

Communication with SIMATIC S7 - manuál

PROFIBUS

PROFINET

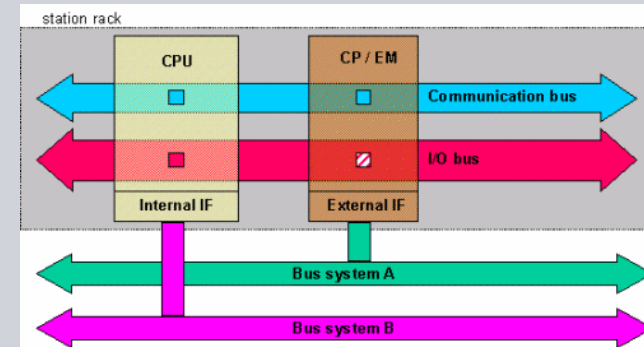
Station 1 \ Station 2	S7 200	S7 300	S7 400	WinAC-Slot	WinAC-Basis(RTX (as of V 4.0))
S7 200	X (only PPI connection possible)	S7 basis communication (partner 2 as server via XPUT / XGET)	S7 communication (partner 2 as server) S7 basis communication (partner 2 as server via XPUT / XGET)	S7 communication (partner 2 as server) S7 basis communication (partner 2 as server via XPUT / XGET)	S7 communication
S7 300	X	S7 basis communication (global data)	S7 basis communication S7 communication	S7 basis communication S7 communication	S7 communication
S7 400	X				
WinAC-Slot	X				
WinAC-Basis(RTX (sb V 4.0))	X				

Criterion	S7 basis communication		S7 communication		Global data
	XPUT / XGET	XSEND / XRECV	BSEND / BRVCV	USEND / URCV	
Data range	1 - 64 bytes	1 - 76 bytes	1 - 32768 (S7-300) / 65535 (S7-400) bytes	1 - 165 bytes	1 - 22 bytes (S7-300) / 1 - 64 bytes (S7-400)
Consistency	Only guaranteed when sending	Yes	Throughout the whole length		Yes
Acknowledgment mechanism	Operating system of the controller		Level 7 implemented	Operating system of the controller	
Connected stations	1 - 1 unidirectional	1 - 1 bidirectional	1 - 1 bidirectional		1 - 1 / 1 - n bidirectional
Configuration type	Non-configured connection		Bilaterally configured	Unilaterally configured	Bilaterally configured
Connection type	Dyn. / stat connection Client / Server	Dyn. / stat connection Client / Client	Stat connection Client / Client		Stat connection Client / Server
Performance	Small data amounts		Medium to large data amounts	Small data amounts	
	Evolution ☞ In case of static connections ☞ In case of dynamic connections			Evolution ☞	
Configuration effort	None		Low		Medium
Programming effort	Medium		Medium		Medium
Connection of old systems (SS) / third party systems	No		No		No



<http://support.automation.siemens.com/WW/view/en/20982954>

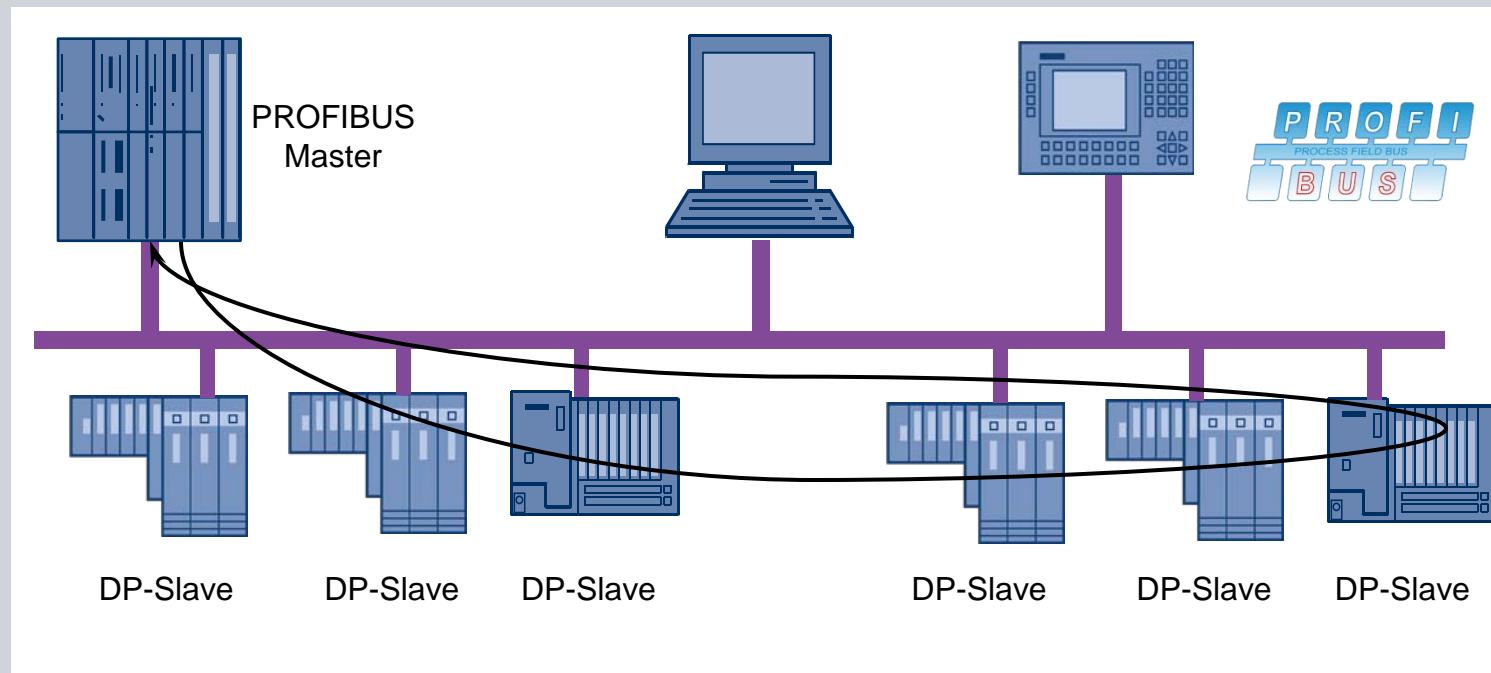
Stažení z webu tech. podpory



PROFIBUS-DP

PROFIBUS

PROFINET



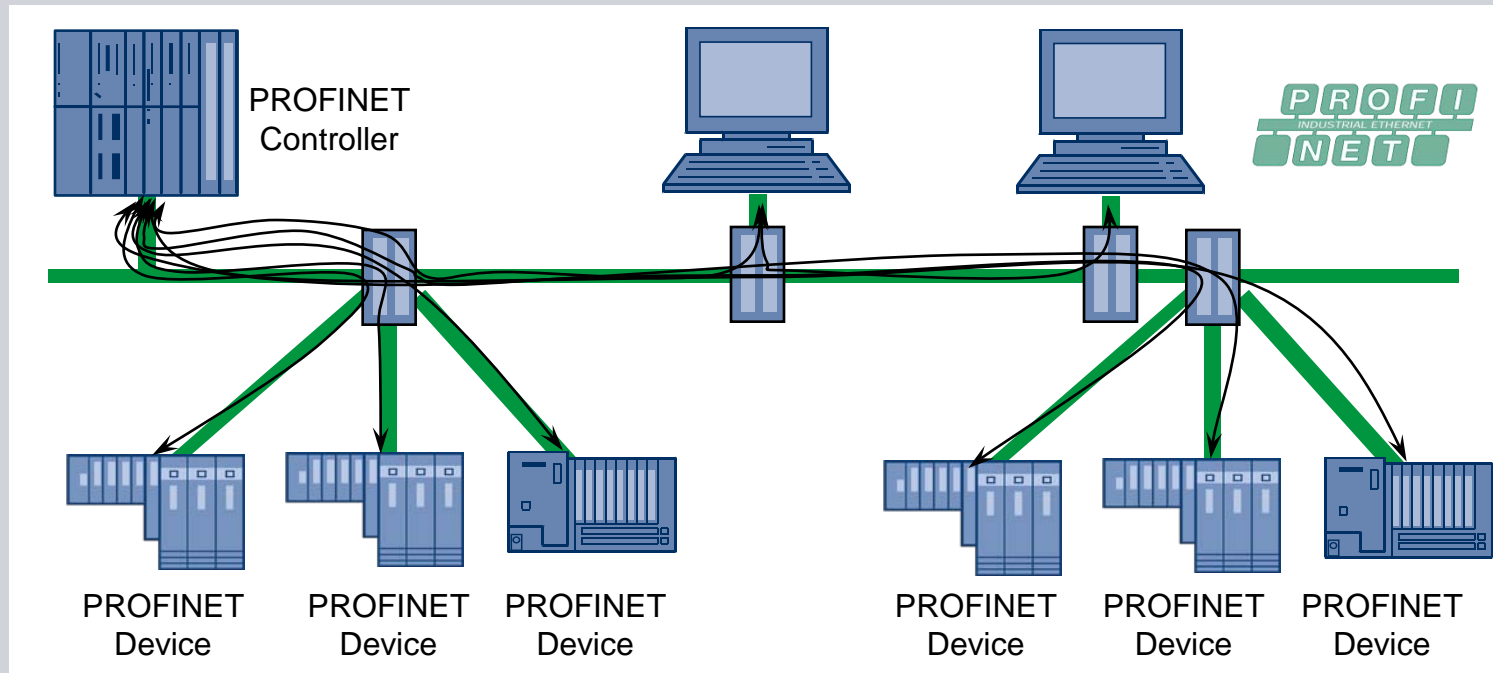
DP-Master sbírá IO-Signály z jednotlivých DP-Slave jednotek a obnovuje Process image oblast CPU tak jak to nejrychleji lze.

Každý další Master nebo „aktivní“ zařízení prodlužuje odezvu na sběrnici (update time).

PROFINET IO

PROFIBUS

PROFINET



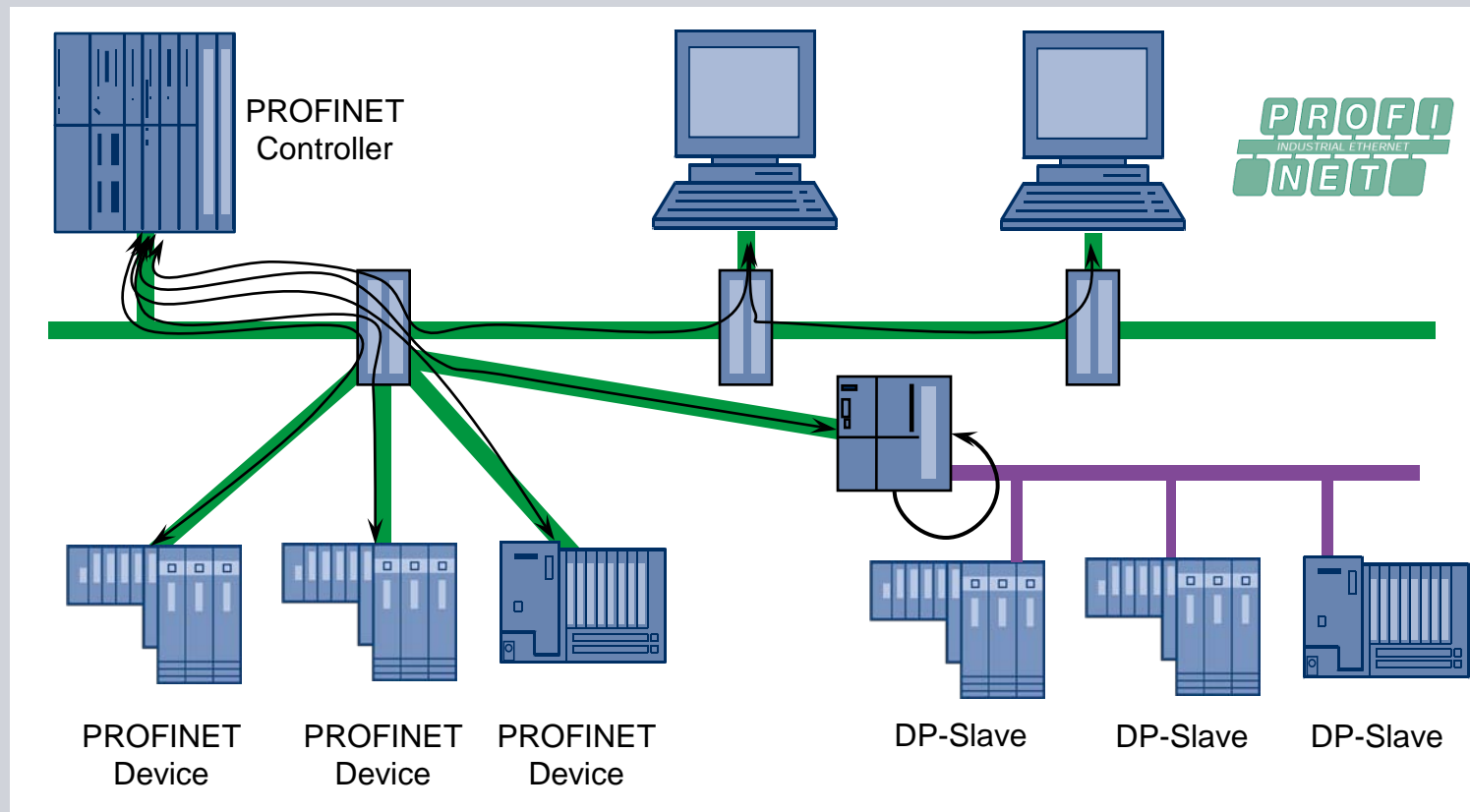
PN-Controller sbírá IO-Signály z jednotlivých PN-Devices a obnovuje Process image oblast CPU tak jak to nejrychleji lze.

Každý další Controller nebo „aktivní“ stanice neovlivní cyklickou komunikaci (update time).

PROFINET

PROFIBUS

PROFINET

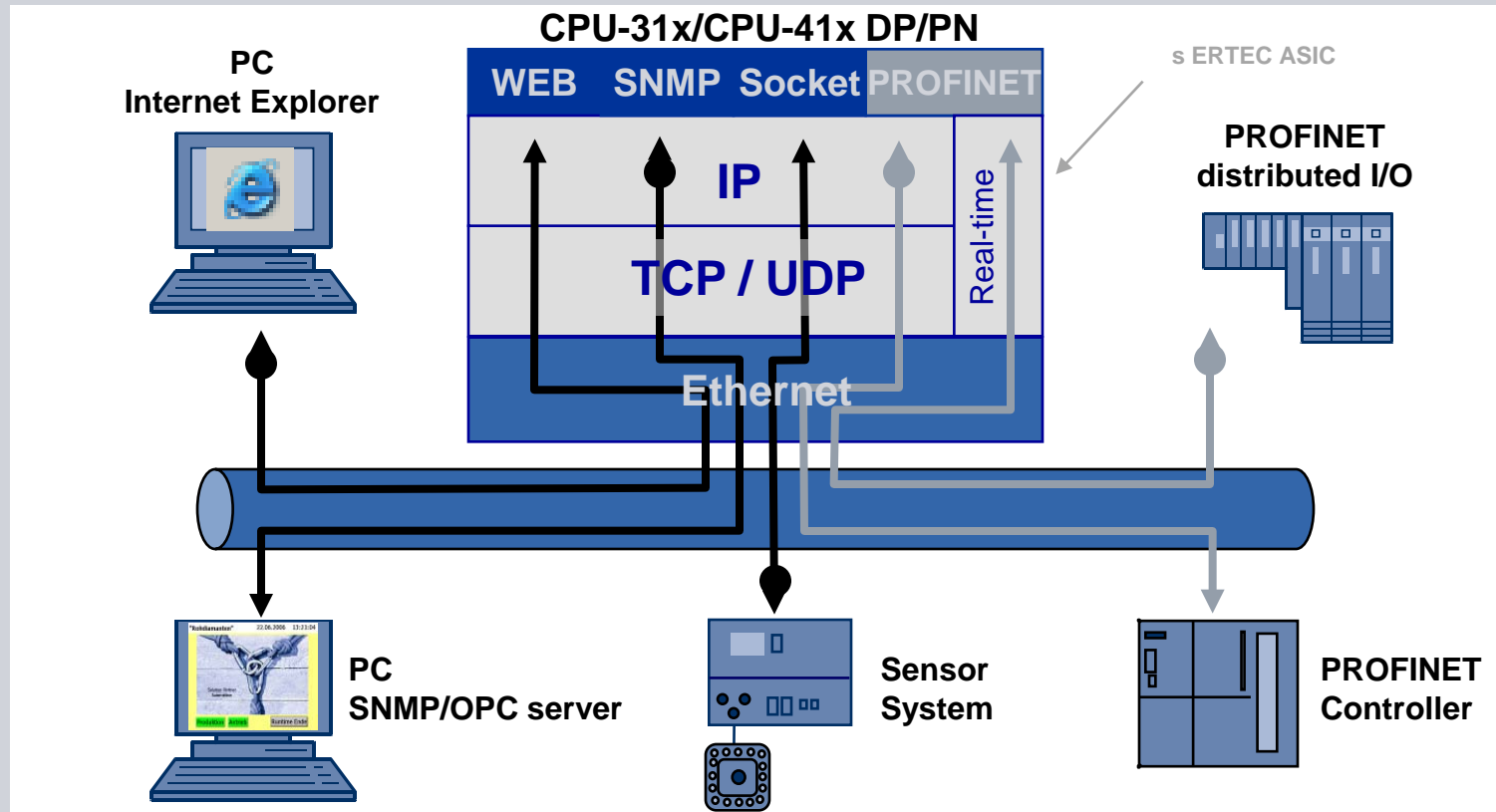


Stávající PROFBUS-sítě lze připojit pomocí Proxy Device.

Jediné rozhraní, jediný kabel - různé komunikační služby

PROFIBUS

PROFINET



PROFINET – různě výkonná komunikace (NRT, RT, IRT)

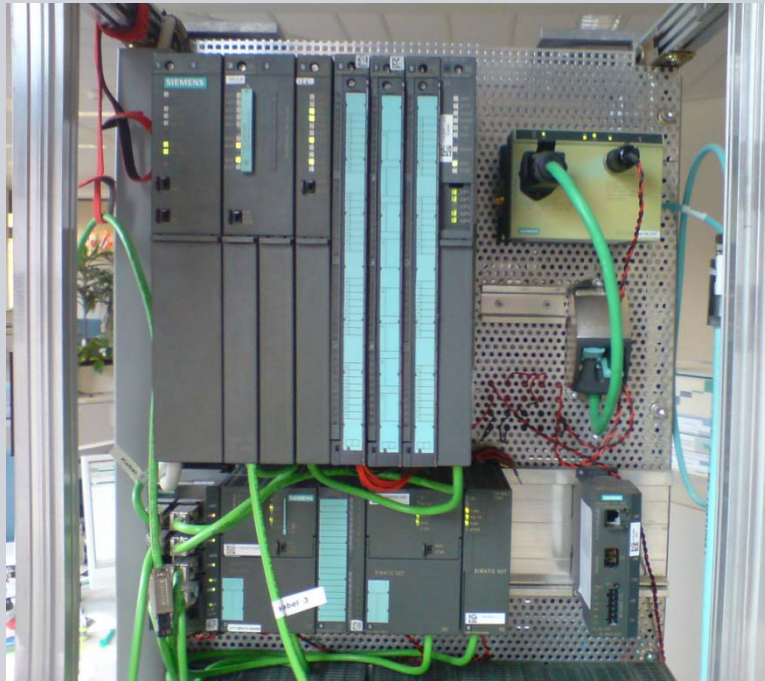
Pokus...

S7-400PN s 16x ET200S v linii

SIEMENS

PROFIBUS

PROFINET



Profinet IO komunikace mezi S7-400 CPU
a ET 200S stanicemi



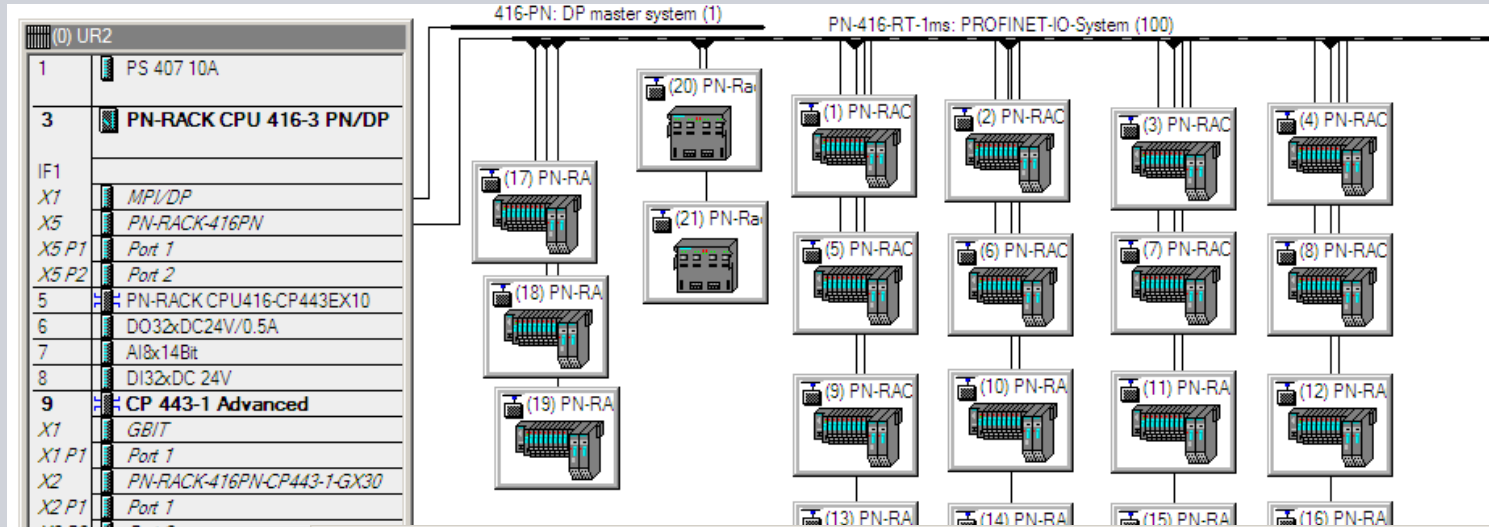
Pokus...

S7-400PN s 16x ET200S v linii



PROFIBUS

PROFINET



(0) UR2	
1	PS 407 10A
3	PN-RACK CPU 416-3 PN/DP
IF1	
X1	MPI/DP
X5	PN-RACK-416PN
X5 P1	Port 1
X5 P2	Port 2
5	PN-RACK CPU416-CP443EX10
6	DO32xDC24V/0.5A
7	AI8x14Bit
8	DI32xDC 24V
9	CP 443-1 Advanced
X1	GBIT
X1 P1	Port 1
X2	PN-RACK-416PN-CP443-1-GX30
X2 P1	Port 1
X2 P2	Port 2
X2 P3	Port 3
X2 P4	Port 4

PROFINET IO-System Properties

General Update Time

Communication allocation (PROFINET IO) %

Send clock: ms

Overview of all IO devices:

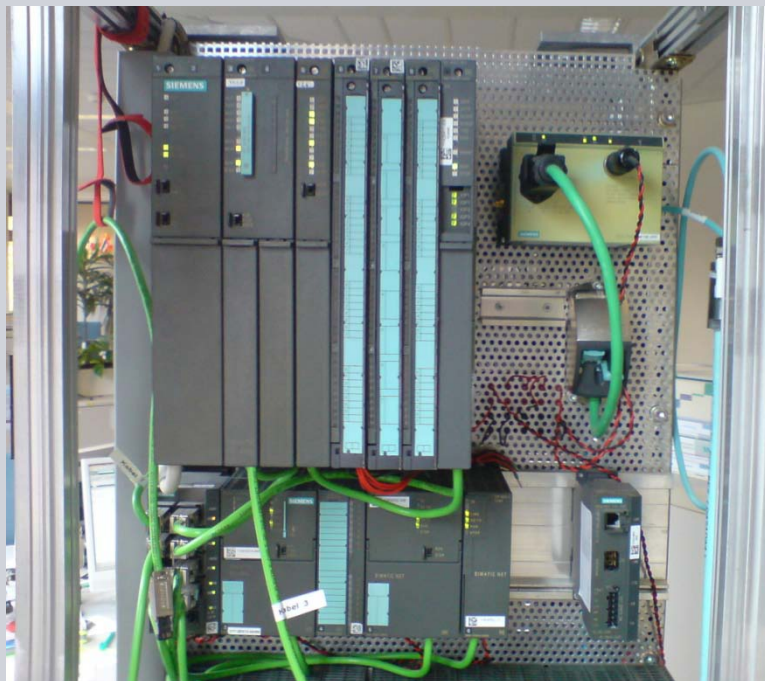
De...	Device Name	Type	RT Class	IRT Option	Mode	Update Time (ms)
1	PN-RACK-2-ET200S-01	IM151-3PN	RT	---	fixed factor	0.500
2	PN-RACK-2-ET200S-02	IM151-3PN	RT	---	fixed update time	1.000
3	PN-RACK-2-ET200S-03	IM151-3PN	RT	---	fixed update time	1.000
4	PN-RACK-2-ET200S-04	IM151-3PN	RT	---	fixed update time	1.000
5	PN-RACK-2-ET200S-05	IM151-3PN	RT	---	fixed update time	1.000
6	PN-RACK-2-ET200S-06	IM151-3PN	RT	---	fixed update time	1.000
7	PN-RACK-2-ET200S-07	IM151-3PN	RT	---	fixed update time	1.000
8	PN-RACK-2-ET200S-08	IM151-3PN	RT	---	fixed update time	1.000
9	PN-RACK-2-ET200S-09	IM151-3PN	RT	---	fixed update time	1.000
10	PN-RACK-2-ET200S-10	IM151-3PN	RT	---	fixed update time	1.000
11	PN-RACK-2-ET200S-11	IM151-3PN	RT	---	fixed update time	1.000
12	PN-RACK-2-ET200S-12	IM151-3PN	RT	---	fixed update time	1.000
13	PN-RACK-2-ET200S-13	IM151-3PN	RT	---	fixed update time	1.000
14	PN-RACK-2-ET200S-14	IM151-3PN	RT	---	fixed update time	1.000
15	PN-RACK-2-ET200S-15	IM151-3PN	RT	---	fixed update time	1.000

Pokus...

S7-400PN s 16x ET200S v linii

PROFIBUS

PROFINET



Simulace útoku hackera – přetížení sítě

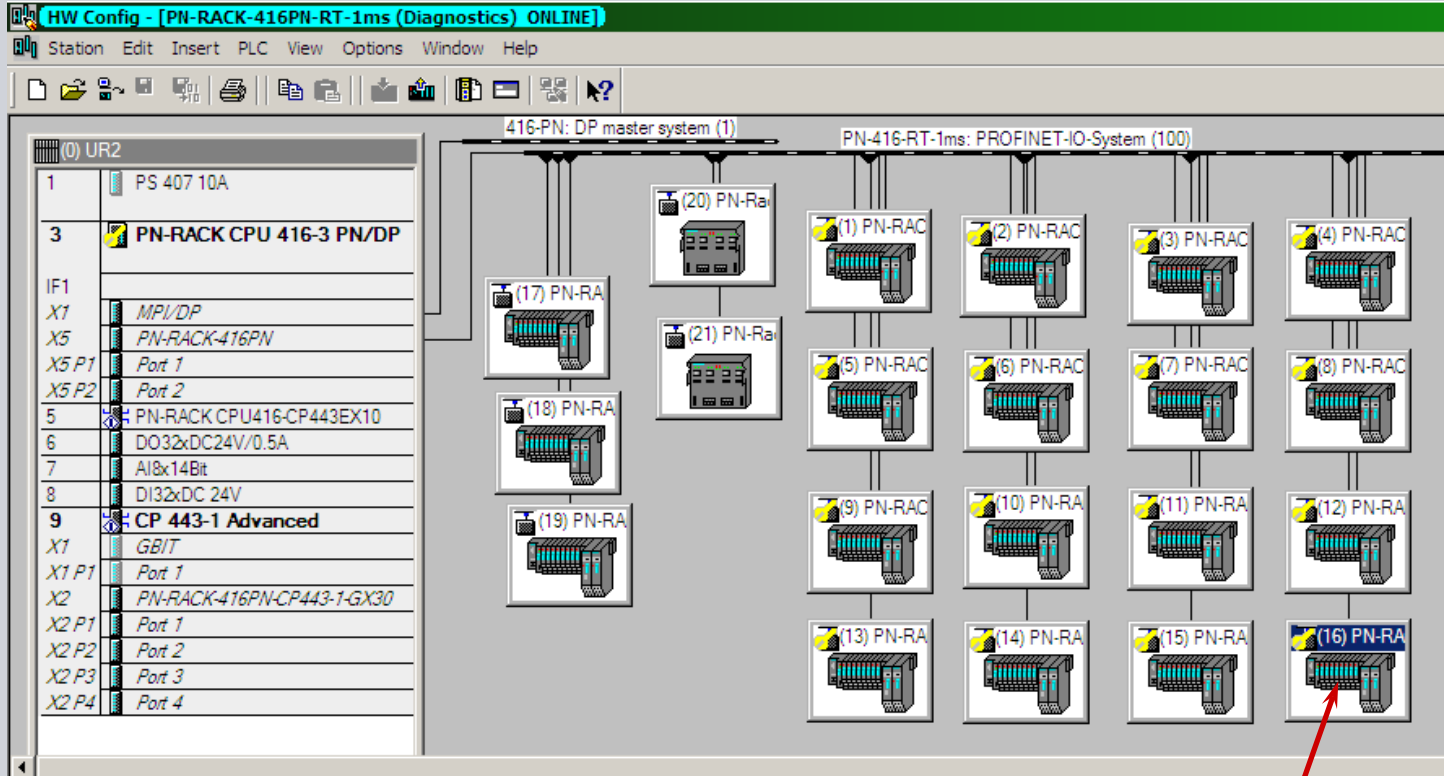


Pokus...

S7-400PN s 16x ET200S v linii

PROFIBUS

PROFINET



← → (16) PN-RACK-2-ET200S-16

Slot	M..	Order number	I address	Q address	Diagnostic address	Comment
0	PN-A	6ES7 151-3BA2			16302*	
X1	PN-IO				16301*	
X1 P1	Port 1				16300*	
X1 P2	Port 2				16299*	
1	PM-E	6ES7 138-4CB11-0			16298*	
2	2DD	6ES7 132-4BB01-0		19.0...19.1		
3	4DI D	6ES7 131-4BD01-0	19.0...19.3			
4						

Maintenance alarm

Pokus...

S7-400PN s 16x ET200S v linii

PROFIBUS

PROFINET

Module Information - IM151-3PN

Path: PN-RACK-20081008-Perform\PN-RACK-416 Operating mode of the CPU: **RUN**

Status: Maintenance request

Network Connection Statistics Identification

General IO Device Diagnostics Communication Diagnostics Interface

Communication Diagnostics:

Name	Error
Interface (X1)	Data packets discarded due to overload

Details of Diagnostics:

At least 23 data packets were discarded due to a lack of resources.
Possible causes:
- High bandwidth reservation for IRT and additional NRT load (Remedy: reduce bandwidth reservation)
- Bundling of small communication load from various sources on one cable producing overload

Settings... Help on Diagnostics

Close Update Print... Help

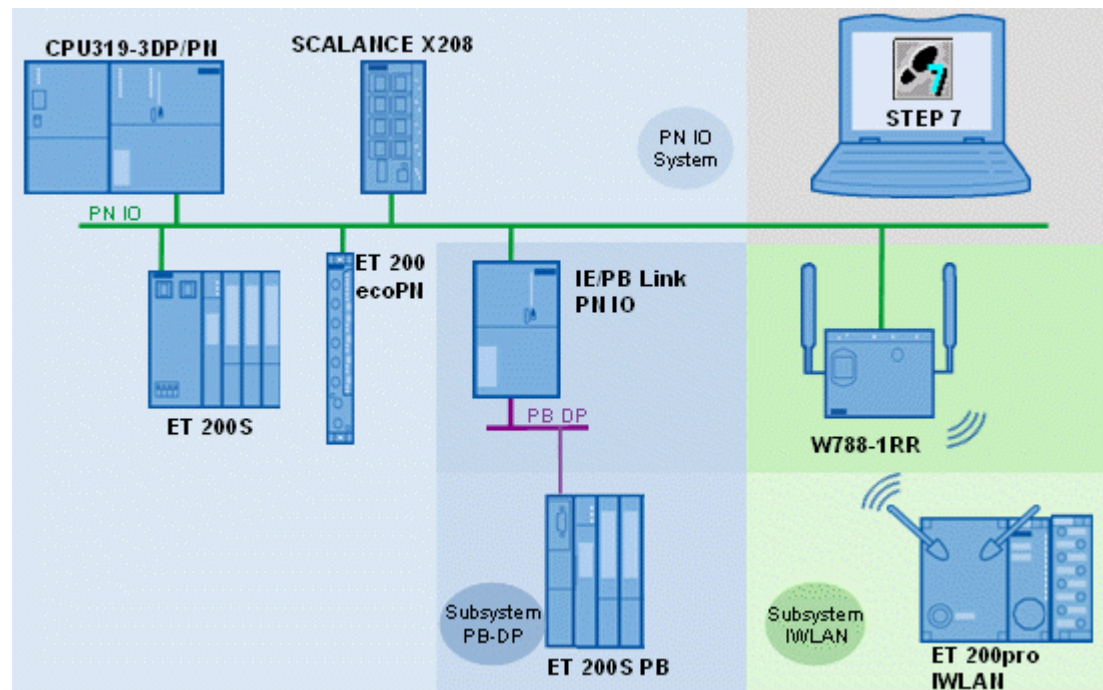
PROFINET IO - Configuration & Diagnostics

PROFIBUS

PROFINET

Základní pravidla pro konfiguraci a správu PROFINET IO

<http://support.automation.siemens.com/WW/view/en/22981197>



PROFINET-Performance Data in the Internet

PROFIBUS

PROFINET

SIEMENS Automation and Drives PerformanceData Version 3.5 Build 1 Rev. 24771 DB: Sept 2006

Leistungsdaten zur PN-Reaktionszeit

neue Hilfe Assistenten de-aktivieren Sprache Deutsch

Auswahl der Konfiguration

IO-Controller	Netz	IO-Device (ET200S PN)
<ul style="list-style-type: none"> CPU CPU 414-3PN1DP CP Last durch Programm 10 ms 	<ul style="list-style-type: none"> Last am Netz 1 PG Netzanschluss SCALANCE W788-1RR Netz-Dämpfung (Signalstärke) 40 dB W7-1RR 	<ul style="list-style-type: none"> Anzahl der Stationen 1 EA-Bytes pro Station 30

Messwerte anzeigen

Gewählte Konfiguration

SCALANCE W788-1RR

W747-1RR

W747-1RR

CP

CPU 414-3PN1DP

Last durch Programm: 10 ms

Anzahl der W747-1RR: 16

Netz-Dämpfung (Signalstärke): 40 dB (100%)

Anzahl der Stationen: 1

EA-Bytes pro Station: 30

Leistungsdaten

PN-Reaktionszeit [ms]		Zykluszeit [ms]		Aktualisierungszeit [ms]	
Min	45,26	Min	13,00		
Typ	95,02	Typ	13,00	Typ	32,00
Max	141,22	Max	13,00		

<http://support.automation.siemens.com>
 → Applications & Tools
 BID: 21869080

<http://support.automation.siemens.com/WW/view/de/21869080>

PROFINET-Performance Data in the Internet

PROFIBUS

PROFINET

SIEMENS
Automation and Drives
PerformanceData Version 3.5 Build 1 Rev. 24771
DB: Aug 2006

Leistungsdaten zur Kommunikation über IE

* neu [?] Hilfe
Sprache: Deutsch

Auswahl der Konfiguration

Sendende Station	Netz	Empfangende Station
<ul style="list-style-type: none"> ● CPU CPU 317-2PN1DP ● CP --- ● Last durch Programm 10 ms 	<ul style="list-style-type: none"> ● Netztopologie (Sicherheit) S602 / Firewall ● Kommunikationsdienst BSEND / BRECV (S7- Protocol) 	<ul style="list-style-type: none"> ● CPU CPU 414-2DP ● CP CP 443-1 Adv (EX40) ● Last durch Programm 10 ms ● Anzahl der Stationen 14

Messwerte anzeigen

Gewählte Konfiguration

Leistungsdaten

Übertragungszeit [ms]		Zykluszeit (Sender) [ms]		Zykluszeit (Empfänger) [ms]	
Min	6029	Min	9	Min	10
Typ	n.a.	Typ	13	Typ	10
Max	6122	Max	15	Max	11

<http://support.automation.siemens.com>
 → Applications & Tools
 BID: 22180793

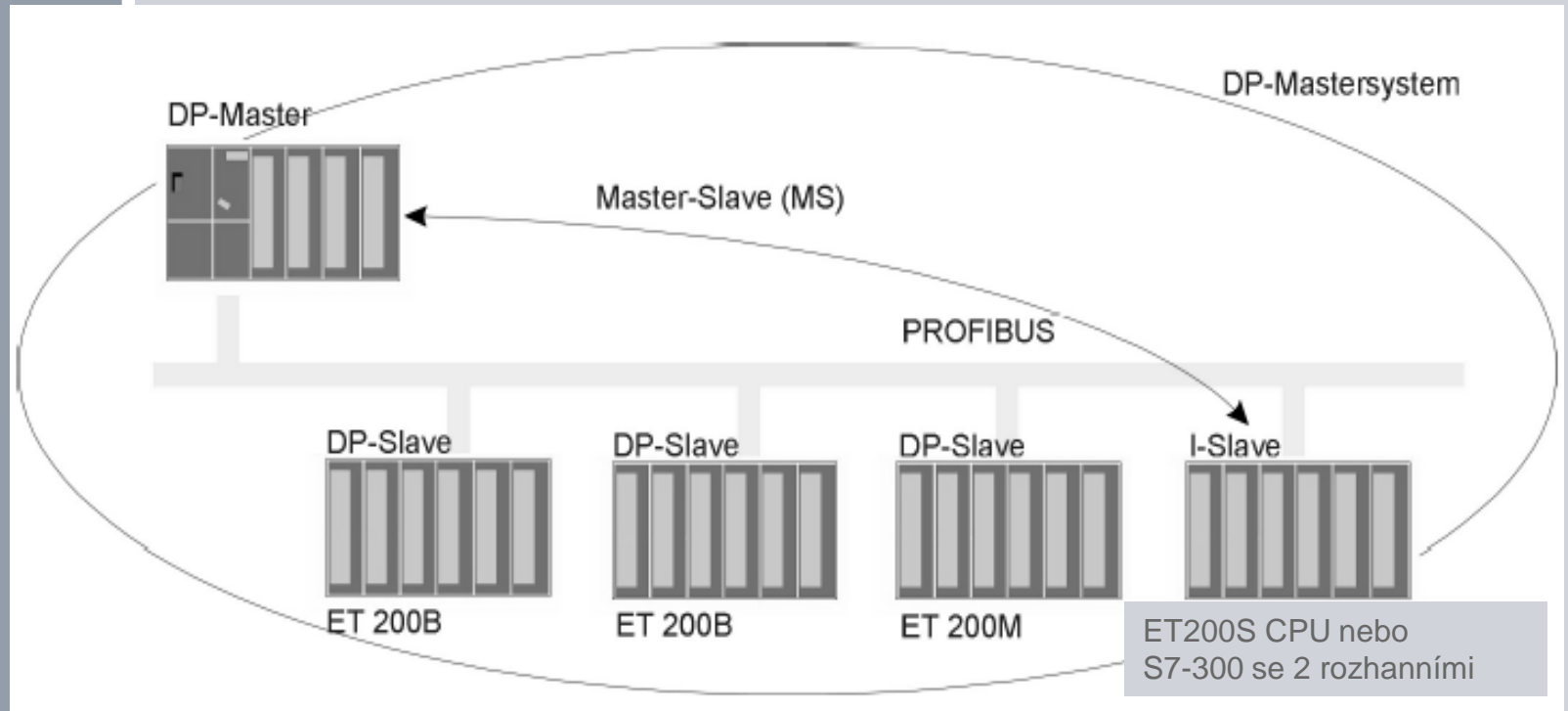
<http://support.automation.siemens.com/WW/view/de/22180793>

Připomenutí: I-DP slave na Profibusu

PROFIBUS

PROFINET

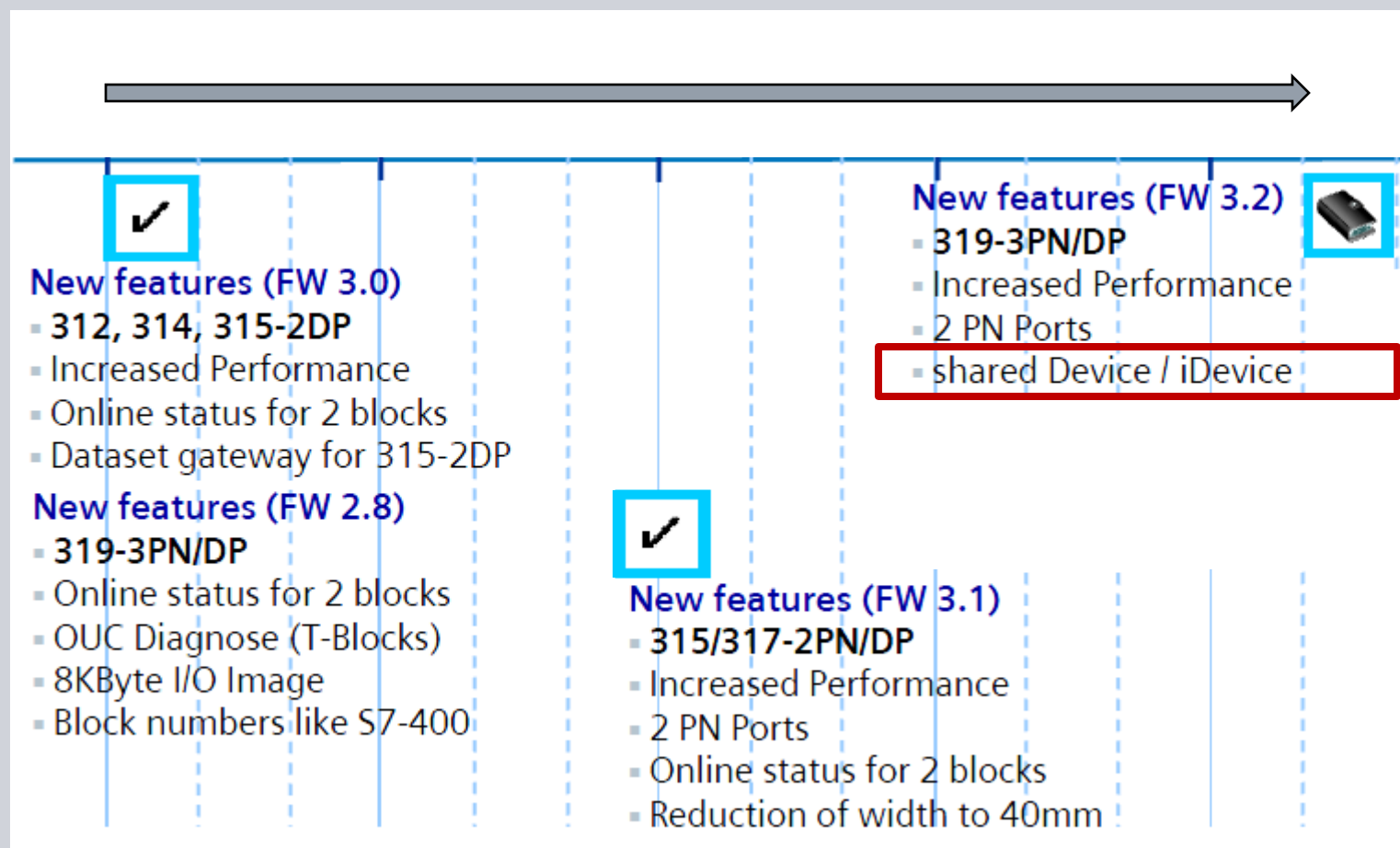
..ukázka - video



I-Device na Profinetu... Blízká budoucnost

PROFIBUS

PROFINET



uvolněno



plánováno



Program

13:00 – 13:05	Úvod
13:05 – 14:15	Simatic - Přehled komunikace
14:15 – 14:45	Přestávka I
14:45 – 15:45	Profinet
15:45 – 16:15	Přestávka II
16:15 – 17:10	Novinky – Simatic, ET 200, ...
17:10 – 17:15	Diskuze, závěr