1) required outbound bandwidth (upstream) at importer as result of entered parameters
(*2) recommended minimum bandwidth (downstream) at each partner is 512 kbit/s

OEM limited the daily maximum transfer volume organisationally to 1024 MB/day

Understanding the calculation of the required bandwidth (upload stream) from importer to VW Service Partners

In order to work out the required bandwidth you need as an upstream towards your market, you may want to use a simple calculation tool (→ e-Room - 4a901 Rollout). You will need to enter the according parameters (see table in graphic: max. amount, protocol overhead, timeframe, no. of VW SP). This will result in the approximate bandwidth (in above example: 39 Mbit/s). The underlying formula is as follows: The estimated daily maximum of net transferred data is extended with a protocol overhead. This gross amount is then factored with 8 to get a Mbit-value (1byte = 8bit), which equals the traffic volume to a single VW SP. Thus, this value is multiplied by the no. of VW SP. Finally, the total value is divided by the provided/available transfer timeframe – transformed into seconds, to yield the desired value in Mbit/s.

NETWORK REQUIREMENTS Network requirements are individual for each market. They depend on the data for chosen applications (e.g. left table) for distribution in the market, the number of VW SP and the available time slot for synchronization.

Contract with Provider and Cost Elements

5-year Market Contract (service contract)

A Market Contract between Importer and Provider is required to organize IA Light and/or BTAC Boxes for Importers respectively for their connected VW Service Partners. For budget purposes please use the provided prices from the table, which cover standard services as listed before in the scope overview.
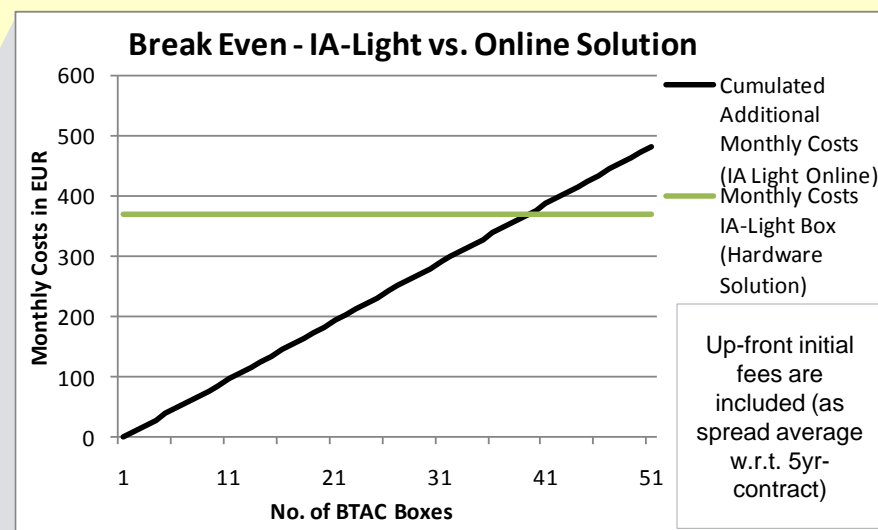
The Provider optionally offers a Pilot Contract (duration 8 weeks) which needs to be agreed on individually and which contains IA Light (Box or Online), and up to around 10 BTAC Boxes, along with extensive service and support. For details on this option, please discuss and arrange directly with the provider. As an orientation (depending on your individual solution needs) the Pilot Contract fee ranges around 6000-7000€.

IA Light Box vs. IA Light Online Solution

Assuming average monthly fees of 350-360€ for an IA Light Box (due to cost regression), the IA Light Online Solution may be an option for markets with up to around 38 SP (see right chart).

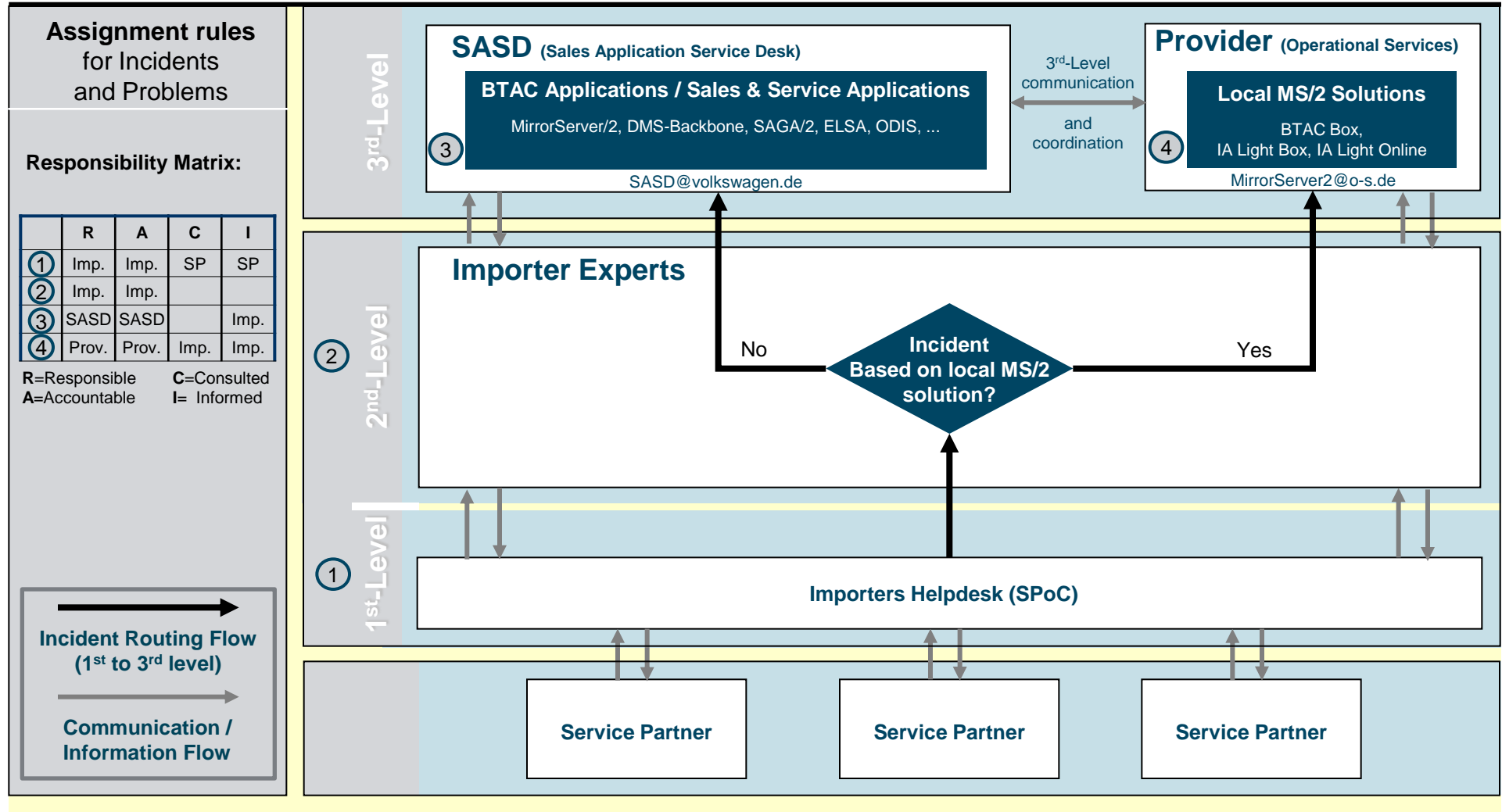### Prices taken from global Volkswagen AG frame contract with OS

Cost Overview [EUR] (Further OperationsServices to be contracted individually)	Up-front one-time fee	year 1	year 2	year 3	year 4	year 5
MS/2 via IA-Light Box Solution						
IA-Light Box	900,00	369,15	358,95	354,76	350,58	346,38
BTAC Box (32-Bit-Box)		30,83	30,17	29,52	28,89	28,23
MS/2 via IA-Light Online Solution						
IA-Light Online	-	-	-	-	-	-
BTAC Box (32-Bit-Box)		30,83	30,17	29,52	28,89	28,23
BTAC Box – additional fees for IA-Light-Online	10,00	9,50	9,50	9,50	9,50	9,50

Break Even - IA-Light vs. Online Solution

Content

Support Concept – Incident Routing Flow

Assignment rules
for Incidents and Problems

Responsibility Matrix:

	R	A	C	I
1	Imp.	Imp.	SP	SP
2	Imp.	Imp.		
3	SASD	SASD		Imp.
4	Prov.	Prov.	Imp.	Imp.

R=Responsible **C**=Consulted
A=Accountable **I**= Informed

Incident Routing Flow
(1st to 3rd level)

Communication /
Information Flow

3rd-Level

SASD (Sales Application Service Desk)

BTAC Applications / Sales & Service Applications

MirrorServer/2, DMS-Backbone, SAGA/2, ELSA, ODIS, ...

3 — SASD@volkswagen.de

3rd-Level communication and coordination

Provider (Operational Services)

Local MS/2 Solutions

BTAC Box,
IA Light Box, IA Light Online

4 — MirrorServer2@o-s.de

2nd-Level

Importer Experts

No ← **Incident Based on local MS/2 solution?** → Yes

2

1st-Level

Importers Helpdesk (SPoC)

1

Service Partner   **Service Partner**   **Service Partner**

Support Concept – Tasks and Responsibilities

	1st-Level Support Importer's Helpdesk	2nd-Level Support Importer's Experts	3rd-Level Support Technical Support	
	Importer		SASD	Provider OS

Tasks	• Record all incidents from VW SP
	• Assign priority to incidents (classify impact and urgency)
	• Provide technical pre-analysis of incident (Sales & Service Applications, MirrorServer/2 software, DMS-Backbone, BTAC Box or IA Light Box, …)
	• Escalate incident to 2nd-Level Support if no ad-hoc solution (workaround, known errors, fast solution, ...) is available
	• Provide solution to VW SP
		• Verify priority of incidents assigned by 1st-Level Support
		• Identify root cause of incident, distinguish if incident is software or hardware based
		• Escalate incident to appropriate 3rd-Level Support (SASD or OS), if necessary
		• Provide solution to 1st-Level Support
		• Replace hardware if necessary from local stock
			• Record all incidents from 2nd-Level Support
			• Analyse and solve software problems (BTAC and Sales & Service Application):
			  - MirrorServer/2 software
			  - DMS-Backbone
			  - ELSA, SAGA/2 and other services
			• Provide solution to 2nd-Level Support
				• Record all incidents from 2nd-Level Support
				• Analyse and solve problems with local MS/2 solution according to SLA:
				  - IA Light Box
				  - BTAC Box
				  - Forward software defects to SASD
				  - Forward DMS-BB topics to SASD (pure "catch & dispatch", no escalation or resolution)
				• Provide solution to 2nd-Level Support
				• Replace server hardware if necessary
				• Refill importer stock if necessary

Responsibilities	• Provide 1st and 2nd-Level Support* • Provide single point of contact (SPoC) to Service Partners (1st-Level Support) • Establish new or adapt existing local support processes and associated documentation to include MS/2 and DMS-BB * The importer may outsource the 1st and 2nd-Level Support to an external provider		• Provide 3rd-Level Support for BTAC Sales & Service Applications software only • Involves respective support groups to solve incident if necessary • Ensure availability for importer via: sasd@volkswagen.de • Administration of incidents in ticketing system • Maintain agreed service level	• Provide 3rd-Level Support for IA Light Box and BTAC Box hardware only • Involves respective support groups to solve incident if necessary • Ensure availability for importer via: mirrorserver2@o-s.de • Administration of incidents in ticketing system • Maintain agreed service level

Support Concept – Service-Level for MS/2 and DMS-BB

| **MirrorServer/2** SASD Service-Level	**DMS-Backbone** SASD Service-Level	**OS Hardware (Light Box, BTAC)** Provider Service-Level*
Service time 6x14 h (Mo.-Sa. 6:00 AM - 8:00 PM GMT)	**Service time** 7x24 h	**Service time** 7x24 h
Response time max. 30 minutes	**Response time** max. 30 minutes	**Response time** depending on priority 15min to 8hrs
Priority and solution time Priority 1 6 hours for solution Priority 2 12 hours for solution Priority 3 24 hours for solution Priority 4 48 hours for solution	**Priority and solution time** Priority 1 4 hours for solution Priority 2 6 hours for solution Priority 3 12 hours for solution Priority 4 24 hours for solution	**Priority and solution time** Priority 1 4 hours for solution Priority 2 8 hours for solution Priority 3 2 work days for solution Priority 4 4 work days for solution
Handling time for complaints Next business day	**Handling time for complaints** Next business day	**Handling time for complaints** → see response time * service level of provider depends on individual contract

Content

How to Start
(overview in a nutshell)

1. Receive initial information from central rollout team, central rollout coordinator assigned

2. Setup and start local rollout project, assign local project manager and sign Memorandum of Understanding (MoU)

3. Analyze market, identify all VW SP in scope, plan technical realization, purchase hardware/services from provider and contract required services

4. Setup of MirrorServer/2 and DMS-BB4 at importer level and execute Pilot project with identified pilot VW Service Partners
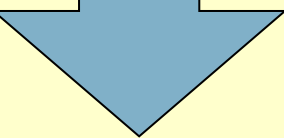
Market Rollout

After successful Pilot, plan and prepare* Rollout of MirrorServer/2 and DMS-BB4 to rest of VW Service Partners in market (*e.g. organization of sufficient manpower for project execution, establishment of necessary support, training measures, translations, manuals)

For further information please contact us:

MirrorServer2@volkswagen.de

Please note that organisational support via the central rollout teams (both MS/2 and ODIS) will be discontinued end of Q2/2012.

Key Stakeholders – Roles and Responsibilities (project implementation)

Central MS/2 Rollout Team	Importer	Service Provider	VW Service Partner
Responsible for project coordination, controlling, communication and alignment with ODIS project, e.g.: • Overall central project coordination. Planning, monitoring and controlling of worldwide rollout process • Alignment of MS/2 project activities and schedule with ODIS rollout project • Point of contact for importer during rollout phases regarding technical and operational questions	**Responsible for rollout and support of the chosen solution to the connected VW Service Partners in the particular market, e.g.:** • Signs rollout agreement with Volkswagen (MoU – Memorandum of Understanding) • Determination of IT infrastructure in the market, adapt infrastructure if necessary (e.g. increase bandwidth capacity) • Decision about the rollout approach for Importer and VW SP • Update support processes for VW SP to include MS/2 and DMS-BB4 • Purchasing with service providers and goods import regulations • Rollout MS/2 and DMS-Backbone 4 (including Market Pilot phase) in the local market including shipping logistics from the importer to the VW SPs. • Test (e.g. flash a car) and safeguard the availability of MS/2 solution for the local market • Ensure availabilty of MS/2 for all VW SP in the respective market, as well as MS/1 until all VW SP are set up for MS/2	**Provision of MirrorServer/2 appliances and additional services during setup, pilot and rollout, e.g.:** • Signs contract with importer regarding MS/2 appliances and additional services • Provides MS/2 appliances and services as agreed on in this contract (Pilot/Market Contract)	**Support for retail MirrorServer/2 / DMS-Backbone 4 setup, e.g.:** • Provides necessary information about infrastructure, applications and environment at the VW SP site • Supports setup of MS/2 and DMS-BB4 in collaboration with Importer and provide local IT resources if necessary

Importer's Stakeholder Model – The Importer needs to ensure that all necessary contractual relationships are established for MS/2

Importer

- The importer plays the central role between all stakeholders regarding the MS/2 Rollout. His role significantly impacts the project's success
- The importer is responsible to actively establish and manage all contractual relations with the relevant stakeholders (e.g. with service partners, OS, DMS vendors)

Stakeholders

- Operational Services (OS) is the only officially contracted provider for MS/2 hardware by VW AG
- Service Partners are workshops that service Volkswagen brands for the importer's market
- The VW central organization includes e.g.:
  - MS/2 Rollout Team
  - Architecture
  - Support (SASD)
- Other related stakeholders include e.g.:
  - Dealer Service Providers (DSP)
  - DMS vendors
  - 1st- and 2nd-Level Support for importer
- An After Sales Customer is any person whose vehicle needs to be serviced at the VW SP

Contractual Relation

After Sales Customer

contract

Service Partner

contract

MS/2 – Hardware Provider (OS)

contract

Importer

contract or other agreement

cooperation or contract

cooperation or contract

Global frame contract (March 2011)

Other related stake-holders

VW Central Organisa-tion

| 1. Introduction | 2. Rollout Components | 3. Solution Options | 4. Support Concept | 5. Approach |

Migration of DMS-BB3 to DMS-BB4
All services, DMS integrations and configuration settings can easily be migrated to DMS-BB4.

DMS-BB3	DMS-BB4
CPN-dependent	CPN-dependent
No automatic updates possible, manual installation required	Automatic updates possible
Old technology (Java 1.4)	State of the art technology (Java 6, OSGi R4)
Uses MirrorServer/1	Full use of MirrorServer/2, downward-compatible with "MirrorServer-Adapter"
Not IA-compatible	Fully IA compatible, uses WebService-Addressing
Diagnostics via Log files	Better and more diagnostics over GUI
DMS-BB and MirrorServer integrated into each other	DMS-BB and MirrorServer independent from each other
No certificate based authorization with client certificate	Client certificates for authentication and authorization available

Change 4 the better!!
DMS-Backbone 3   **DMS-Backbone 4**

DMS-Backbone⁴

MIGRATION		
	COMPATIBILITY	The DMS-BB4 is fully compatible with the DMS-BB3! All your services, DMS-integrations and configuration of your DMS-BB3 can be migrated to your new DMS-BB4.
	EASY MIGRATION by using the **MIGRATION SCRIPT**	The migration is simple and fault-safe: copy the configuration to your new machine, change the DNS-Alias „lpnbb" to the new one and start to work with your new DMS-BB4! Optionally, Volkswagen AG is providing a migration script. This script migrates all existing standard services from your DMS-BB3 to DMS-BB4.

1. Introduction	2. Rollout Components	3. Solution Options	4. Support Concept	5. Approach

Migration of DMS-BB3 to DMS-BB4

Recommendations for a Successful Migration of DMS-BB3 to DMS-BB4

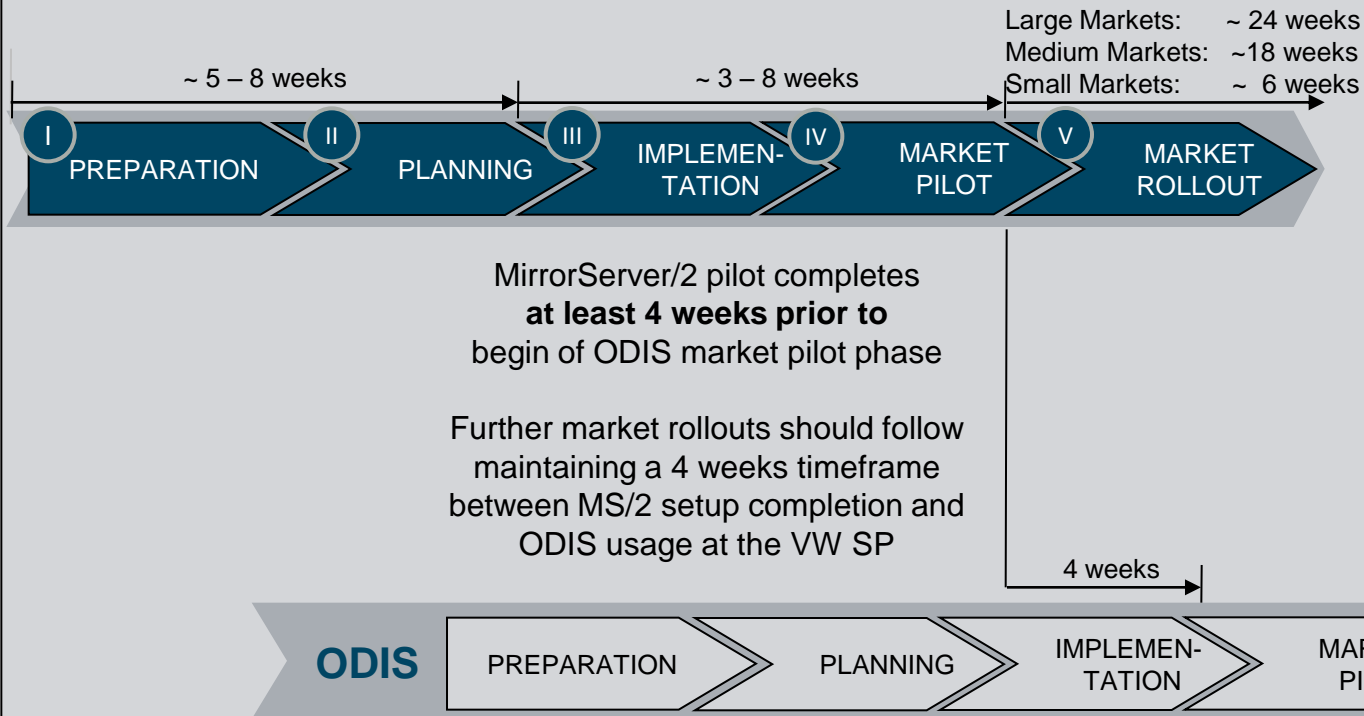|	
No DMS-Connection project during rollout!	• Do not run a DMS-Connection project during rollout, this would add further complexity. • If you would like to integrate your DMS, after the rollout please contact the DMS-Connection team via Sales Application Service Desk (sasd@volkswagen.de) with reference to Uwe Schramm.
Clean up your DMS-BB3 service configuration first!	• Delete unused services • DMS-BB4 shows mis-configurations better, so more mistakes will be revealed, even some that may not have been visible before with DMS-BB3
Alternative to the migration script	• If you cannot use the script or prefer an alternative see the DMS-BB4 Support Manual, chapter Services, for a manual migration option (→ e-Room - 4a902 Manual)
You cannot run DMS-BB3 and DMS-BB4 in parallel!	• The central backbone (CPNBB) restricts the multiple registration of any Org-ID, therefore parallel usage of DMS-BB3 and DMS-BB4 is limited → use the rollback option if you are having trouble with the migration (see below)
Rollback when necessary!	• Rolling back to your DMS-BB3 after the migration is possible: e.g. you can switch back to DMS-BB3 by re-assigning the DNS-alias "lpnbb" to DMS-BB3.

Migration – Standard Procedure

MirrorServer/2 Migration and DMS-BB4 Migration			
I Preparation	**II MirrorServer/2 setup**	**III DMS-BB4 setup**	**IV Integration of MirrorServer/2 into DMS-BB4**

Activities

Documentation • Read and understand the provided documentation in the e-Room - 4a902 Manual (BTAC Box Quick Start Guide) • Address open questions to central rollout team mirrorserver2@volkswagen.de Prerequisites are • Knowledge of local network and DMS-BB infrastructure at VW-Service Partner site • Availability of the appropriate hardware (e.g. BTAC Box / IA Light Box) • Knowledge of implementation of local DMS integration at the VW SP site	• Set up MirrorServer/2 Retail version and connect it to the importer (or provider) • Test data distribution via MirrorServer/2 • Deactivate MirrorServer/1 data distribution	• Launch DMS-BB4 on BTAC Box / IA Light Box • Check network connection between DMS-BB3 and DMS-BB4 • Run Migration Script 　1. Collect configuration data from DMS-BB3 　2. Copy configuration data to DMS-BB4 　3. Deactivate DMS-BB3 with Org-ID 　4. Activate DMS-BB4 with Org-ID 　5. See the report of migration results • Test all services • Use DMS-BB4	• Ensure you are running the latest DMS-BB4 version. Check availability of DMS-BB4 updates on MirrorServer/2 • Check automatic update settings (usually preconfigured): 　• Configure DMS-BB4 for update (set: MirrorServer/2 URL) 　• Use automatic update or perform manual update

Results

• No further questions • You know what to do • Specifics of migration approach	• MirrorServer/2 receives data	• DMS-BB4 is properly configured and running	• DMS-BB 4 is able to update itself via MirrorServer/2

1. Introduction	2. Rollout Components	3. Solution Options	4. Support Concept	5. Approach

Market Rollout Overview

The standard MS/2 Project consists of 5 phases and timelines are dependent on the ODIS timeline

Single market: rollout process (standard planning approach)

Large Markets: ~ 24 weeks
Medium Markets: ~18 weeks
Small Markets: ~ 6 weeks

~ 5 – 8 weeks   ~ 3 – 8 weeks

I PREPARATION II PLANNING III IMPLEMEN-TATION IV MARKET PILOT V MARKET ROLLOUT

MirrorServer/2 pilot completes
at least 4 weeks prior to
begin of ODIS market pilot phase

Further market rollouts should follow
maintaining a 4 weeks timeframe
between MS/2 setup completion and
ODIS usage at the VW SP

4 weeks

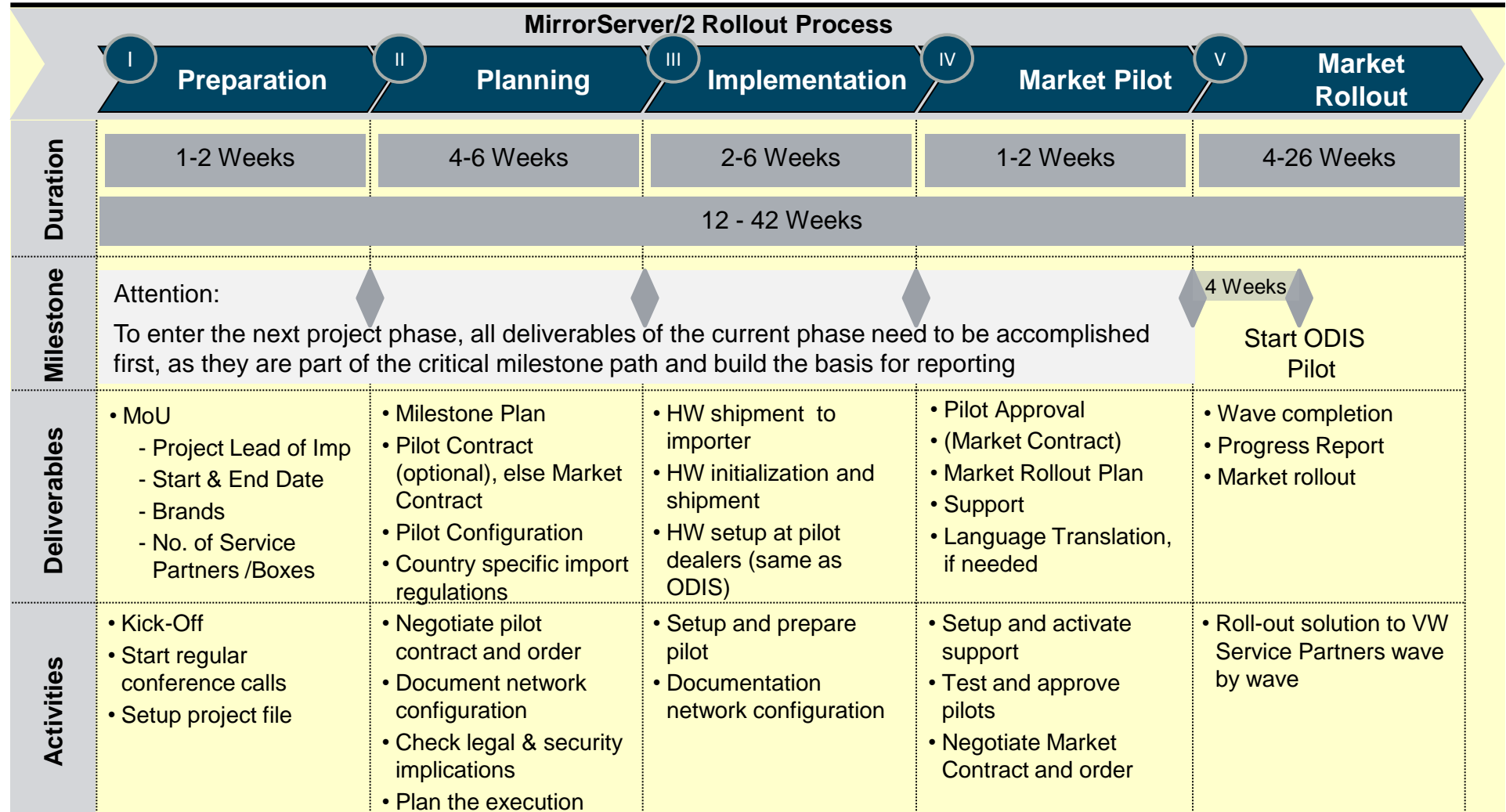**ODIS** PREPARATION PLANNING IMPLEMEN-TATION MARKET PILOT MARKET ROLLOUT

Timeline

4 week contingency

As a rule the MS/2 Market Pilot phase should complete providing a contingency of minimum 4 weeks to the ODIS Market Rollout phase

Market Rollout – Project Phases, Main Activities and Milestones

MirrorServer/2 Rollout Process

	I Preparation	II Planning	III Implementation	IV Market Pilot	V Market Rollout
Duration	1-2 Weeks	4-6 Weeks	2-6 Weeks	1-2 Weeks	4-26 Weeks
	12 - 42 Weeks				
Milestone	Attention: To enter the next project phase, all deliverables of the current phase need to be accomplished first, as they are part of the critical milestone path and build the basis for reporting				4 Weeks — Start ODIS Pilot
Deliverables	• MoU - Project Lead of Imp - Start & End Date - Brands - No. of Service Partners /Boxes	• Milestone Plan • Pilot Contract (optional), else Market Contract • Pilot Configuration • Country specific import regulations	• HW shipment to importer • HW initialization and shipment • HW setup at pilot dealers (same as ODIS)	• Pilot Approval • (Market Contract) • Market Rollout Plan • Support • Language Translation, if needed	• Wave completion • Progress Report • Market rollout
Activities	• Kick-Off • Start regular conference calls • Setup project file	• Negotiate pilot contract and order • Document network configuration • Check legal & security implications • Plan the execution	• Setup and prepare pilot • Documentation network configuration	• Setup and activate support • Test and approve pilots • Negotiate Market Contract and order	• Roll-out solution to VW Service Partners wave by wave

1. Introduction	2. Rollout Components	3. Solution Options	4. Support Concept	5. Approach

Summary of Key Steps between Importer and OS

| Step	Who?	What?
ongoing	MS/2 Team	**Provide relevant information, coordinate and track project progress, support importer in case of problems/questions**
1	Importer	**Sign the Memorandum of Understanding (MoU) and send it to MS/2 Team (mirrorserver2@volkswagen.de)**
2	Importer	**Contact OS, discuss solution design and request for market contract (via mirrorserver2@o-s.de)**
3	OS	**Provide importer with pricing and invoice information for solution and shipment**
4	Importer	**Gather and provide information on IT infrastructure for wholesale and retail (required for HW-configuration), fill out questionnaires and send them to OS**
5	OS	**Prepare Market Contract and quality assure IT infrastructure information**
6	Importer/OS	**Agree on and sign Market Contract, configure hardware**
7	Importer	**Prepare and agree on HW delivery and invoicing schedule (Market Rollout Plan)**
8	OS/Importer	**Deliver / Import hardware**
9	Importer	**Prepare, test and approve Pilot (with identified Service Partners)**
10	Importer	**Roll out hardware (i.e. Service Partners have HW in operation)**
11	Importer/OS	**Confirm completion of MS/2 Rollout**

Content

IA Light Box Technical Information

Hardware:

- 19" standard-rackmount body, 1U height
  → (48,3x76,5x4,3)cm currently, can differ depending on manufacturer
- Intel Xeon L5609 Quadcore processor (1,8 Ghz)
- 8 GB Ram
- 6x 300 GB SAS with RAID 5
- Slimline CD/DVD-Rom
- 4 x Gigabit Ethernet Adapter (1x management and up to 3x operative LAN)
- Redundant power supply (100-240V)
- all necessary standard plugs/cables can be delivered

Software:

- VMware ESXi 4.1 Bare-metal Hypervisor as operation system
- 4 Debian Linux VMs for different applications

  → MirrorServer/2: Runs a webservice and a synchronisation module to receive data from the parent server and share those with the retailer BTAC Boxes.

  → DMS-BB4: Runs the wholesale version of the DMS-Backbone on PROD-stage

  → DMS-BB4-QS: Contains a QS-stage-version of the wholesale version of DMS-Backbone 4. Deactivated by default.

  → Support: Currently only used to read the health values e.g. temperature, fans

- Internal virtual LAN Adapter for a fast connection between the VMs

NIC B NIC A

Power 1   Power 2   USB   iRMC VGA   Nic 1 Nic 2
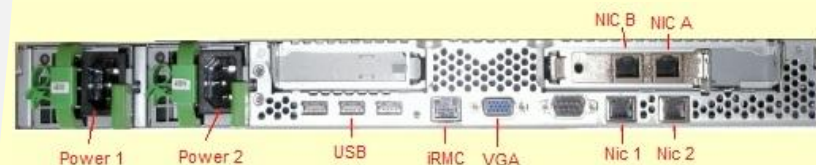
BTAC Box Technical Information

Hardware:

- Intel® Atom™
- 1 GB RAM
- 1x 500 GB hard disk
- 1x 10/100/1000 Mbit LAN Adapter
- USB-display with function keys
- Body: 192 x 210 x 62 mm
- external power supply (100-240V)
- all necessary standard plugs/cables can be delivered

Software:

- Pre-installed retail version of MirrorServer/2
- Web-based Administration of MirrorServer/2
- Configuration data stored on a CF-Card to ensure the exchangeability of the boxes
- DMS-Backbone 4 (retail version) and administration
- Optional DHCP and DNS server
- Connects to the following services:

    SAGA/2, ELSA Pro, NADIN, RESERVE, ETKA, ET 2000, ISA, EVA,

    CRM (KUBA), RECALL

DMS-Backbone⁴ Mirror Server²

MirrorServer-Adapter to connect existing VAS clients

For backward compatibility of MirrorServer/2 a "MirrorServer-Adapter" is embedded in DMS-BB4 to connect existing VAS clients.
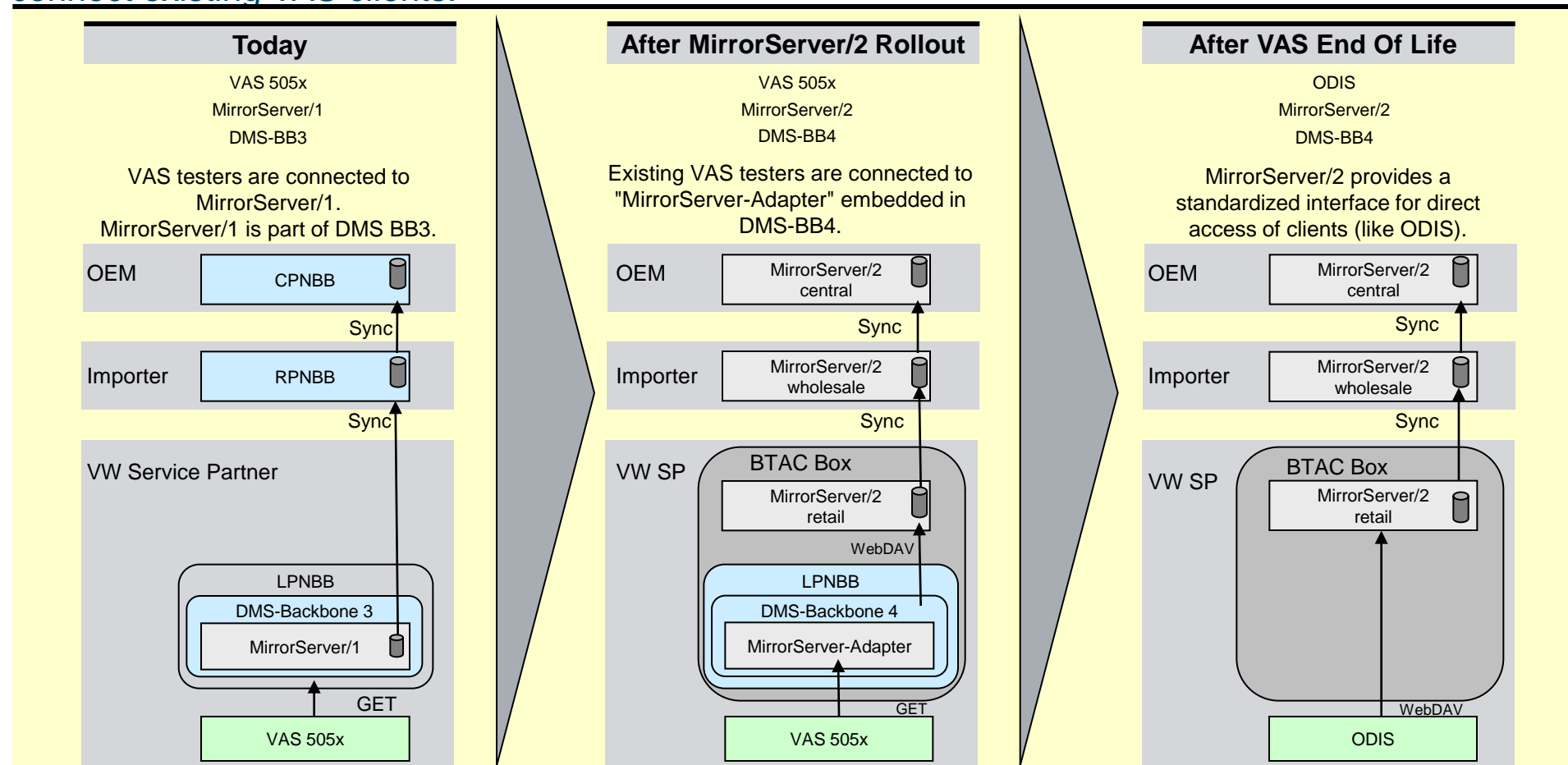
Certificates for DMS-BB4
Certificates secure DMS-BB4 communication

Overview

DMS-BB4 is able to communicate with central services via the Internet (depends on the services).
If you use DMS-BB4 in this manner the communication will be SSL-encrypted and will use certificates.
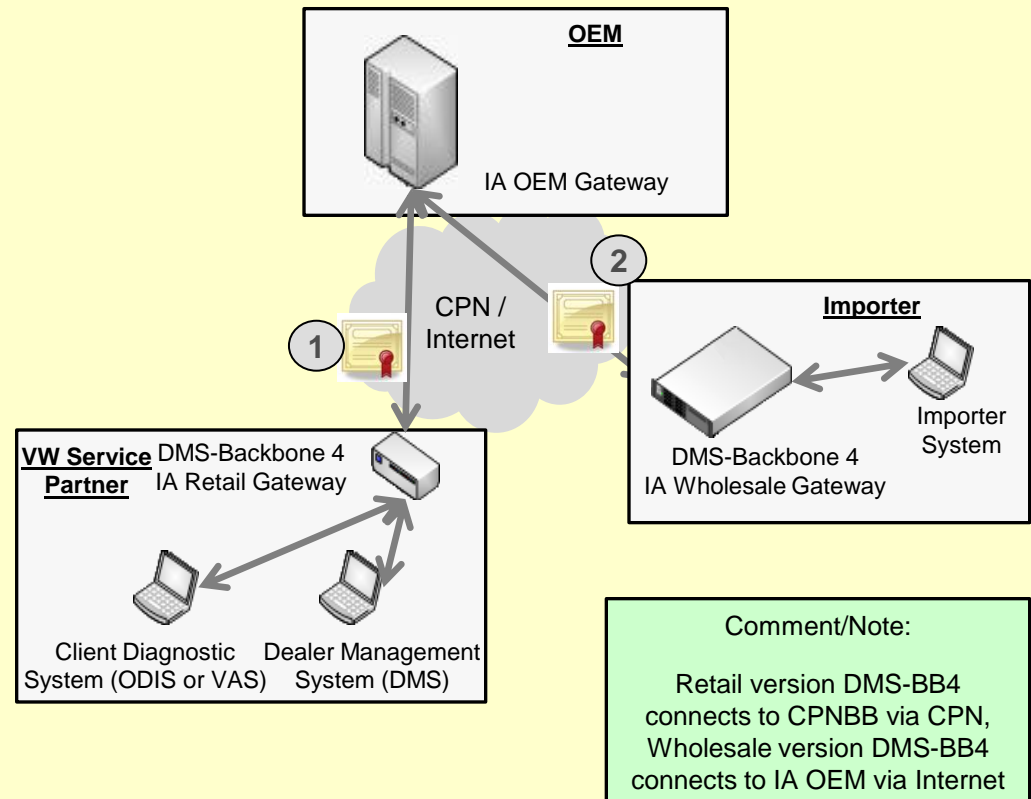
(1) Server-Certificates

If DMS-BB4 contacts central services or applications, it will need a server certificate for the encryption of the communication. The required components of these server certificates come with activation of the Dealer Org-ID with DMS-BB4.
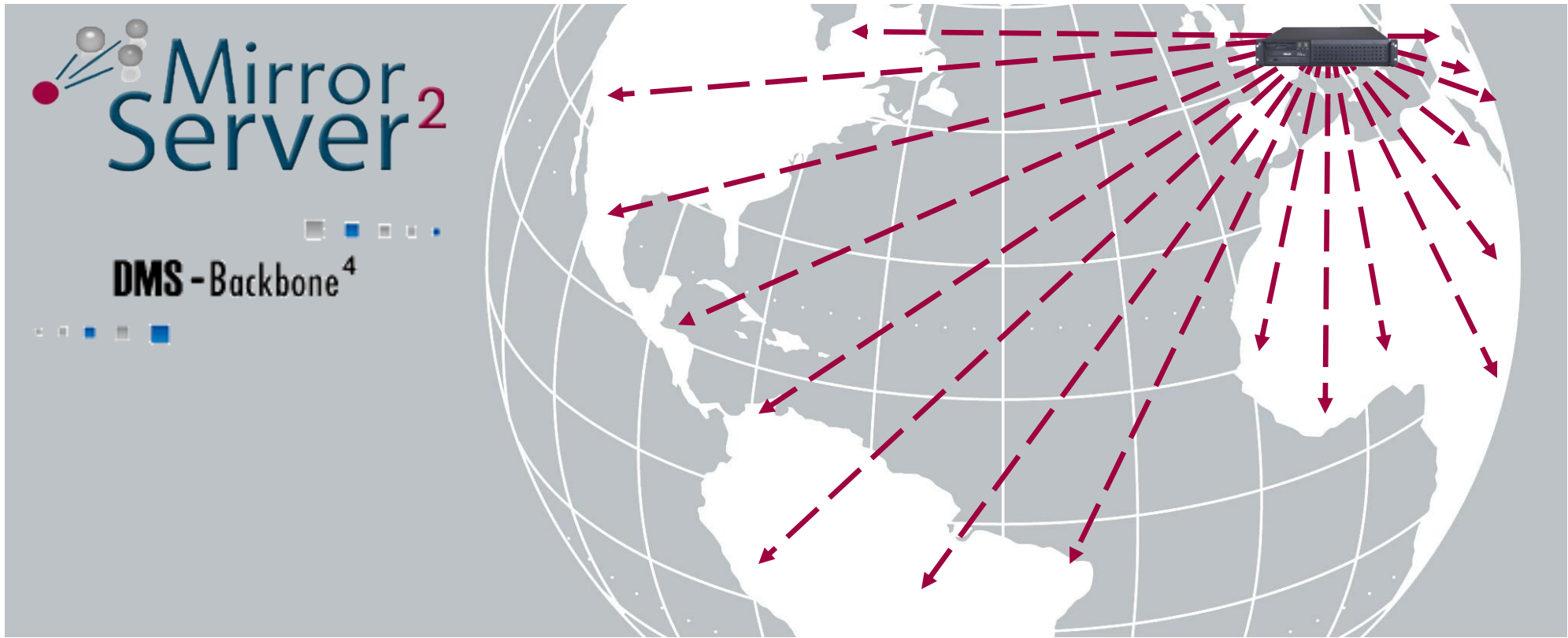
(2) Client-Certificates

If you use DMS-BB4 on the importers site (wholesale), you can access central services (OEM) that require additional security.
You will need a client certificate from Volkswagen to get authentication; authorization needs to be requested from IA (integrationarchitecture@volkswagen.de).
Additional to the certificates being placed on the wholesale site the central services have to be configured in the DMS-BB4 (Wholesale).

Comment/Note:

Retail version DMS-BB4 connects to CPNBB via CPN, Wholesale version DMS-BB4 connects to IA OEM via Internet

For further information regarding MS/2, please
check our MS/2 eRoom: 4a900 MirrorServer2
or contact us: **mirrorserver2@volkswagen.de**

For further information regarding ODIS, please
check the ODIS eRoom: 4a800 ODIS
or contact: **odis-info@volkswagen.de**