



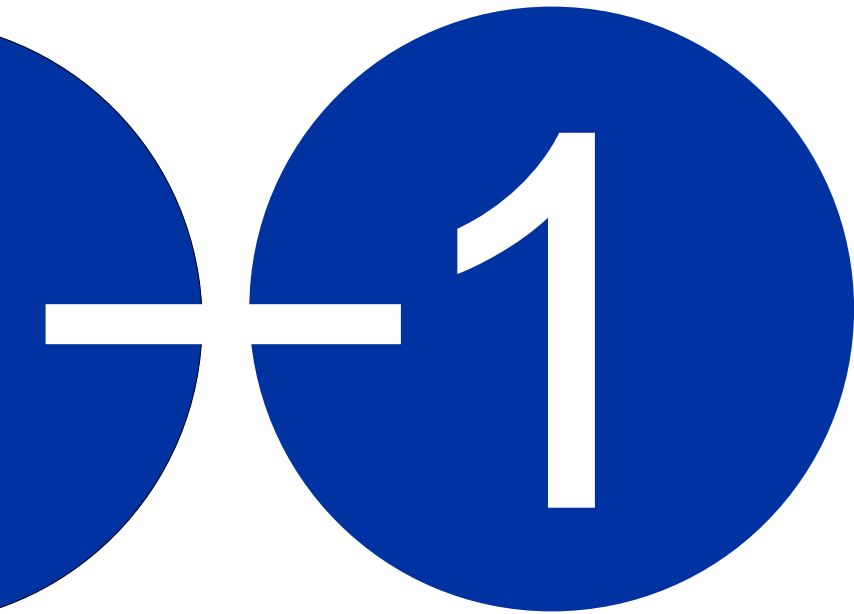
# Unmatched Migration – a NonStop success story

01.05.2018,  
HANS-JÖRG RICHTER/ IT-OPERATIONS



# • agenda

- Introduction
- Motivation
- Migration Concept
- Go Live and Results
- Challenges



# Introduction

# Ingenico Group in figures



**6,000**  
EMPLOYEES,  
74 NATIONALITIES



**88**  
LOCATIONS



**> €2 billion**  
TURNOVER  
HAS DOUBLED IN 4 YEARS



**170**  
COUNTRIES WITH  
INGENICO  
REPRESENTATION



**1,000+**  
PARTNER BANKS  
AND  
ACQUIRERS



**300+**  
PAYMENT  
PROCEDURES

Your partner for successful trade:  
stationary, online or mobile

ingenico  
GROUP



ingenico  
Smart  
terminals

Our **comprehensive range of terminals**, together with our partnership agreements, allows Ingenico Smart Terminals to offer you over **250 payment methods**.



ingenico  
Payment  
services

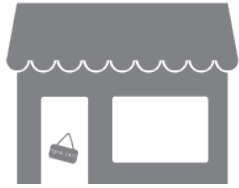
Ingenico Payment Services believes in **unlimited payment solutions**. Our strong position in Europe is the basis for our **global service portfolio**.



ingenico  
ePayments

Ingenico ePayments – scalable solutions for **successful online business**. With only one interface, you can gain access to **more than 200 acceptance partners and 150 payment methods**.

# Ingenico Payment Services in figures



**95,000**

CUSTOMERS IN GERMANY  
**160,000** CUSTOMERS  
THROUGHOUT EUROPE



**583**

EMPLOYEES IN GERMANY  
**1,000** EMPLOYEES  
THROUGHOUT EUROPE



**2.04 billion**

TRANSACTIONS PER YEAR  
IN GERMANY



**€70 billion**

VOLUME OF PROCESSED  
PAYMENT TRANSACTIONS  
IN GERMANY



**288,000**

TERMINALS AND CHECKOUT  
SOLUTIONS BEING USED  
IN GERMANY

# Our clients

Below are some of the top companies, from a wide range of business sectors, who are long-standing customers of ours :





# Motivation

Why we started thinking about a  
technical update



# Fact 1

- Replacement of high availability infrastructure every five years
- Test machine needs to be replaced (EoS 01.08.2017)
- Renewal of contracts for support and licenses

<b>NB54000c</b>	<b>NB54000c</b>	<b>NS2000</b>
Purchase in 04/2012	Purchase in 04/2012	Purchase in 07/2009
Supported until at least 02/2019	Supported until at least 02/2019	Supported until 08/2017

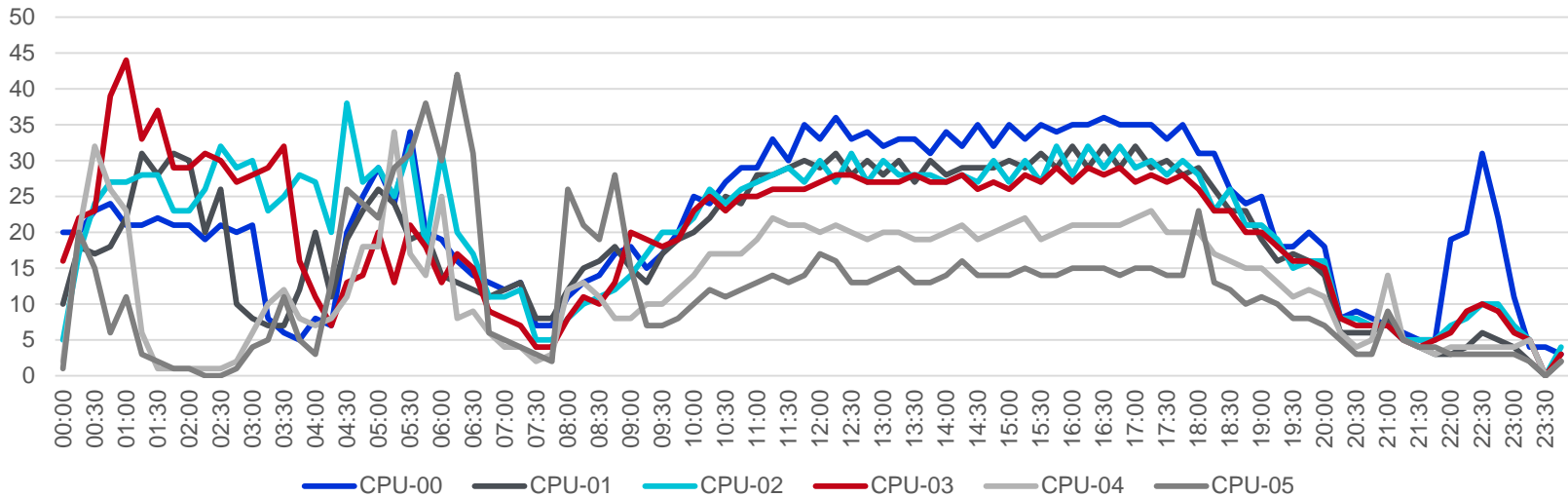
## Fact 2

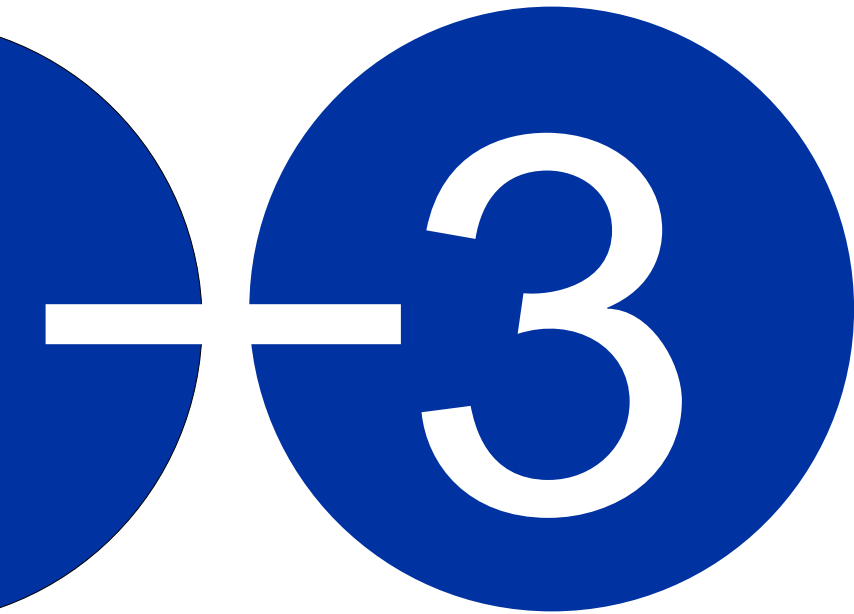
Batch utilization:  
Average ~ 63%  
Peak > 70%

OLTP utilization (Peak day):  
Average ~ 35%  
Peak ~ 43%

- Rematch the scaling of the production system to the daily use
- Strategic decision to move epayments to an other ingenico entity

CPU load 23.12.2015





# Migration Concept

Scenarios, criterias and POC

# NonStop future Scenarios for IPS

## Decision

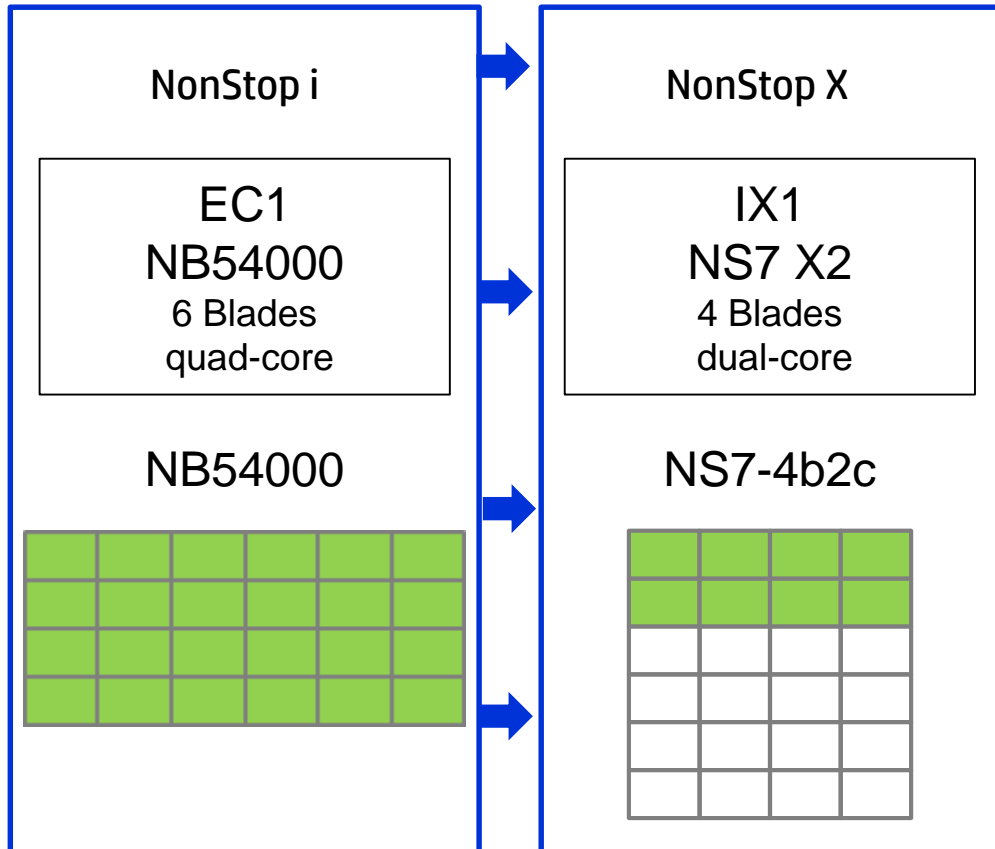
- Scenario 2: switch to NonStop i
- Replace all systems with S (ev. 02.2009) for (primary, backup, test)
- Replace the test system (investment for just two years)

## Size matters

- Scenario 2 provides performance figures for the CPU
- Replace all systems with size of NonStop (primary, backup, test)
- Need to do Proof of Concept on a production node



# Nonstop X for IPS



Reduced performance (~ -15 %)





Increased memory

Increased disc capacity

Increased the usage of SSD

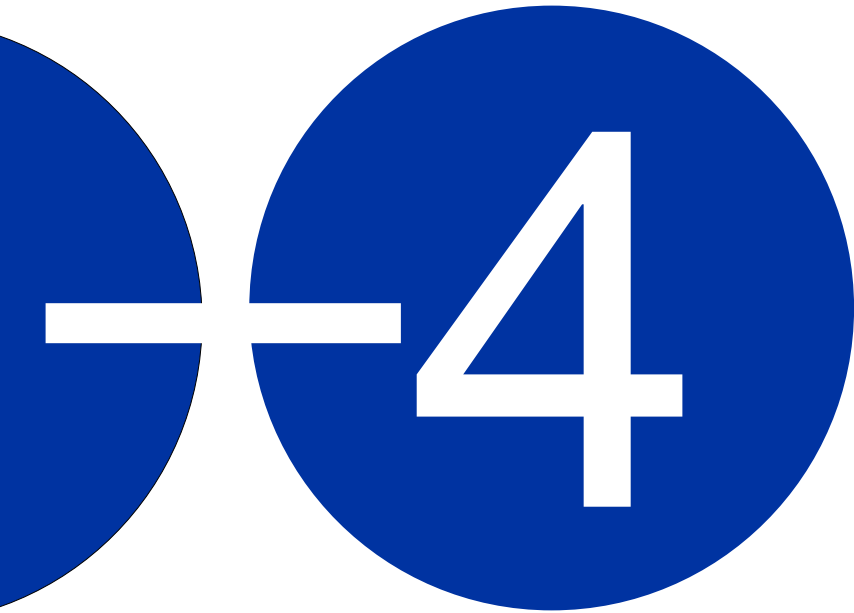
Increased comms throughput (IP CLIM)

# PoC

	Criteria	specification	Required value	Measured value	Passed
1) Poseidon OLTP	Ingenico expects to receive a NonStop X Poseidon release their SW Vendor WL. Their expectation is that release will be compiled and ready for all areas (Online and Batch). It is Ingenico's responsibility to have the Poseidon release for NonStop L16.05 available for the PoC.	Ingenico will adjust the configuration of the application and database to the reduced NonStop X configuration of 4CPU/2core and 25 disk volumes.	-	-	
2) Transaction Throughput	With support of the PDIAG solution, Ingenico will simulate several different OLTP scenarios with various transactions types. It is the responsibility of Ingenico to provide and setup the PDIAG environment.	<b>Transaction Response Times:</b> -TRX volume of 300 to 400 TPS (measure the response times) - Overall response times should be same range or better as on current system	response time of the NonStop X should be better than NonStop i	with 650 to 700 TPS the response time averages: NonStop i 22ms NonStop X 9ms	
		<b>Volume Test:</b> - Use of reduced TRX set - Achieve 1.200 TPS (TRX per sec.) with CPU Busy Rate (not more than 80%)	CPU Busy < 80%	max. 1.147 TRX/sec avg. CPU Busy 40%	
		- Poseidon Quene Manager should not report significant bottleneck warnings for increased numner of TRX time outs	no messages from the queue manager process	-	

# PoC

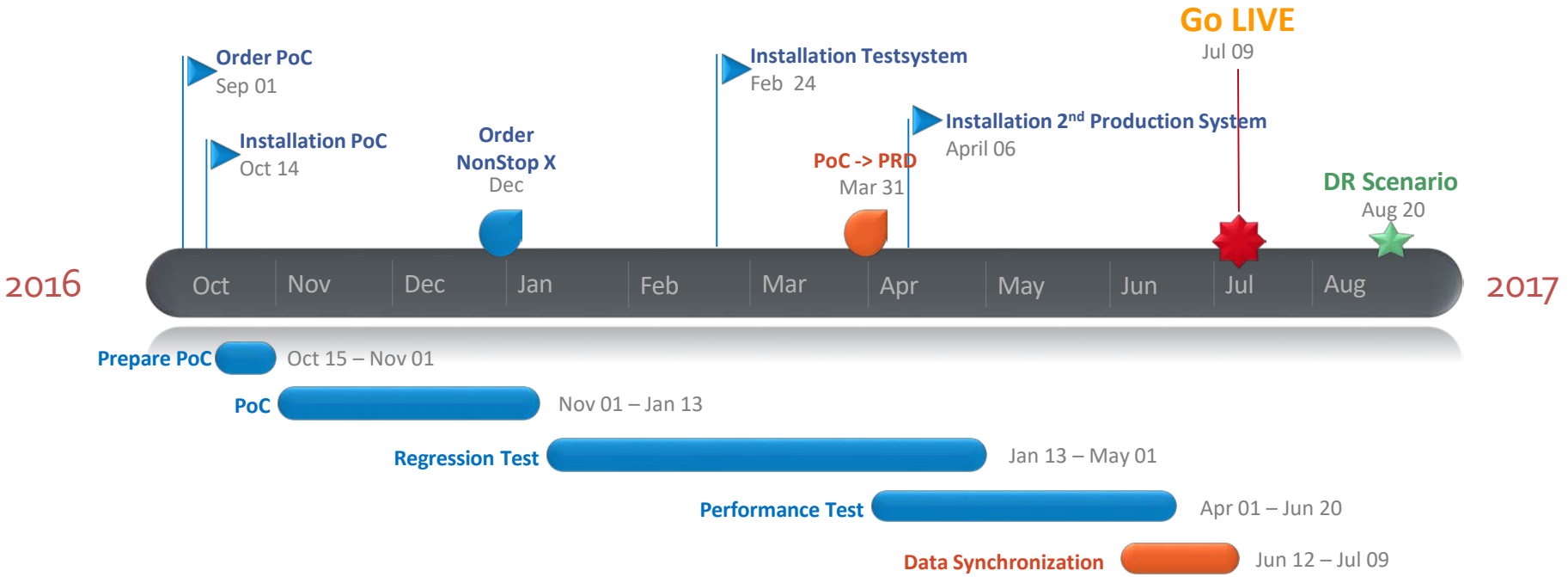
	Criteria	specification	Required value	Measured value	Passed
3) Batch Processing – Day End Processing	Clearing processing needs to be finished within certain period (depending on “Kassenschluss” and “Batch Windows of the Bank”). Complete data set will be loaded onto PoC system to run test scenario. Ingencio will collect for one or more days from the current production environment.	<b>Comparison between current system and PoC system, using:</b> <ul style="list-style-type: none"> <li>- CPU Busy during execution time</li> <li>- Disk I/O</li> <li>- TMF TPS</li> <li>- Runtime of ZVMAIN processes (part of Poseidon application)</li> <li>- Runtime of all post processing processes (KUMUL,SPLIT)</li> </ul>	<ul style="list-style-type: none"> <li>see graphic</li> <li>Disk Queue &lt; 1</li> <li>no error msg</li> <li>see graphic</li> <li>see graphic</li> </ul>	-	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> </ul>
4) Risikoindex / OLV	Ingencio’s risk application “Risikoindex” is involved in each OLV OLTP TRX to detect fraud.	<ul style="list-style-type: none"> <li>- Response time is &lt; 80ms</li> <li>- Timeout-Quote should not exceed an average of 1% over a full day</li> </ul>	<ul style="list-style-type: none"> <li>&lt; 80ms</li> <li>&lt; 1%</li> </ul>	<ul style="list-style-type: none"> <li>700 TRX/sec</li> <li>no time outs</li> <li>0%</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> </ul>



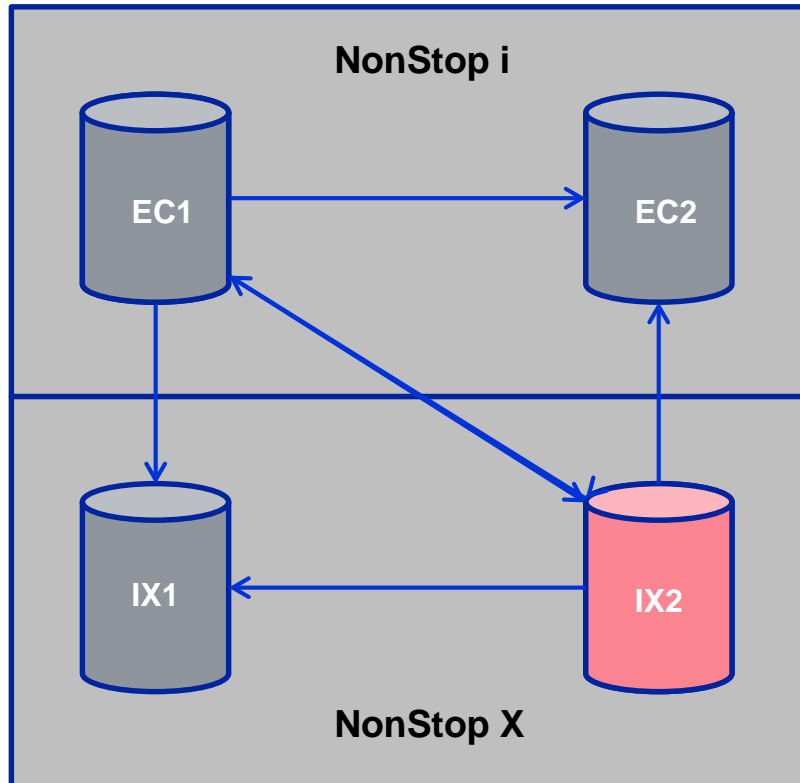
Going  
Live



# Go live



# Going live

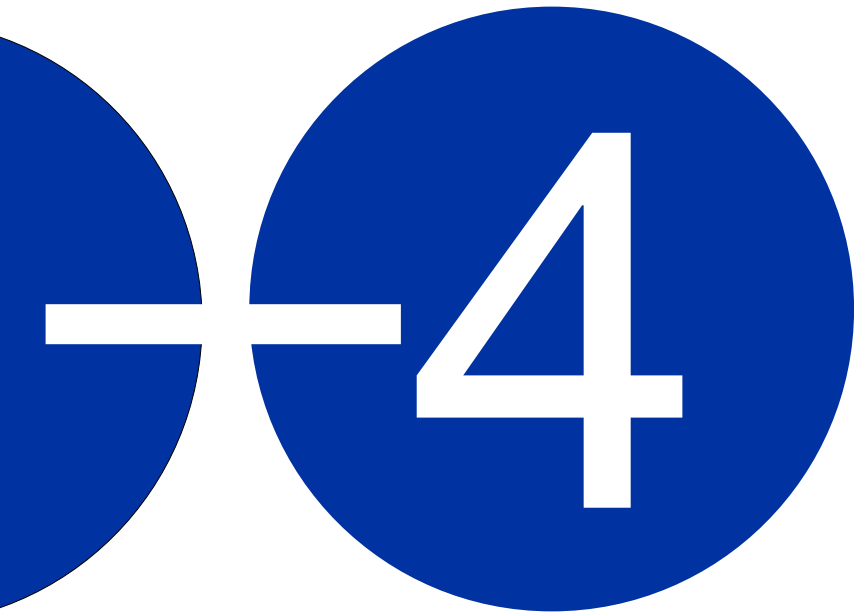


Data Replication to three systems  
Shutdown of all applications  
Stop of RDF  
Start of all applications  
Start of RDF with Data Replication  
to NonStop i for possible fallback

# results

- Reduce operational costs
  - Except ISV's
- Faster batch execution time
- Faster response time
- Jobs with big I/O are very fast
- Capacity for future growth

	NonStop i	NonStop X	factor
Response time (650TPS)	22ms	9ms	-
Batch time (example 1, high cpu activity)	04:10:21 h	01:25:49 h	2,91
Batch time (example 2, high disk activity)	0:58:18 h	00:07:57 h	7,33



challenges

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Synchronisation of data (RDF)

Reduction of Volumes

Complete new IP Infrastructure

No more X.25 (SWANS)

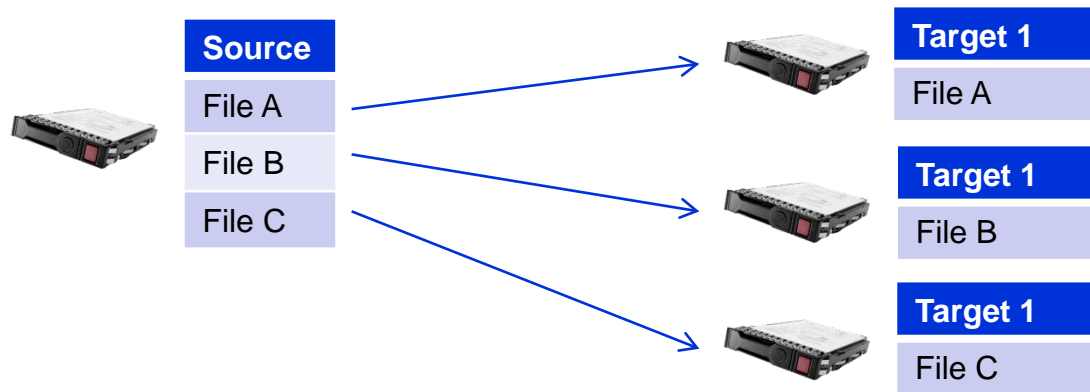
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# RDF

Less volumes means more configuration for replication

There are some restrictions in RDF

- File replications only with in/excludes possible
- Source volume can only be used once in a configuration
- Target volume can only be used once in a configuration



**Three different RDF instances**

# Data movement

Nonstop i				ECLOG	DB	ZVMAIN	UMSATZ	L2Rep	SEPA1	SEPA2	NonStop X								
Volume	Typ	Beschreibung	weg								ECLOG	DB	ZVMAIN	UMSATZ	L2Rep	SEPA1	SEPA2	Volume	Typ
\$DP001	HDD	Poseidon ECLOG, DB		x	x			x			x	x	x	x	x	x	x	\$DP001	SSD
\$DP002	HDD	Poseidon ZVMAIN, UMSATZ, L2Rep				x	x	x			x	x	x	x	x	x	x	\$DP002	SSD
\$DP003	HDD	Poseidon ECLOG, Eigenentwicklungen, L2Rep		x			x	x			x	x	x	x	x	x	x	\$DP003	SSD
\$DP004	HDD	Poseidon ZVMAIN, L2Rep				x		x			x	x	x	x	x	x	x	\$DP004	SSD
\$DP005	HDD	Poseidon ECLOG, DB, ZVMAIN, UMSATZ, L2Rep		x	x	x	x	x			x	x	x	x	x	x	x	\$DP005	SSD
\$DP006	HDD	Poseidon DB, ZVMAIN, L2Rep			x	x		x			x	x	x	x	x			\$DP006	SSD
\$DP007	HDD	Poseidon ECLOG, ZVMAIN		x		x		x			x	x	x	x	x			\$DP007	SSD
\$DP008	HDD	Poseidon ZVMAIN, UMSATZ, L2Rep				x	x	x			x	x	x	x	x			\$DP008	SSD
\$DP009	HDD	Poseidon DB, SEPA2			x						x	x	(x)	x	x	(x)		\$DP009	SSD
\$DP010	HDD	Poseidon SEPA1							x		x	x	(x)	x	x	(x)		\$DP010	SSD
\$DP101	HDD	Poseidon ECLOG, DB, UMSATZ		x	x		x						(x)			(x)		\$DP101	SSD
\$DP102	HDD	Poseidon ZVMAIN, UMSATZ, L2Rep				x	x	x					(x)			(x)		\$DP102	SSD
\$DP103	HDD	Poseidon HOME, DB, EMV			x						x							\$DP103	SSD
\$DP104	HDD	Poseidon ECLOG, DB, ZVMAIN, UMSATZ, L2Rep	x	x	x	x	x	x											
\$DP105	HDD	Poseidon ECLOG, DB, UMSATZ	x	x	x		x												
\$DP106	HDD	Poseidon ECLOG, DB, UMSATZ	x	x	x		x												
\$DP107	HDD	Poseidon ECLOG, DB, CLS, ADAM	x	x	x														
\$DP108	HDD	Poseidon UMSATZ, SEPA2	x				x												
\$DP109	HDD	Poseidon Seiteneinreicher, XML, UMSSAVE	x																
\$DP110	HDD	Poseidon DB, Accounting	x		x														
\$DP116	HDD	Poseidon DTA	x																
\$DP118	HDD	Poseidon ECLOG SEPA2	x	x															

# RDF – before and after going live

## Before

- 3 instances for NonStop i
- 20 instances for NonStop X (both nodes)

## After

- 3 instances for NonStop X
- 22 instances for fall back to NonStop i



Big thanks go out to

**equensWorldline**

  
**Hewlett Packard  
Enterprise**



**ingenico**

Payment  
services

Closing slide, Q&A,  
thanks,...

CONTACTS  
WEBSITE

