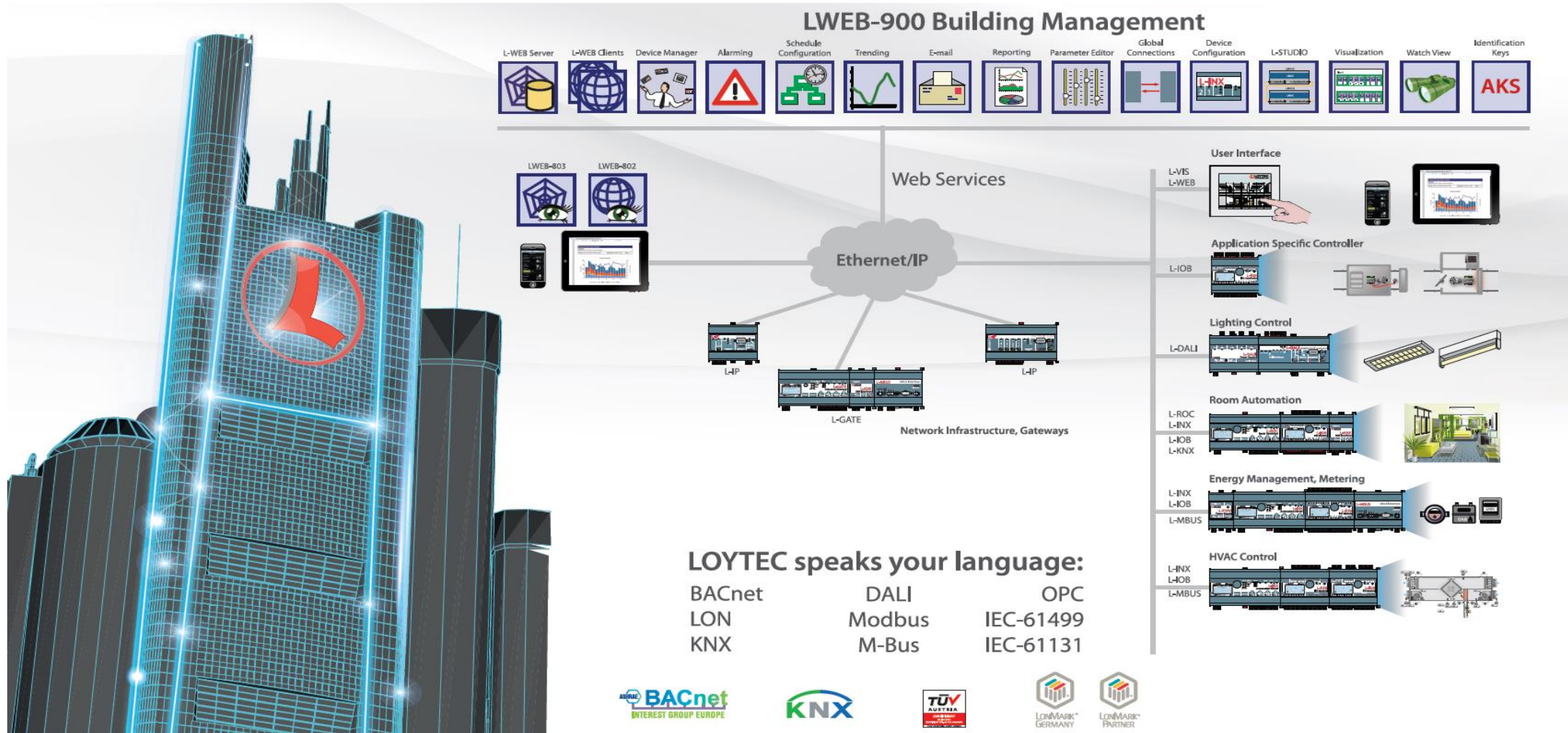




Buildings under Control
Symposium
Kraków
7.04.2016

Serwery automatyki, sterowniki
programowalne i moduły wejść/wyjść

Ogólne spojrzenie na system



Ogólne spojrzenie na system

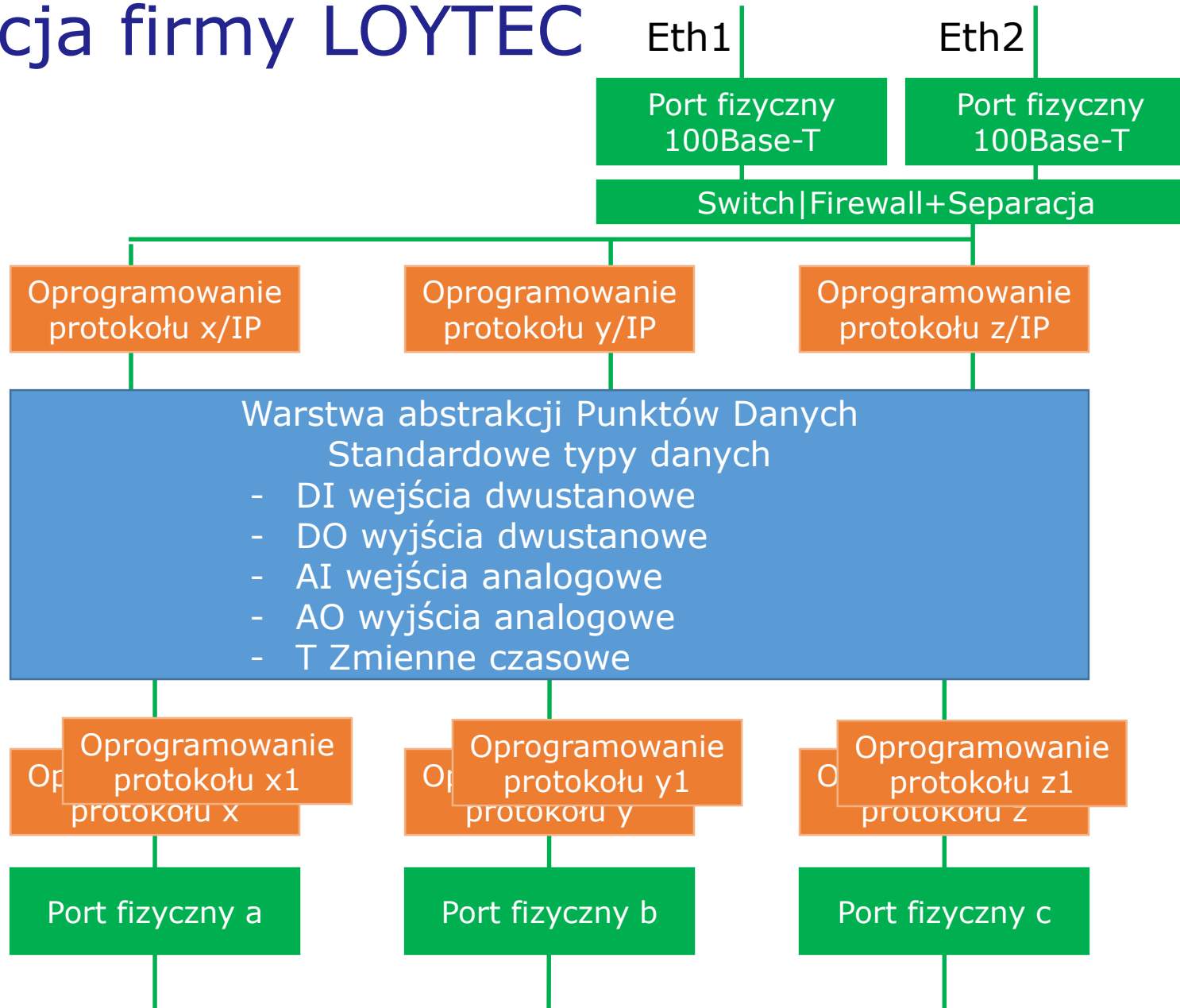


Sterowniki, I/O i serwery automatyki:

- HVAC
- Opomiarowanie mediów
- Zintegrow. automatyka pomieszczeń
- Sterowanie oświetleniem
- Sterowniki funkcjonalne do urządzeń technologicznych

Koncepcja firmy LOYTEC

Protokoły
IP

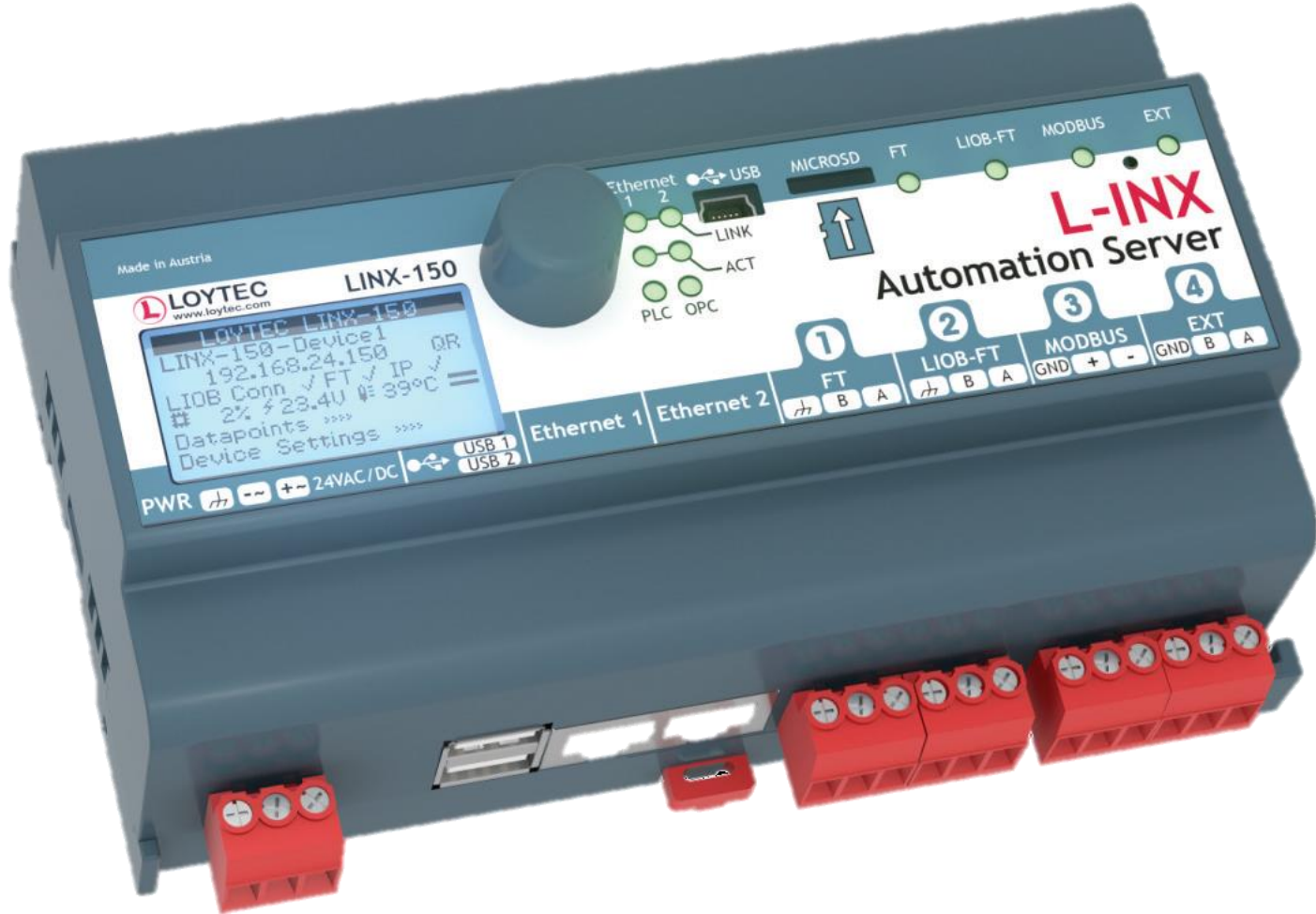


Protokoły
poziomu
obiektowego

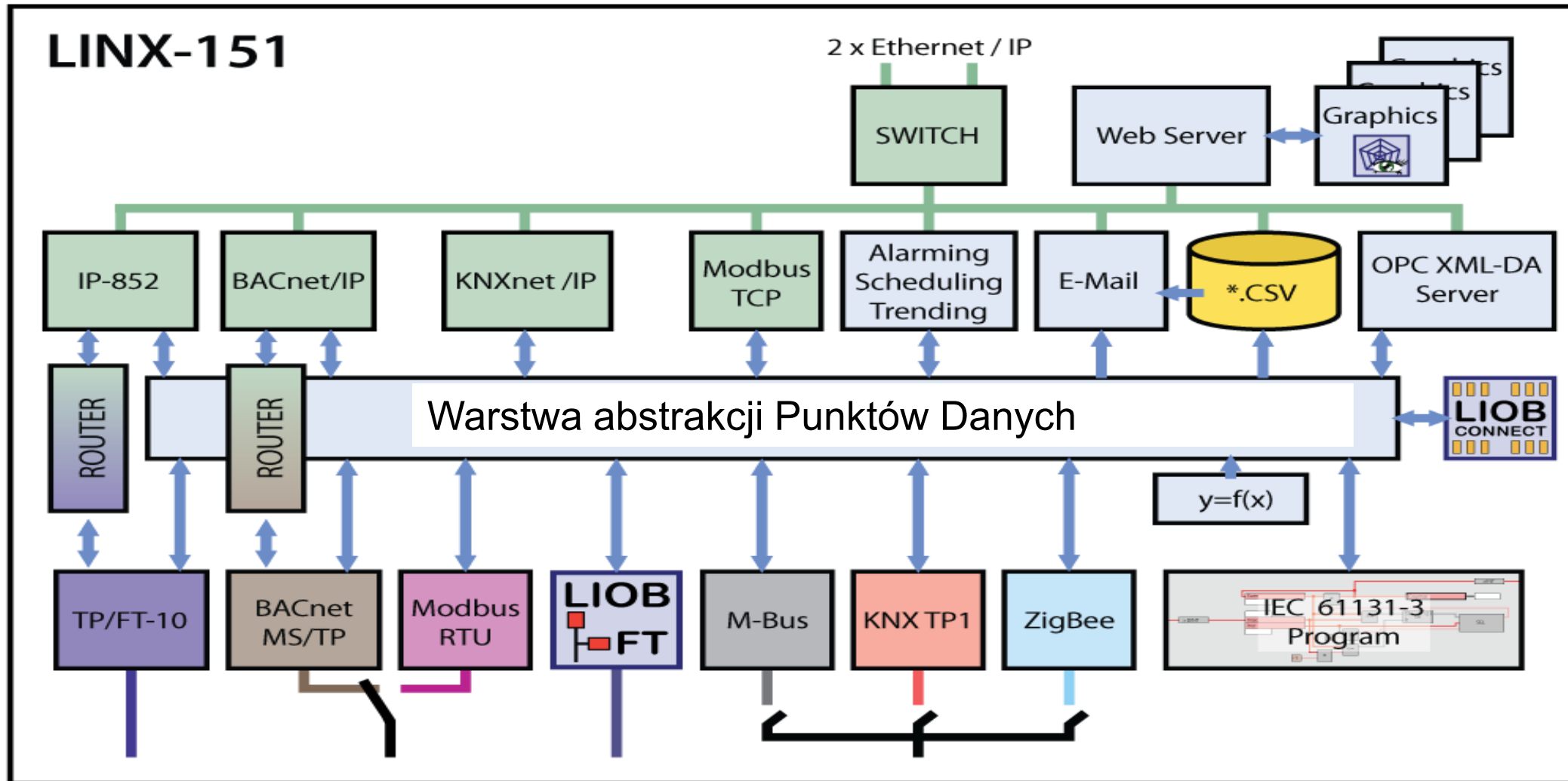
Przykład Serwera Automatyki



Przykład Serwera Automatyki

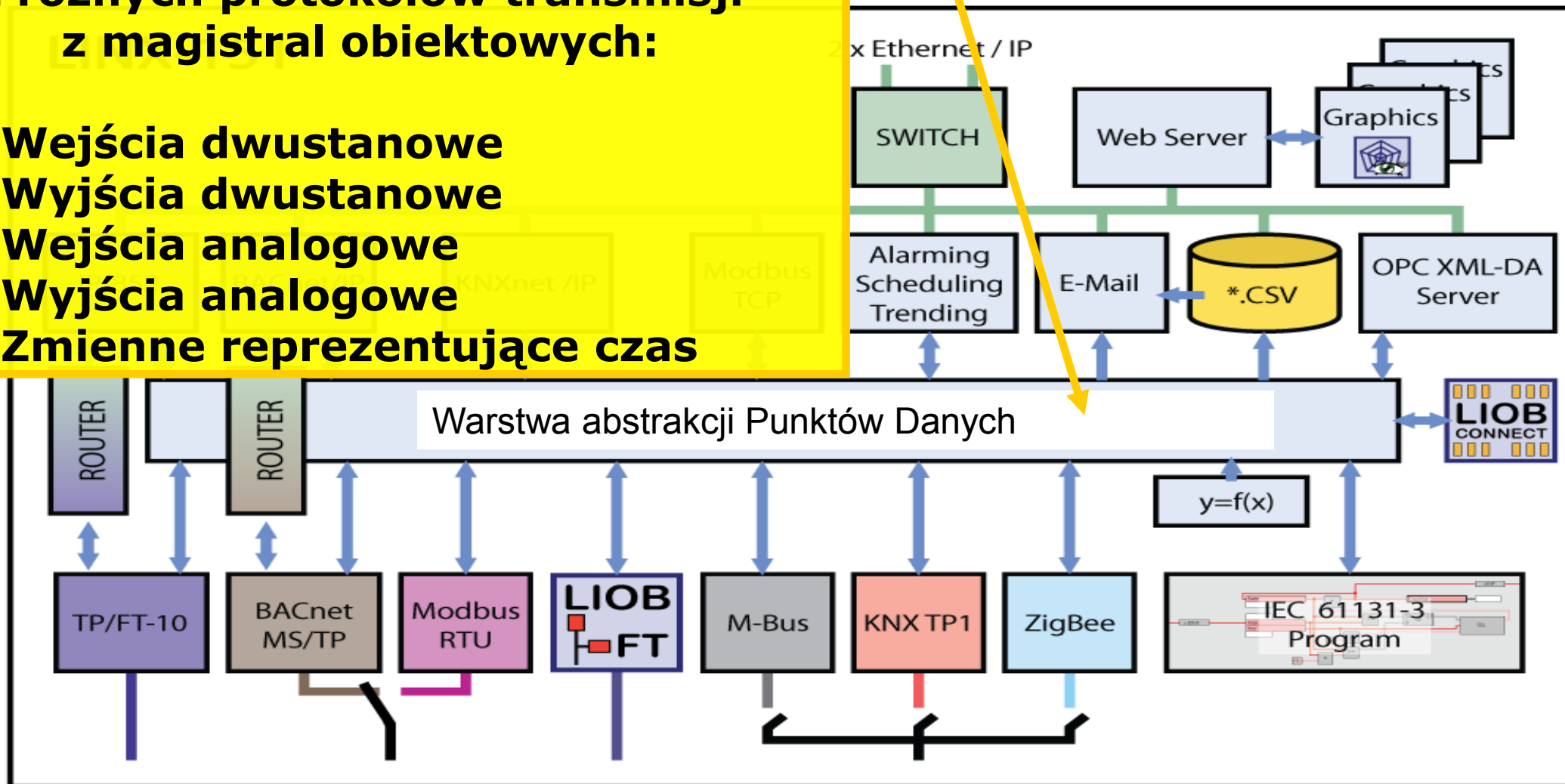


Schemat blokowy serwera automatyki L-INX



Warstwa jednolitego przedstawienia wszystkich Punktów Danych pochodzących z różnych protokołów transmisji z magistral obiektowych:

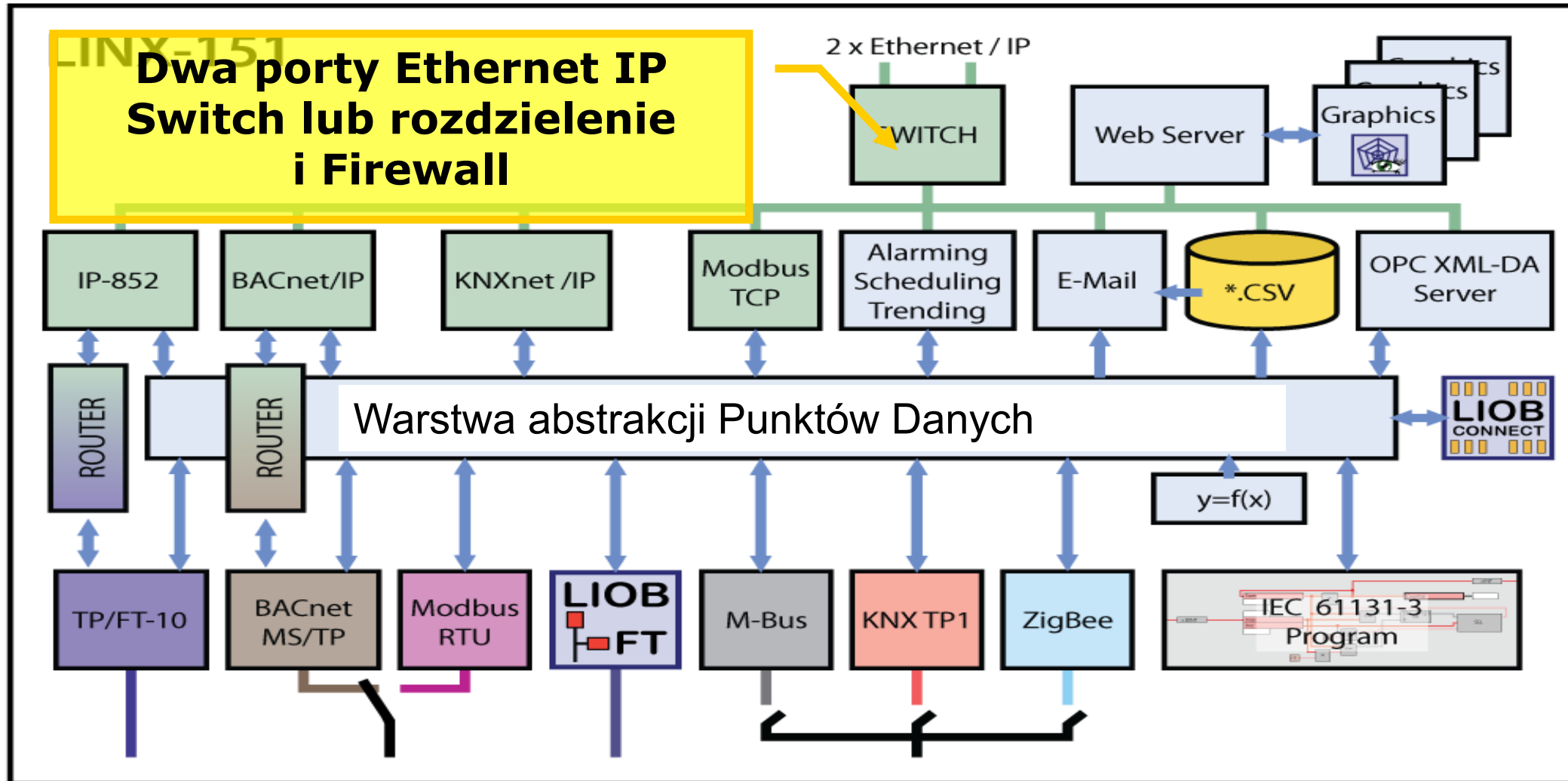
- Wejścia dwustanowe
- Wyjścia dwustanowe
- Wejścia analogowe
- Wyjścia analogowe
- Zmienne reprezentujące czas



Abstrakcja Punktów Danych

- ① Punkty Danych traktowane jako dane niezależne od technologii transmisji danych
- ① Takie same koncepcje w różnych technologiach (dane binarne, dane analogowe)
- ① Takie same koncepcje w różnych produktach
- ① W pełni zintegrowana funkcjonalność alarmowania, harmonogramowania i rejestracji trendów (AST - Alarming, Scheduling, Trending)
- ① Praktycznie niewidoczne połączenia pomiędzy Punktami Danych – funkcjonalność bramy (gateway)
- ① Aplikacje niezależne od technologii (grafika, uzależnienia logiczne)

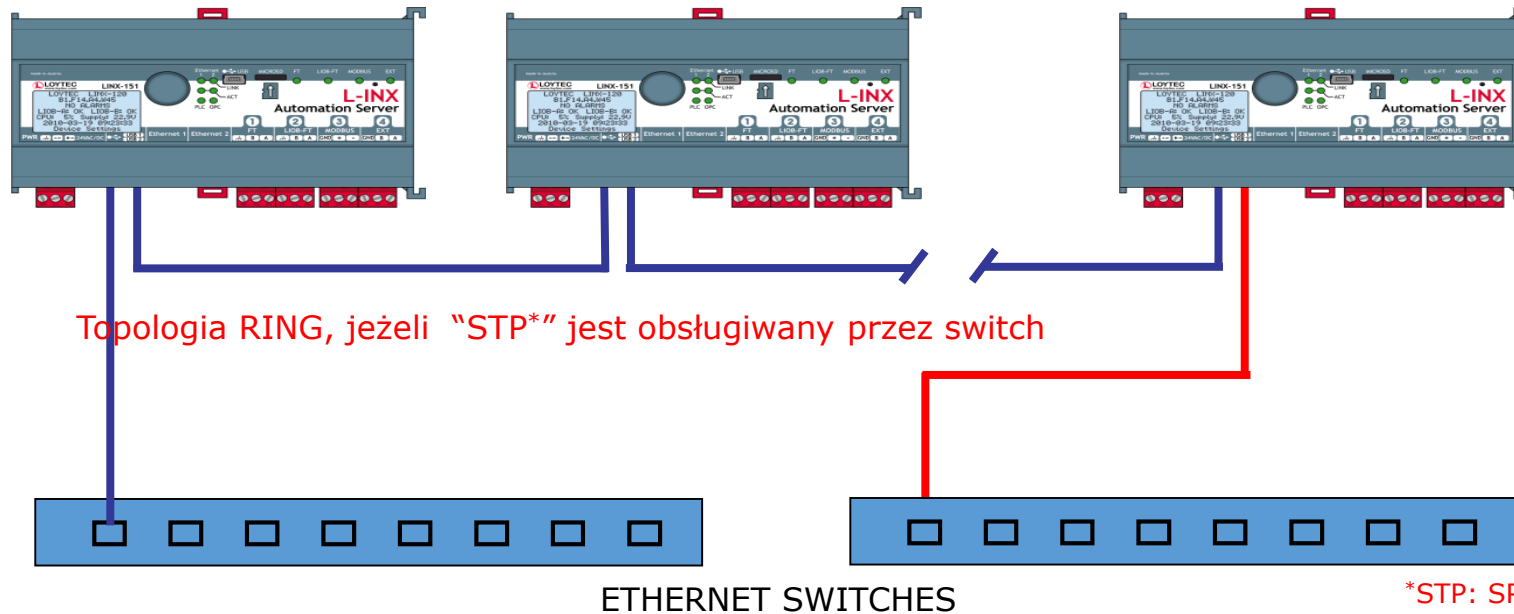
Schemat blokowy L-INX





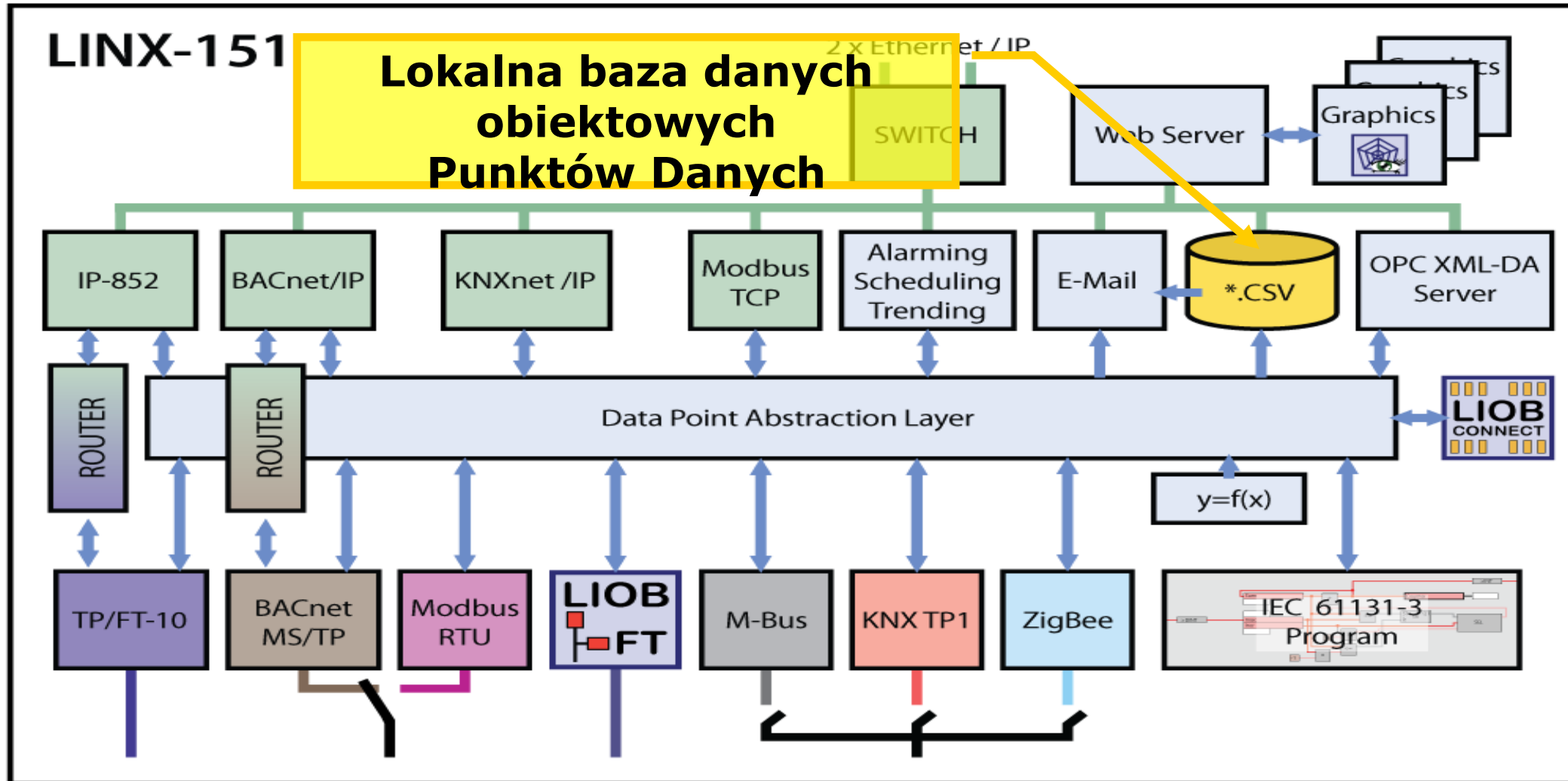
L-INX pracuje w Ethernet/IP

- ① Komunikacja Ethernet/IP z wykorzystaniem BACnet/IP, LonMark IP-852, Modbus TCP, KNXnet/IP, OPC XML-DA, Access Point WiFi
- ① Interfejs Dual-Port (funkcja Routera) Ethernet do łańcuchowego łączenia serwerów automatyki,
- ① Interfejs Dual-Port w trybie rozdzielania sieci przez różne adresy IP oraz firewall

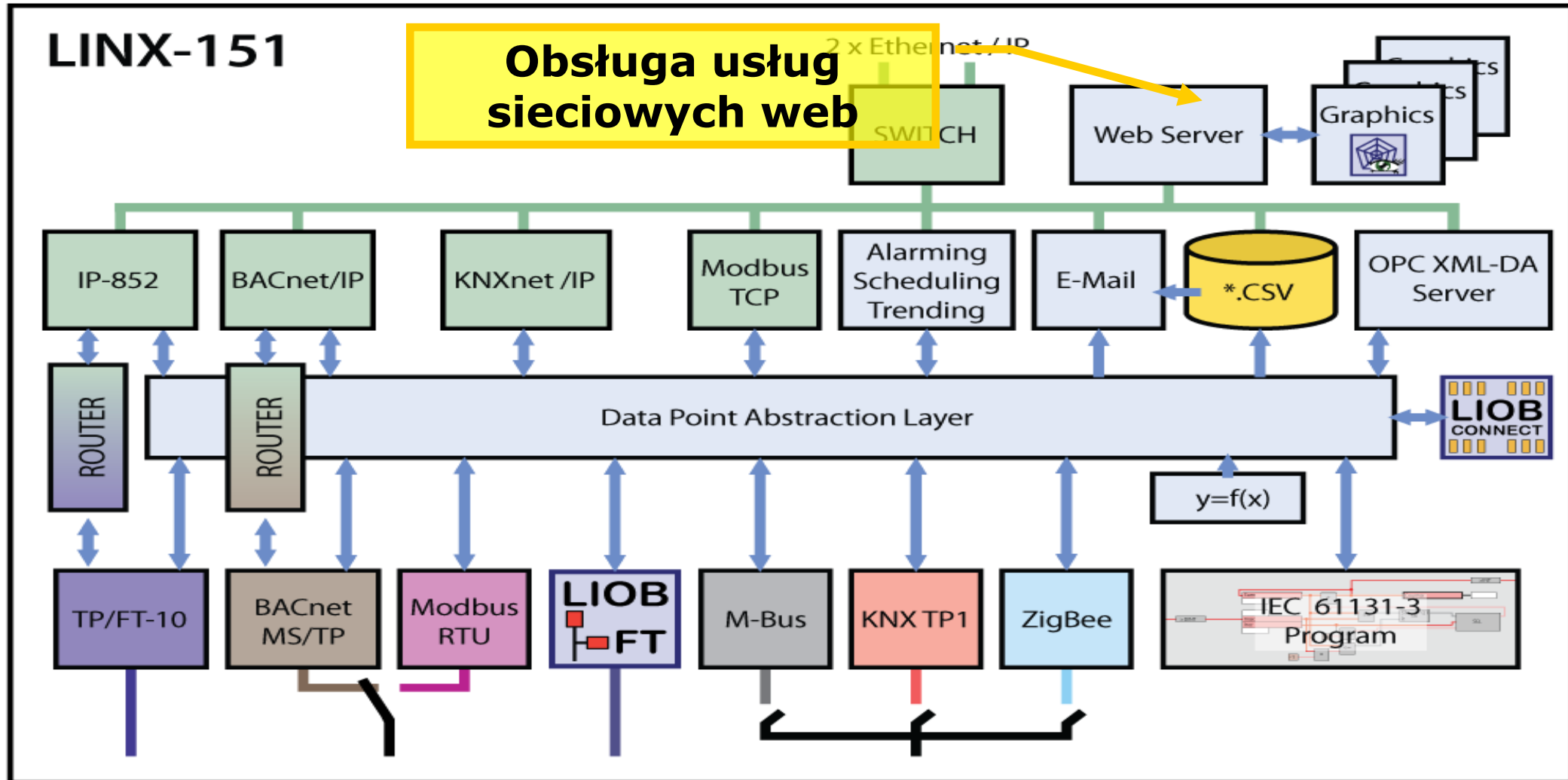


*STP: SPANNING TREE PROTOCOL

Schemat blokowy L-INX

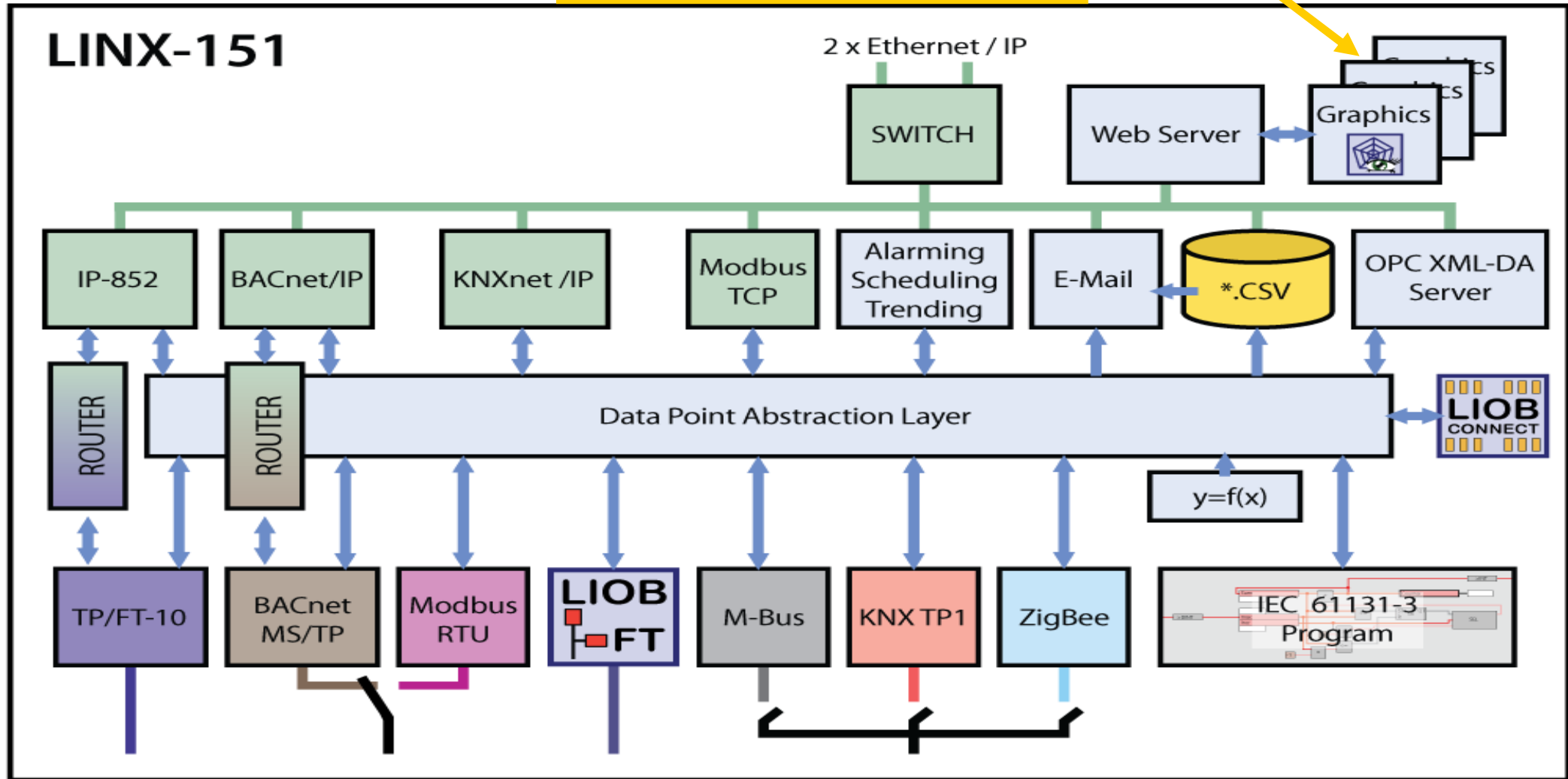


Schemat blokowy L-INX

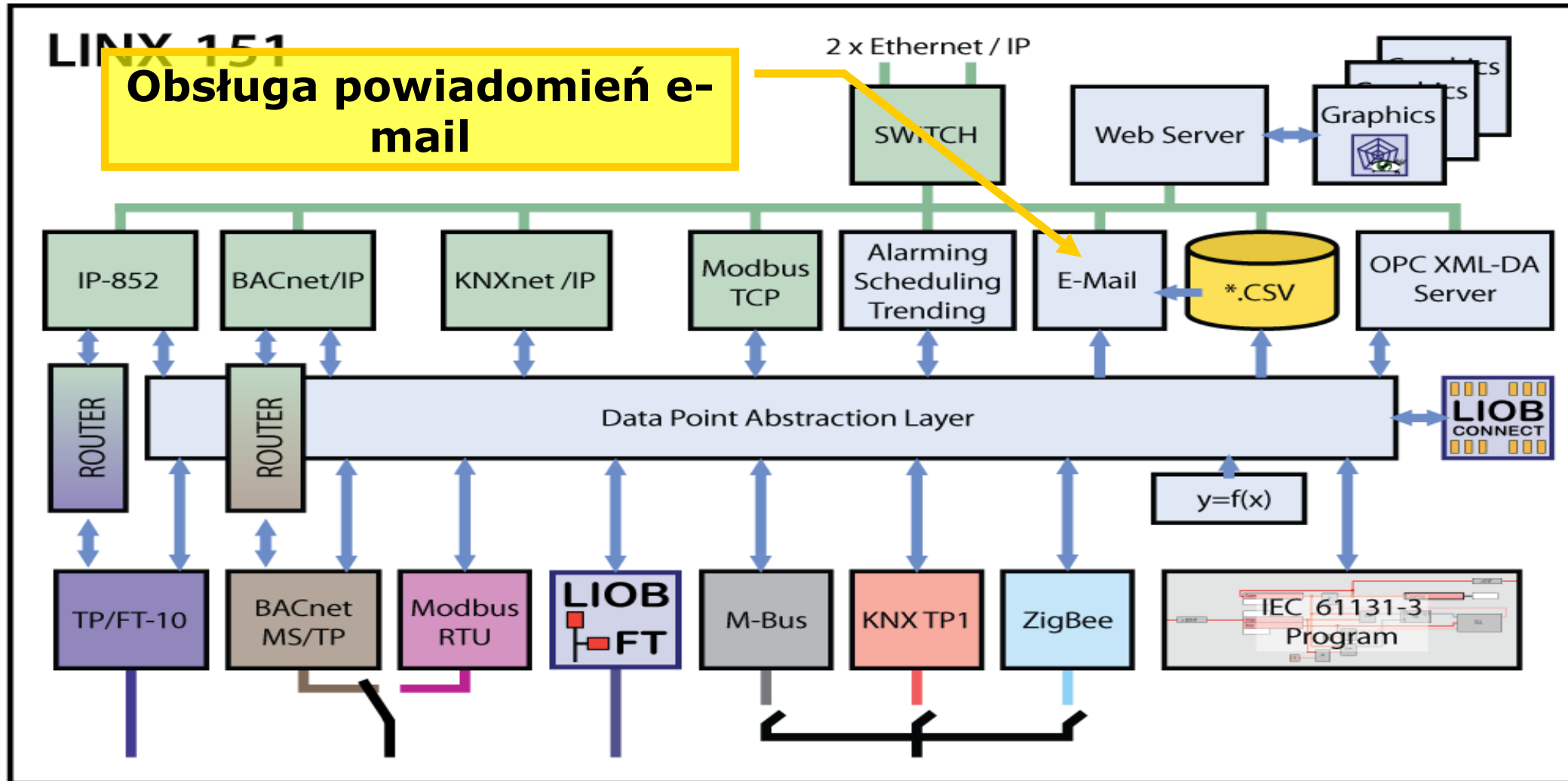


Schemat blokowy L-INX

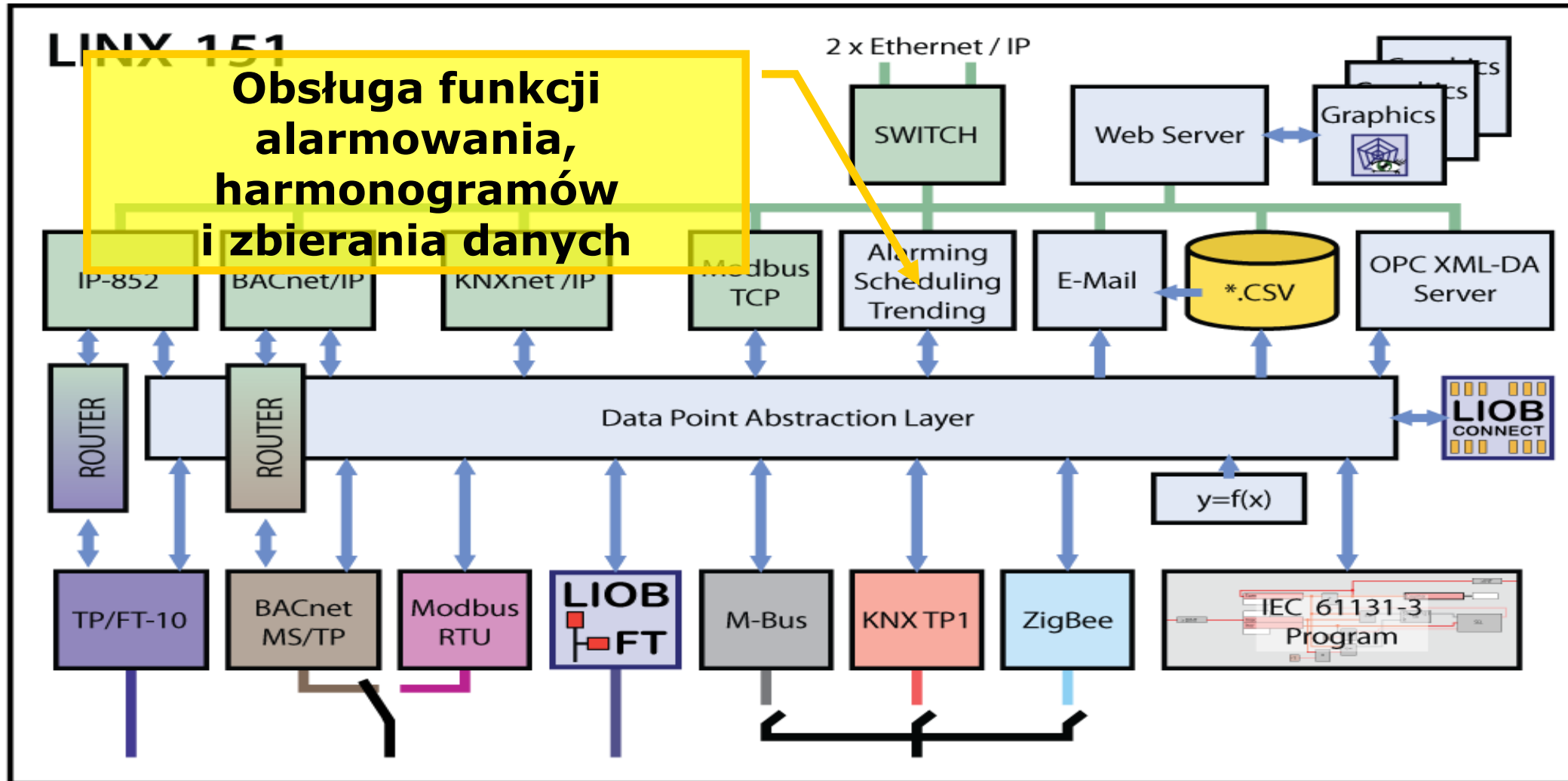
**Projekty graficzne
wizualizacji**



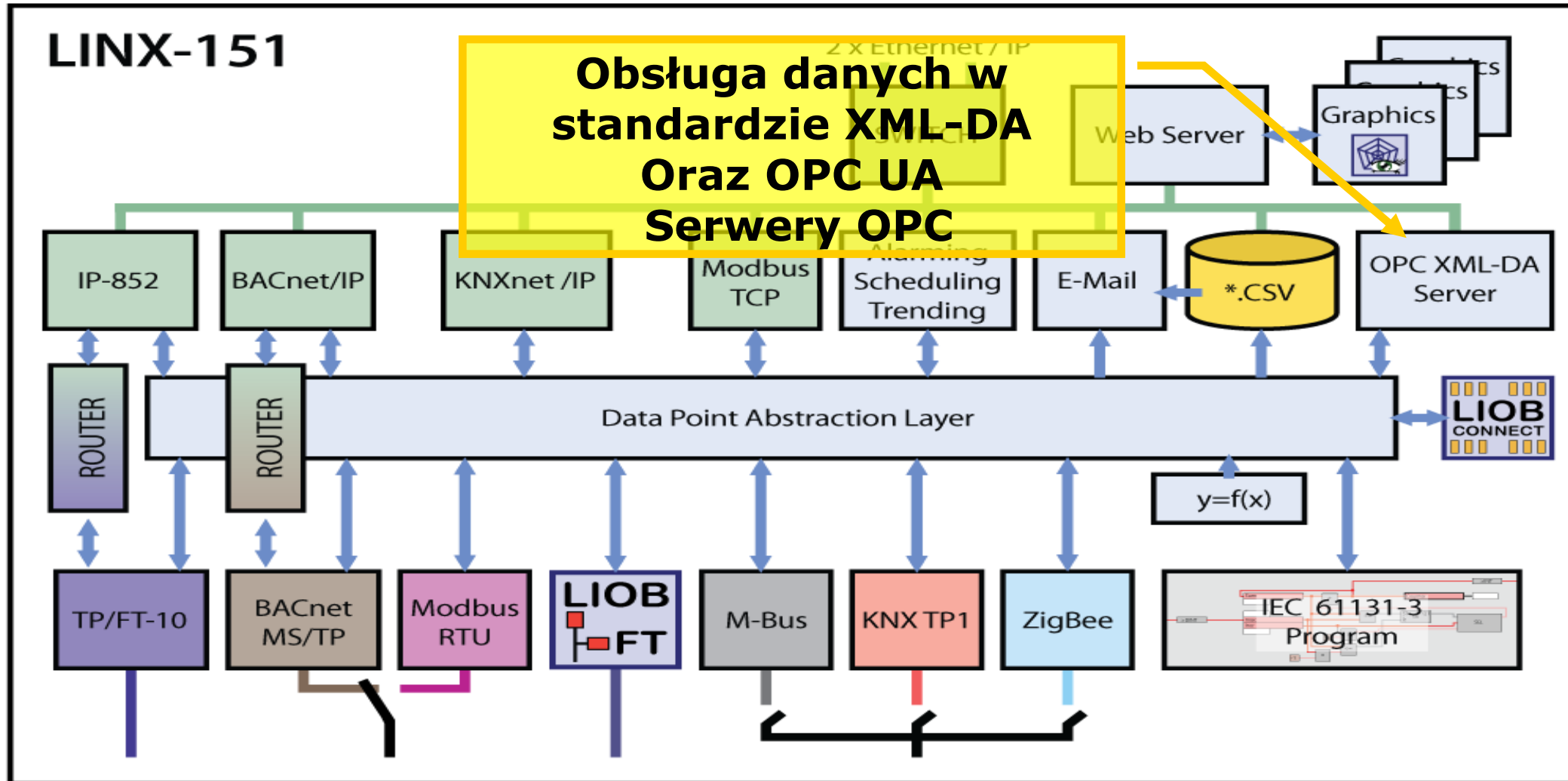
Schemat blokowy L-INX



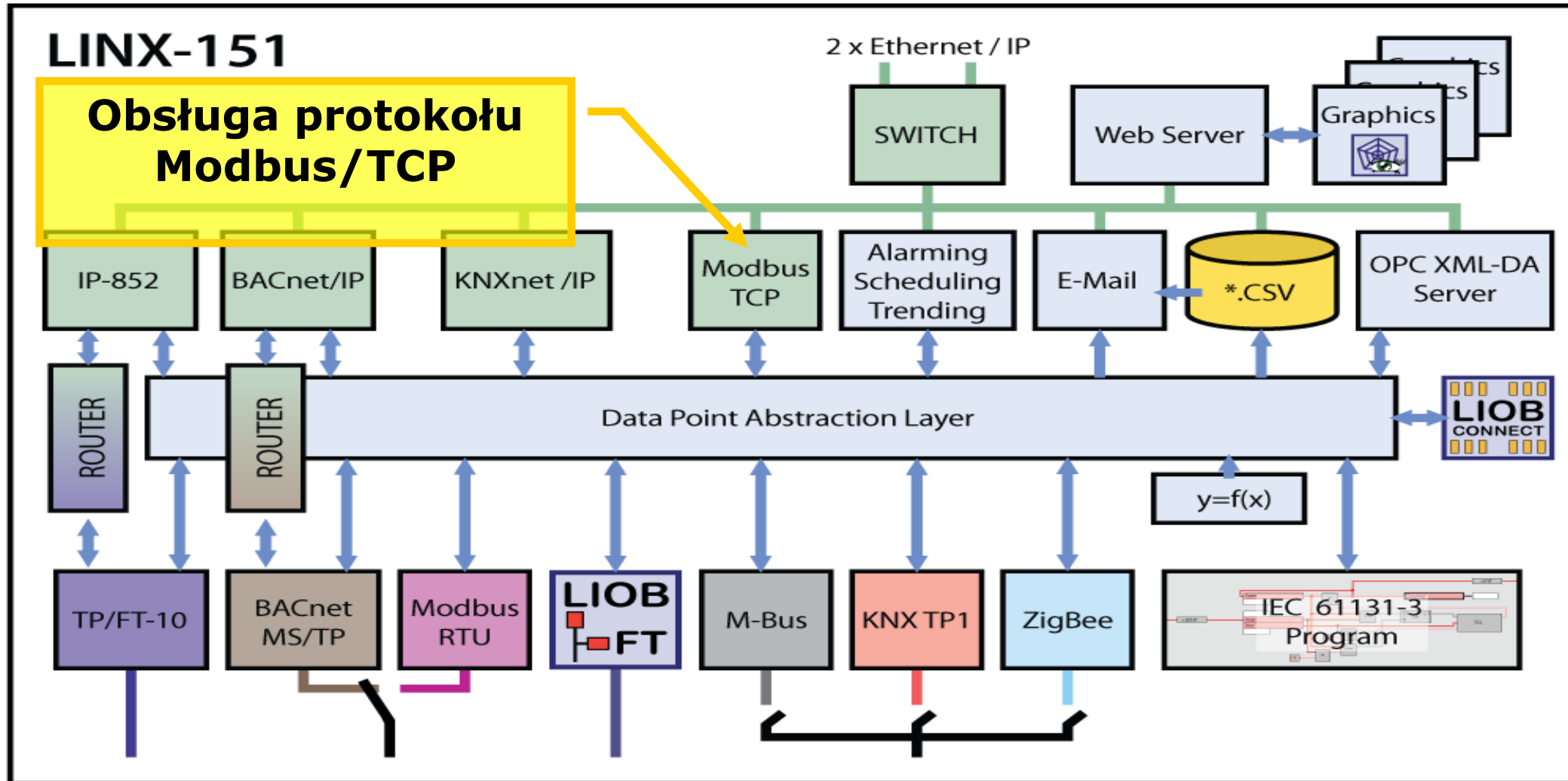
Schemat blokowy L-INX



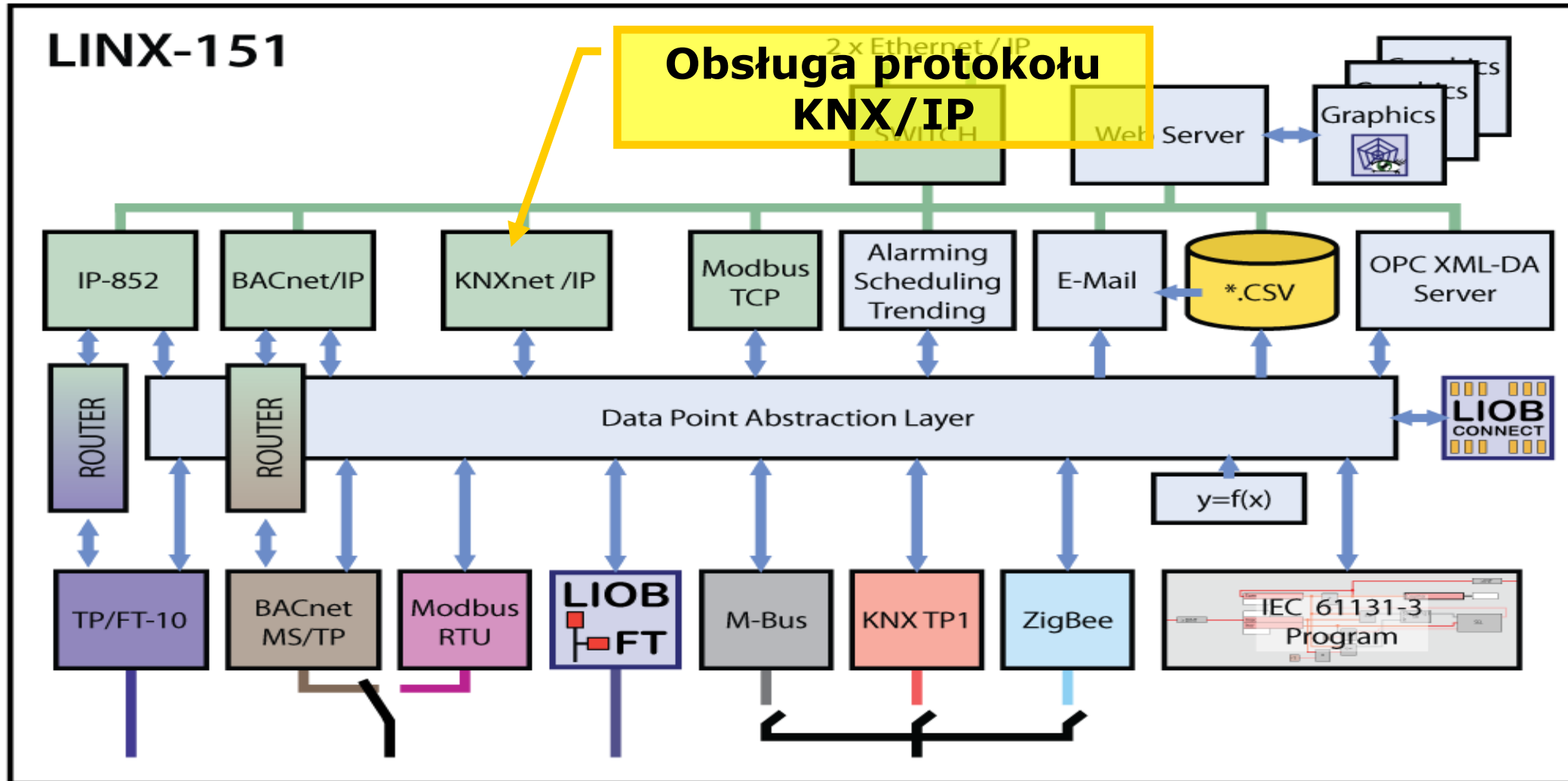
Schemat blokowy L-INX



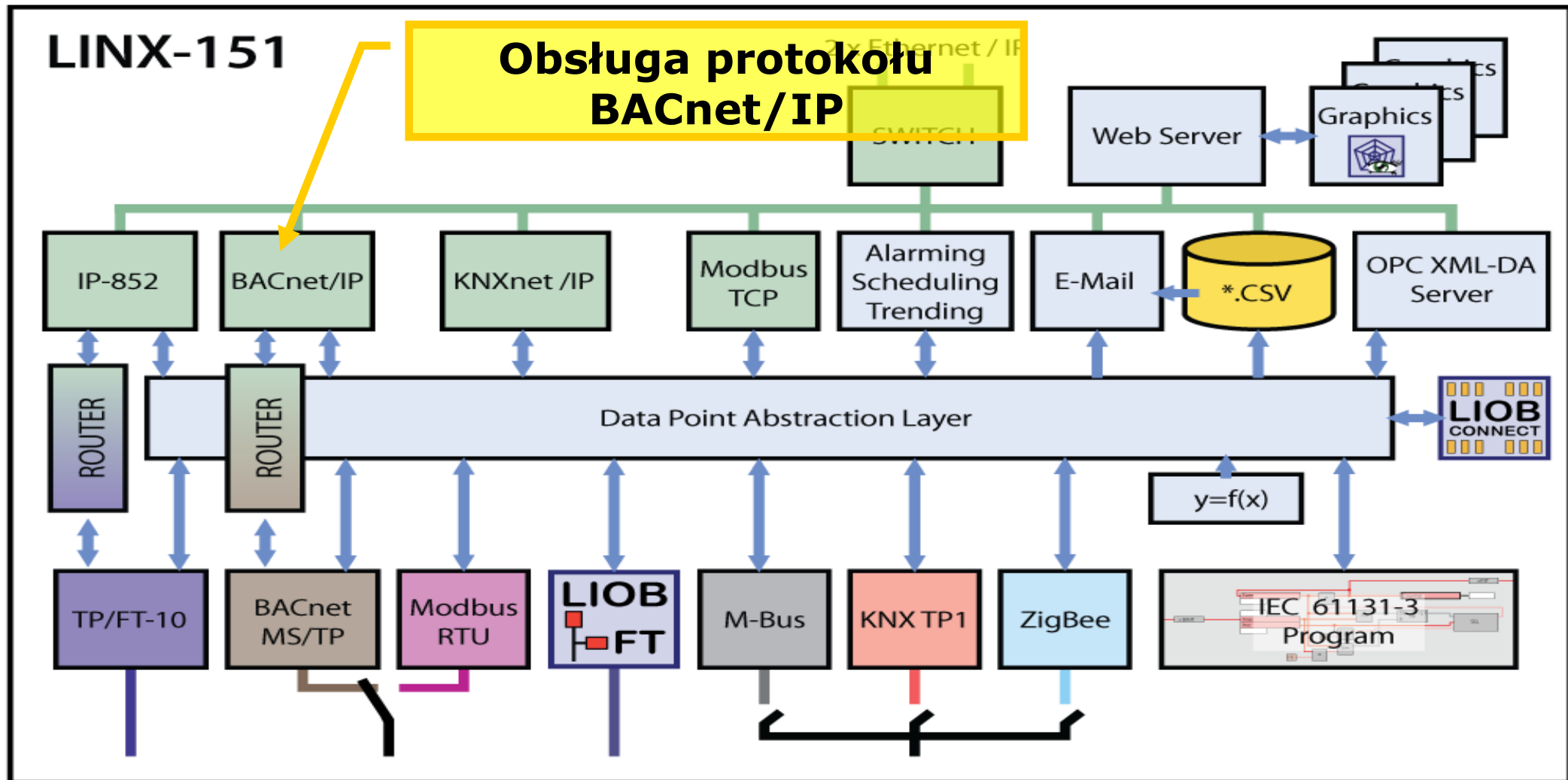
Schemat blokowy L-INX



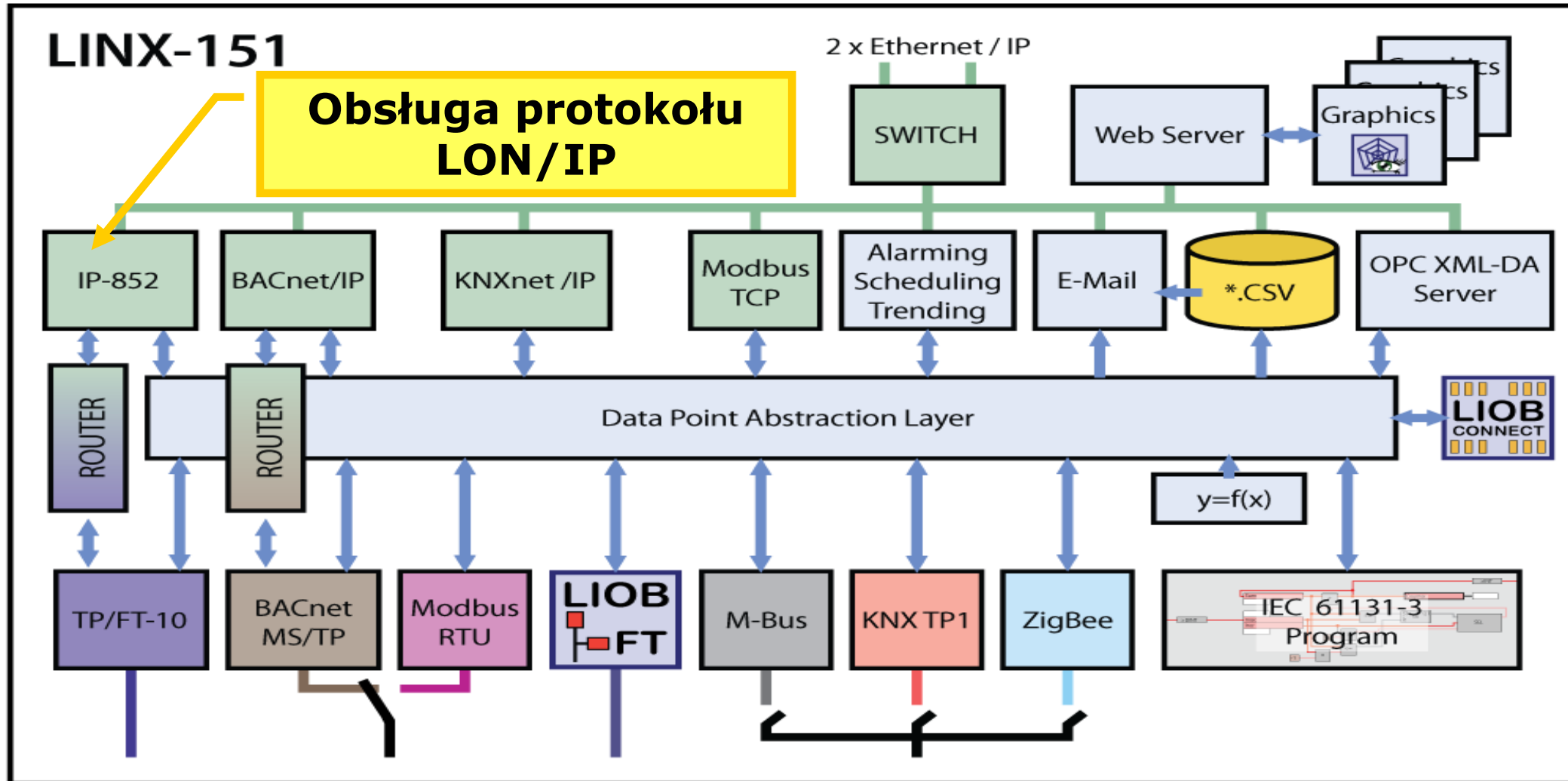
Schemat blokowy L-INX



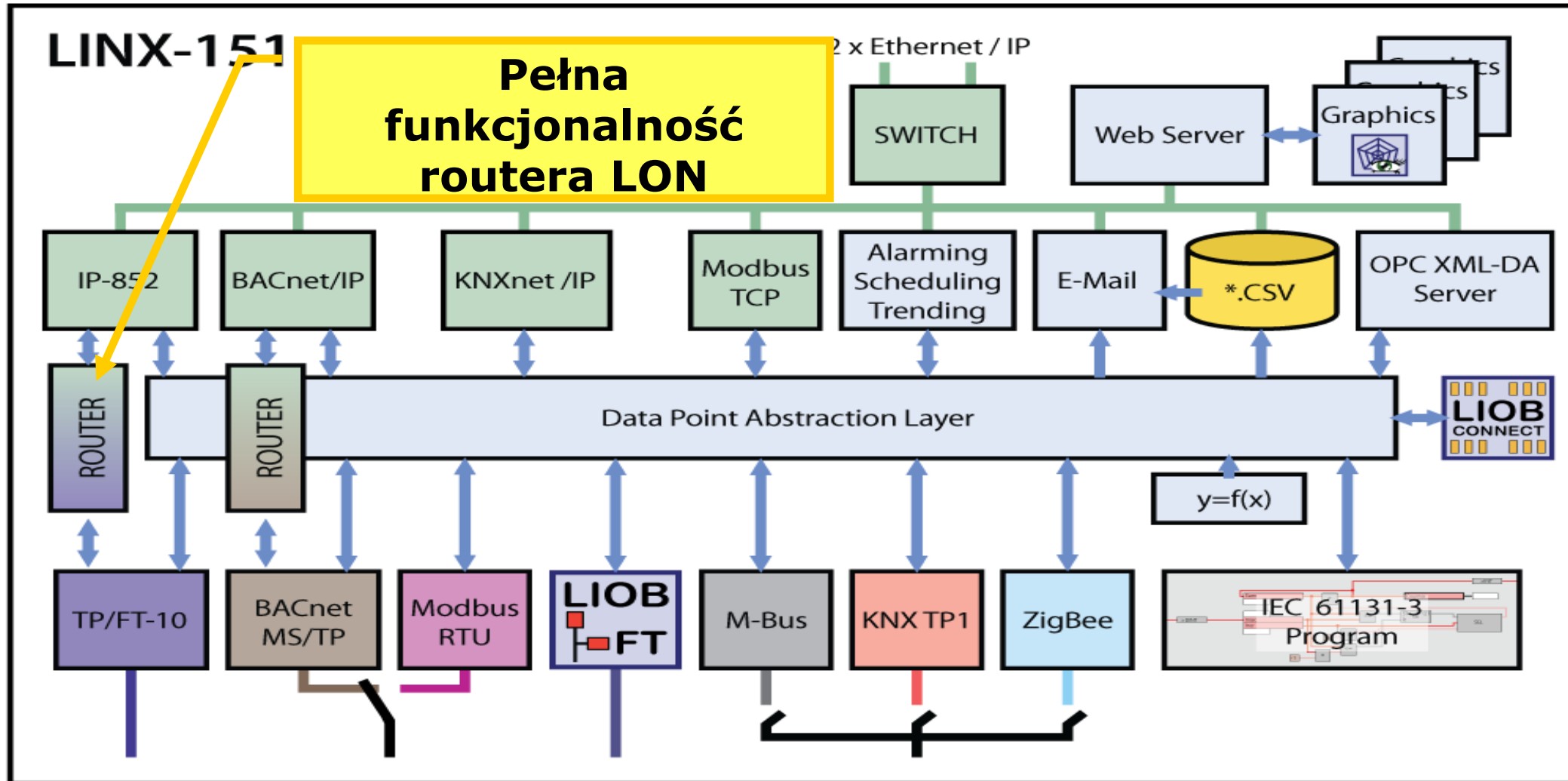
Schemat blokowy L-INX



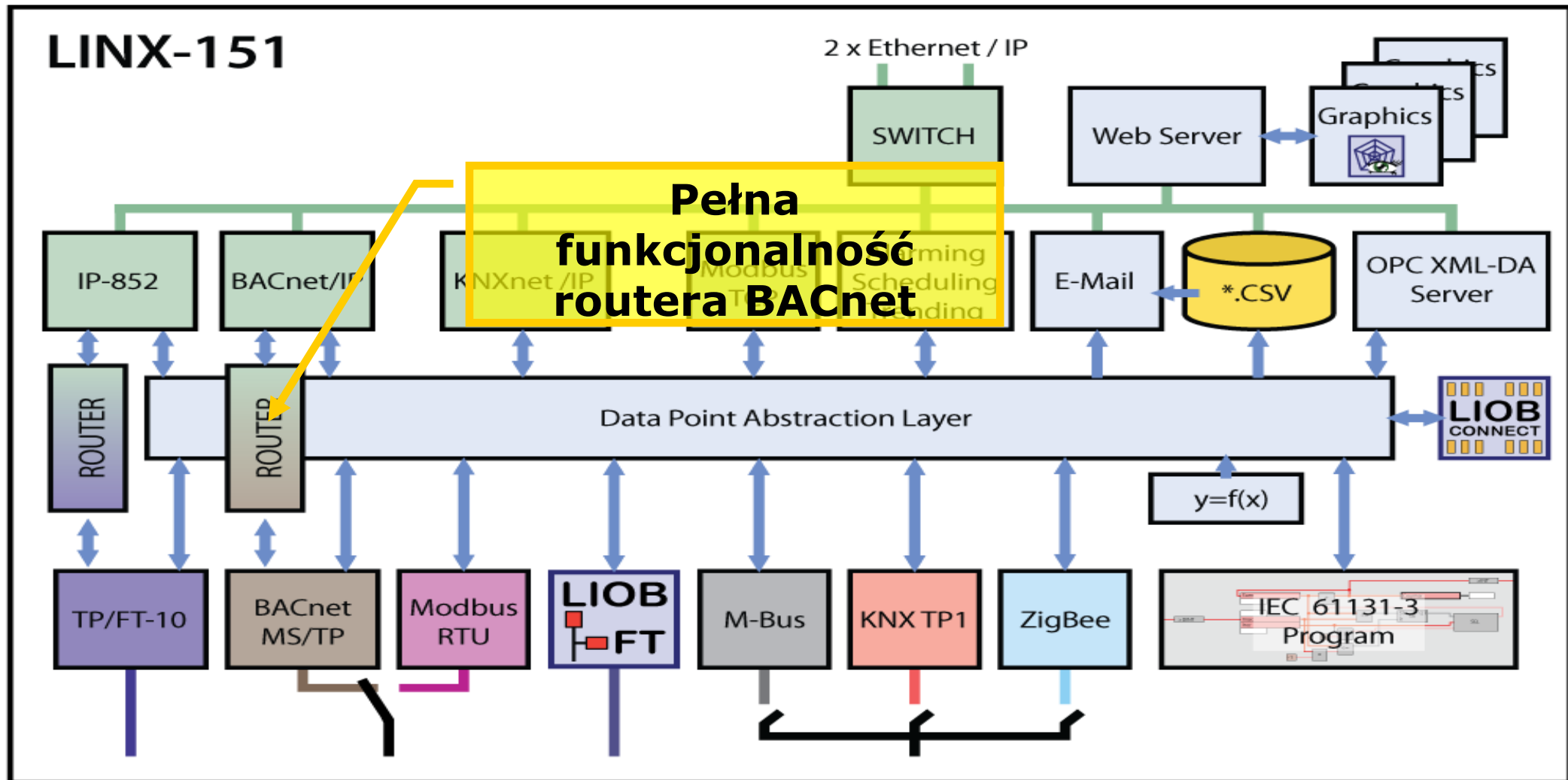
Schemat blokowy L-INX



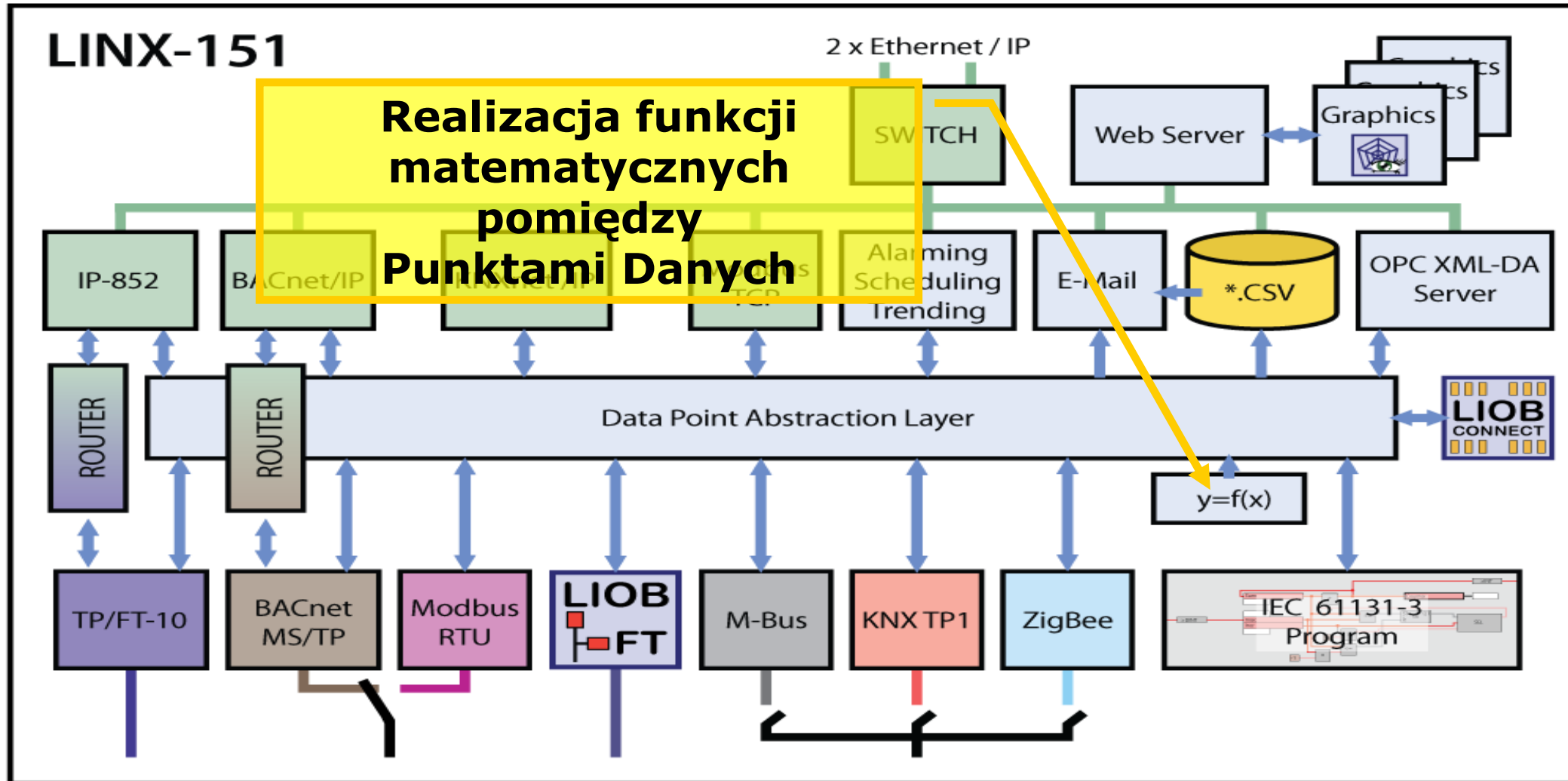
Schemat blokowy L-INX



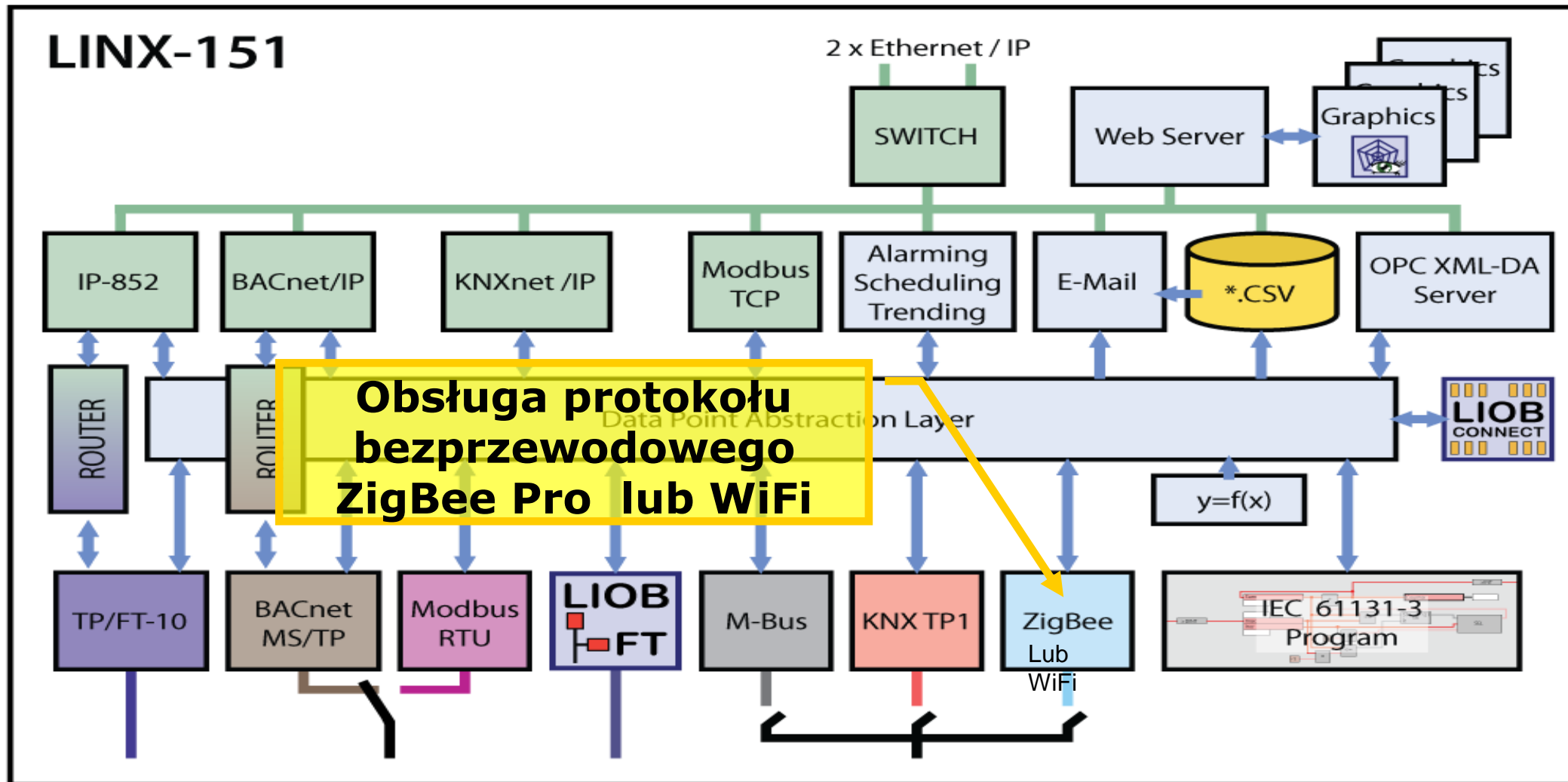
Schemat blokowy L-INX



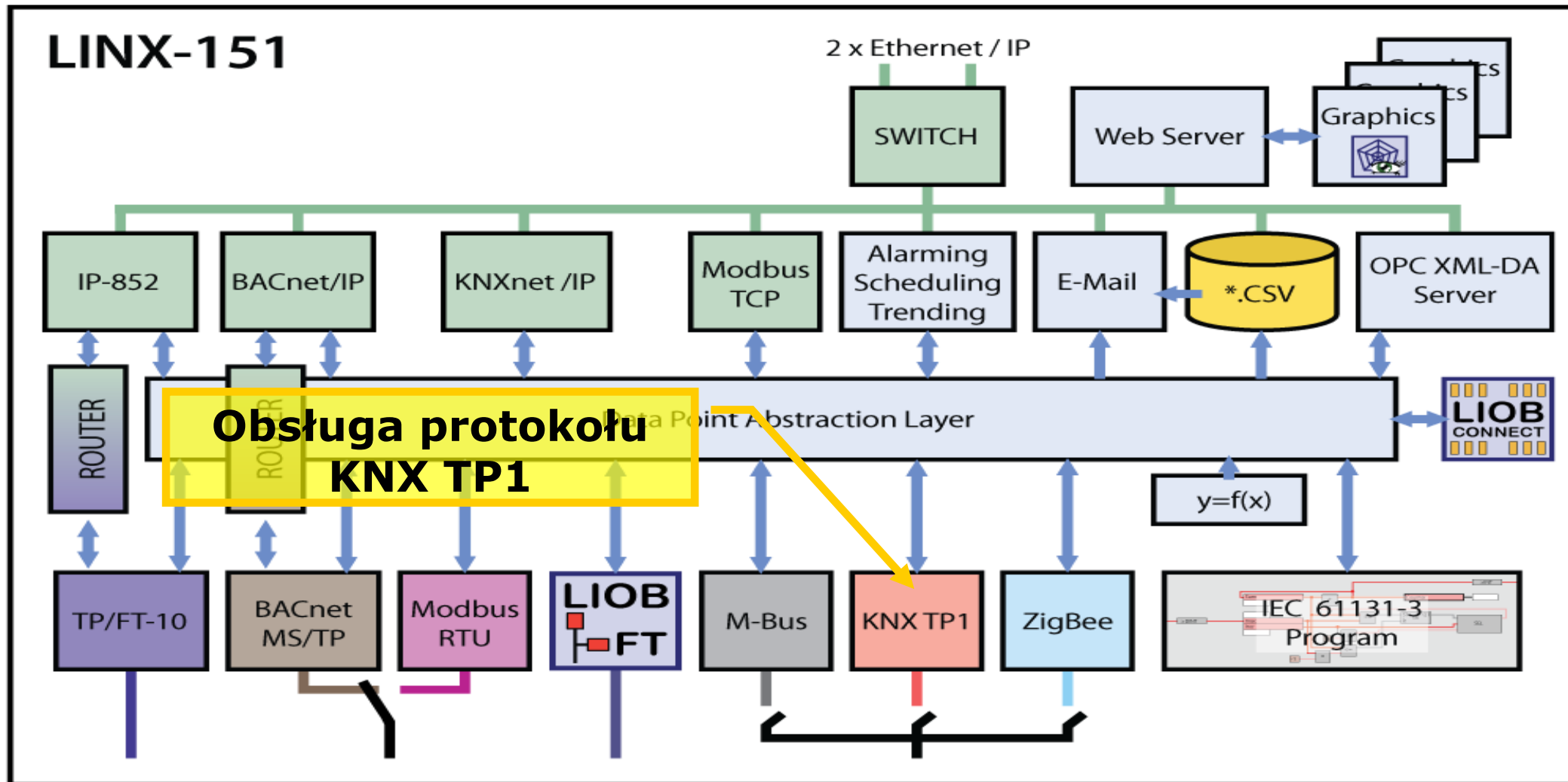
Schemat blokowy L-INX



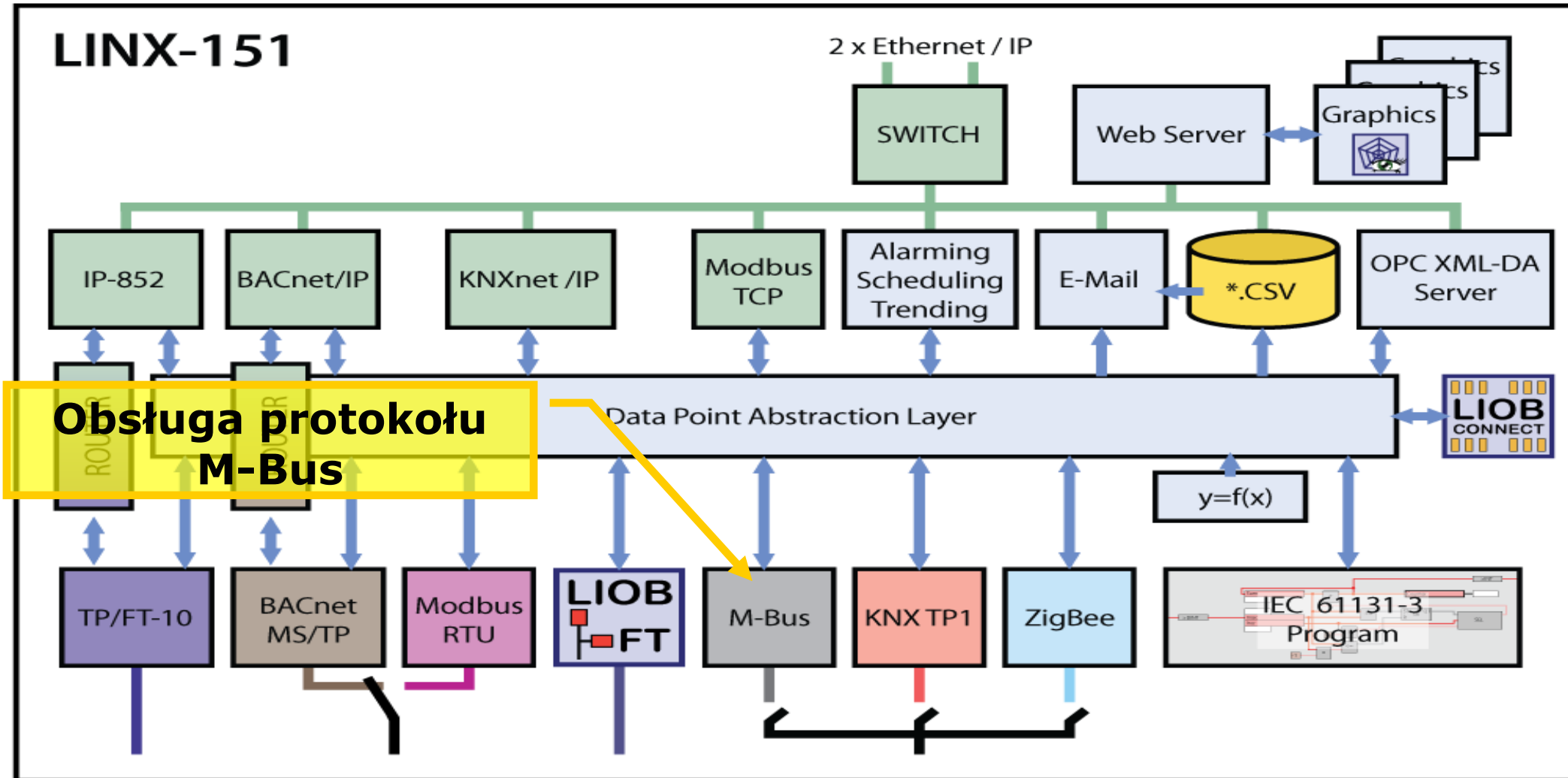
Schemat blokowy L-INX



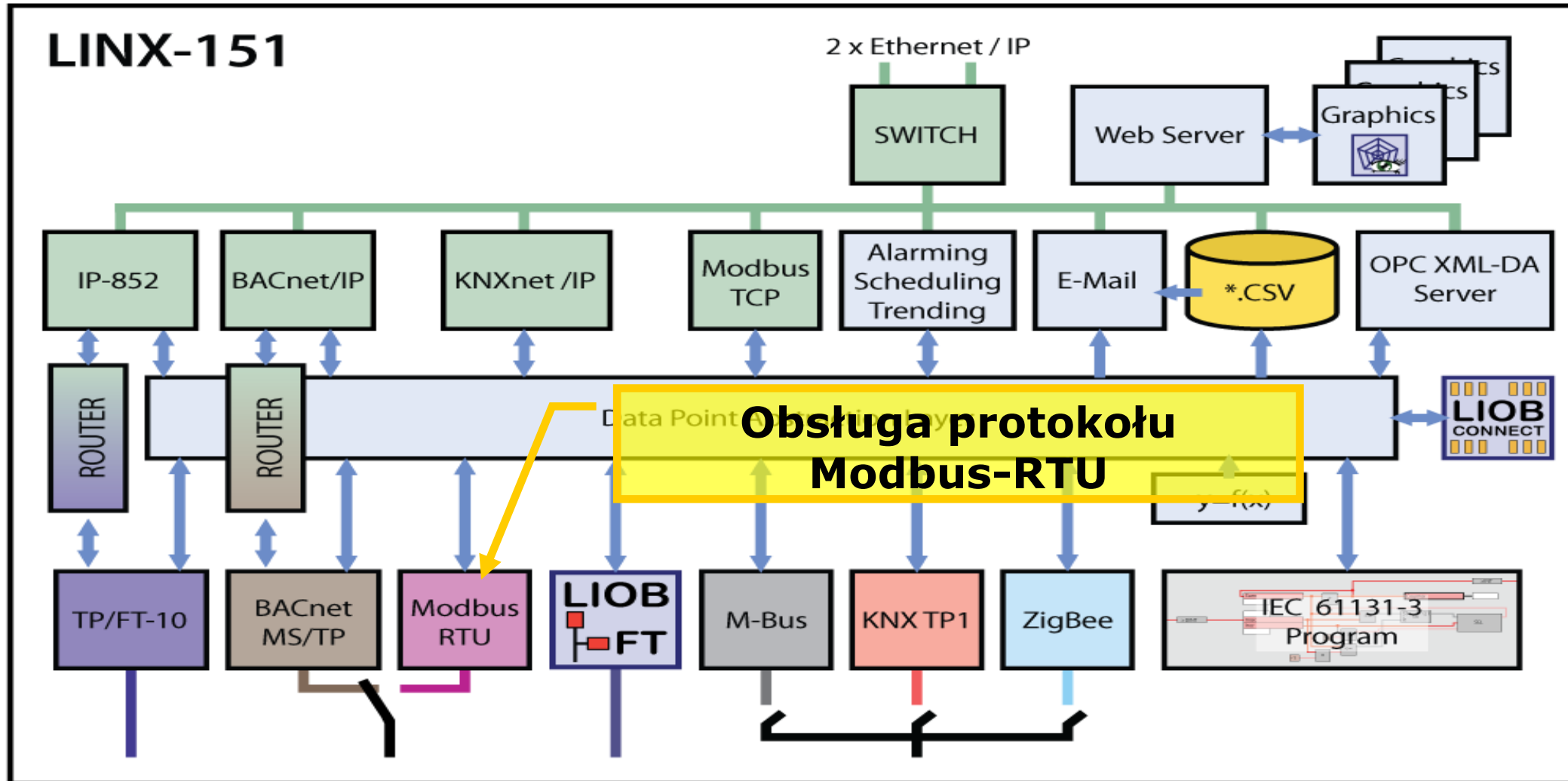
Schemat blokowy L-INX



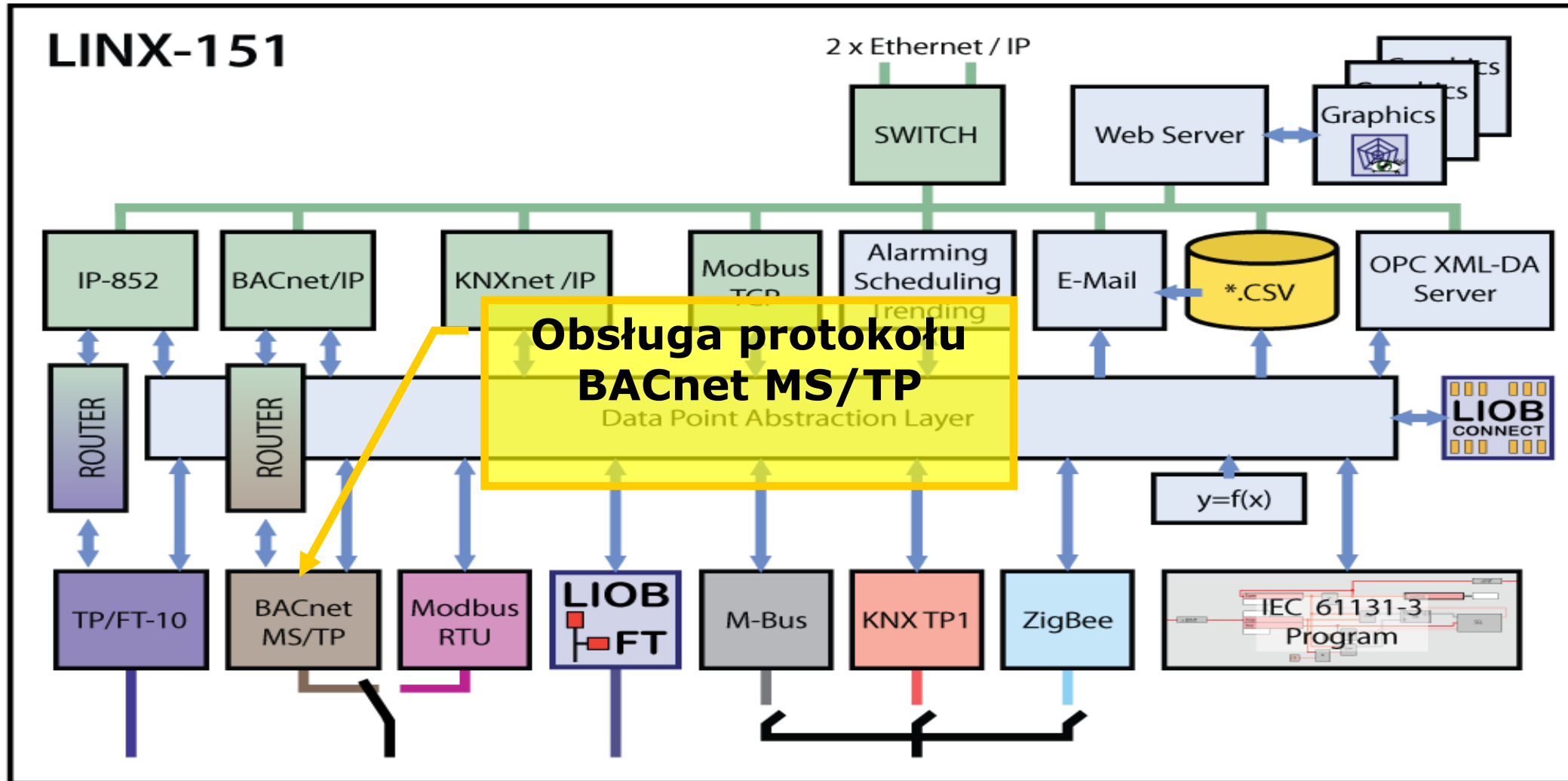
Schemat blokowy L-INX



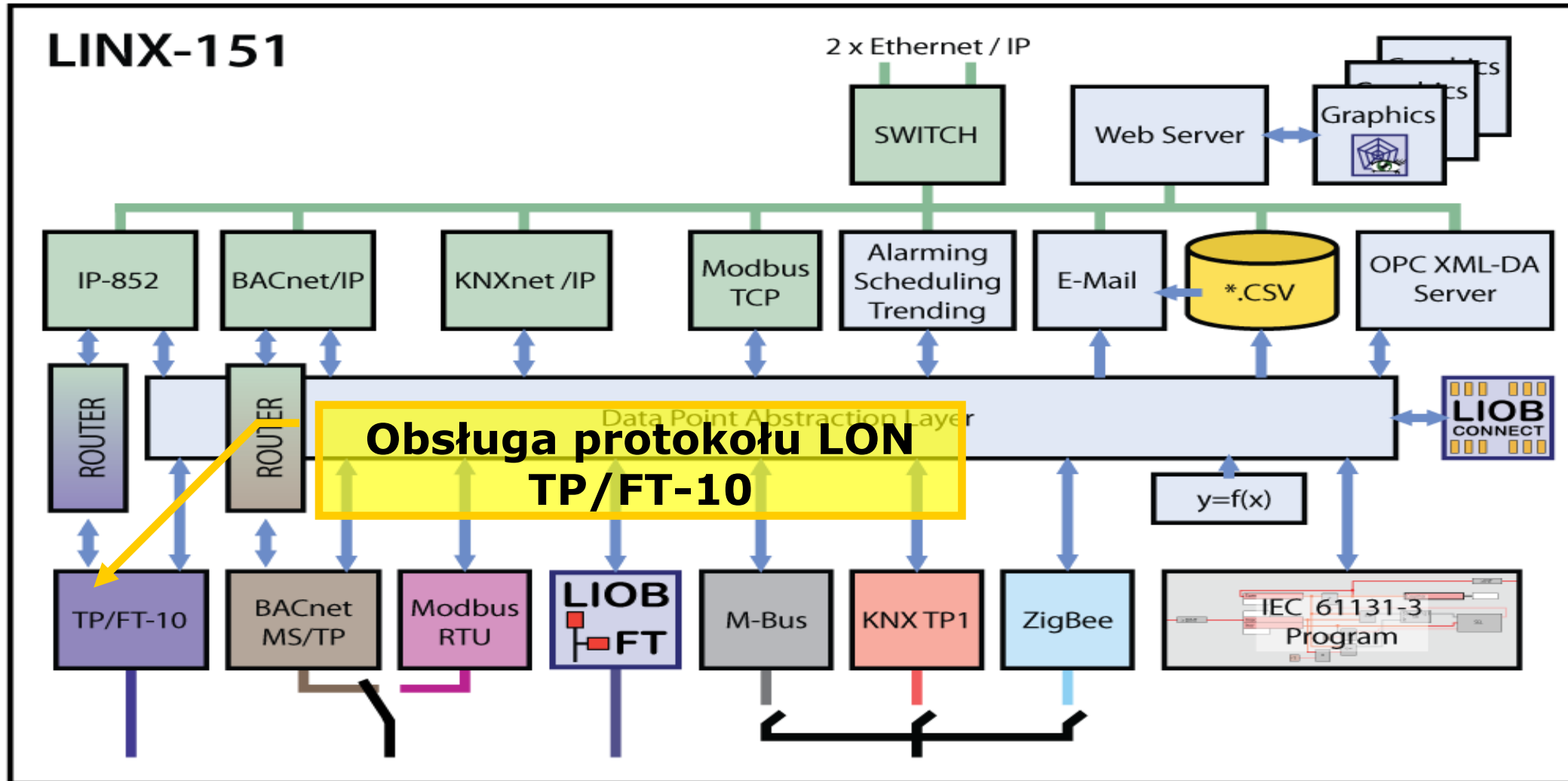
Schemat blokowy L-INX



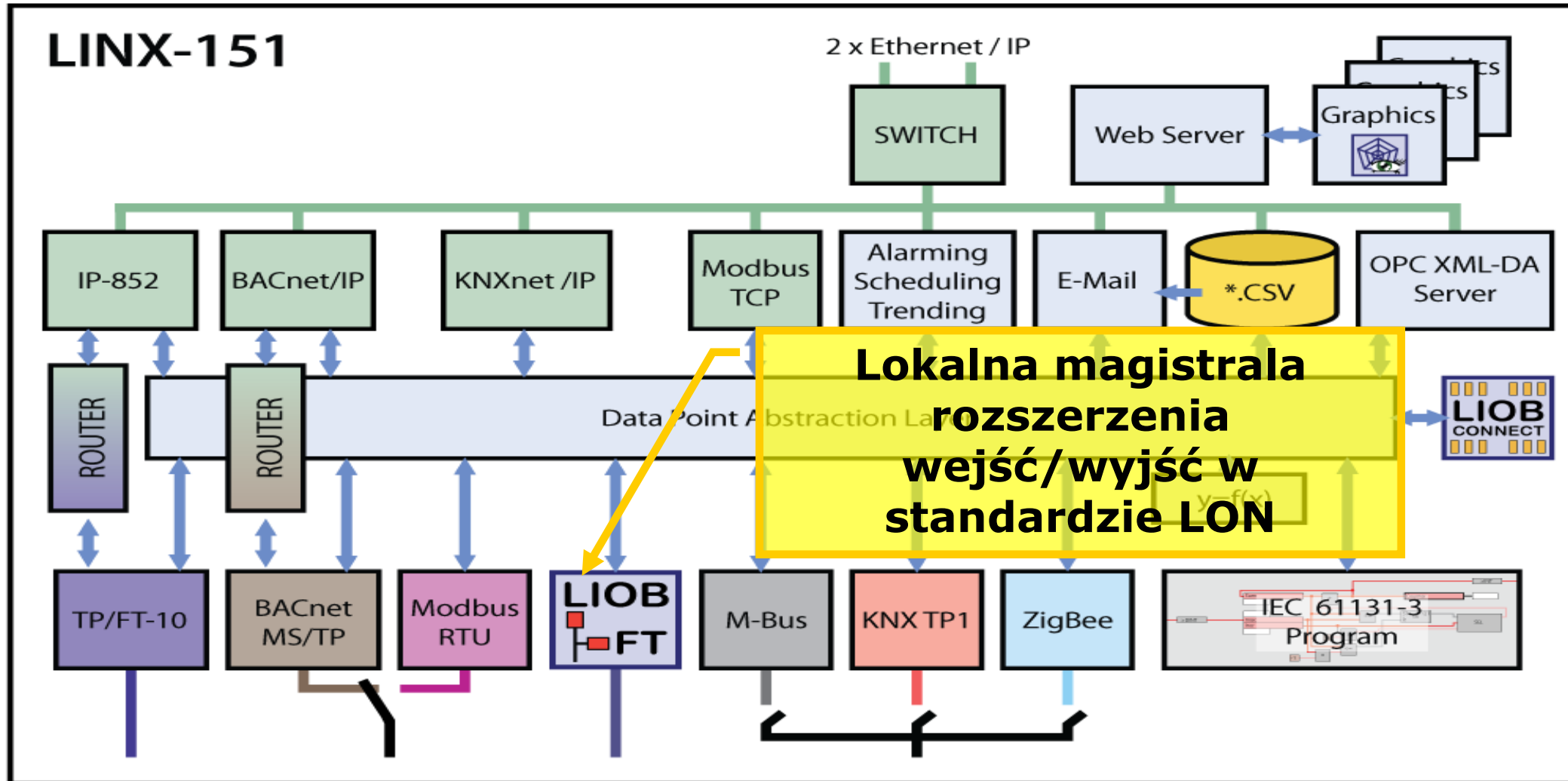
Schemat blokowy L-INX



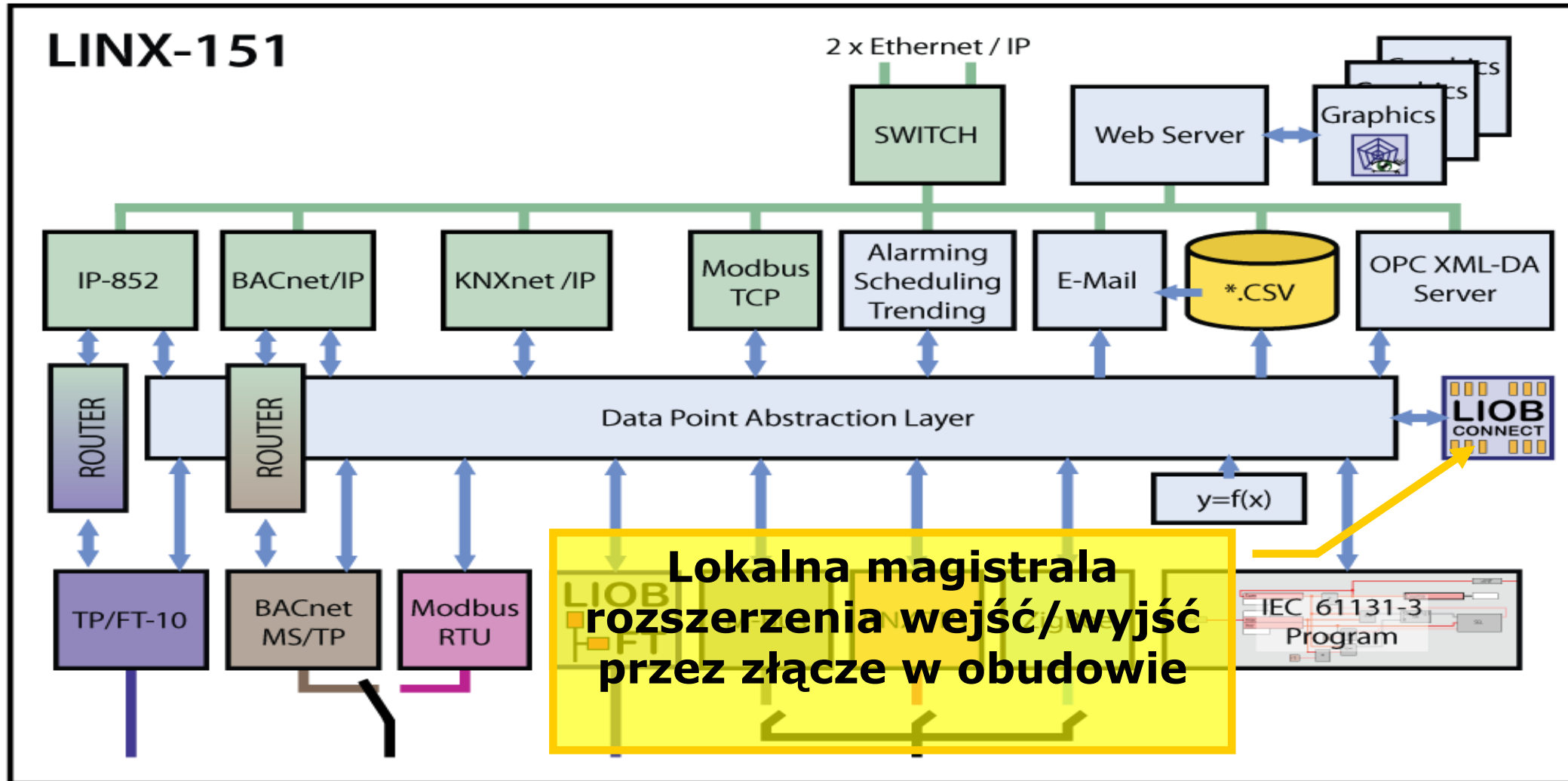
Schemat blokowy L-INX



Schemat blokowy L-INX



Schemat blokowy L-INX

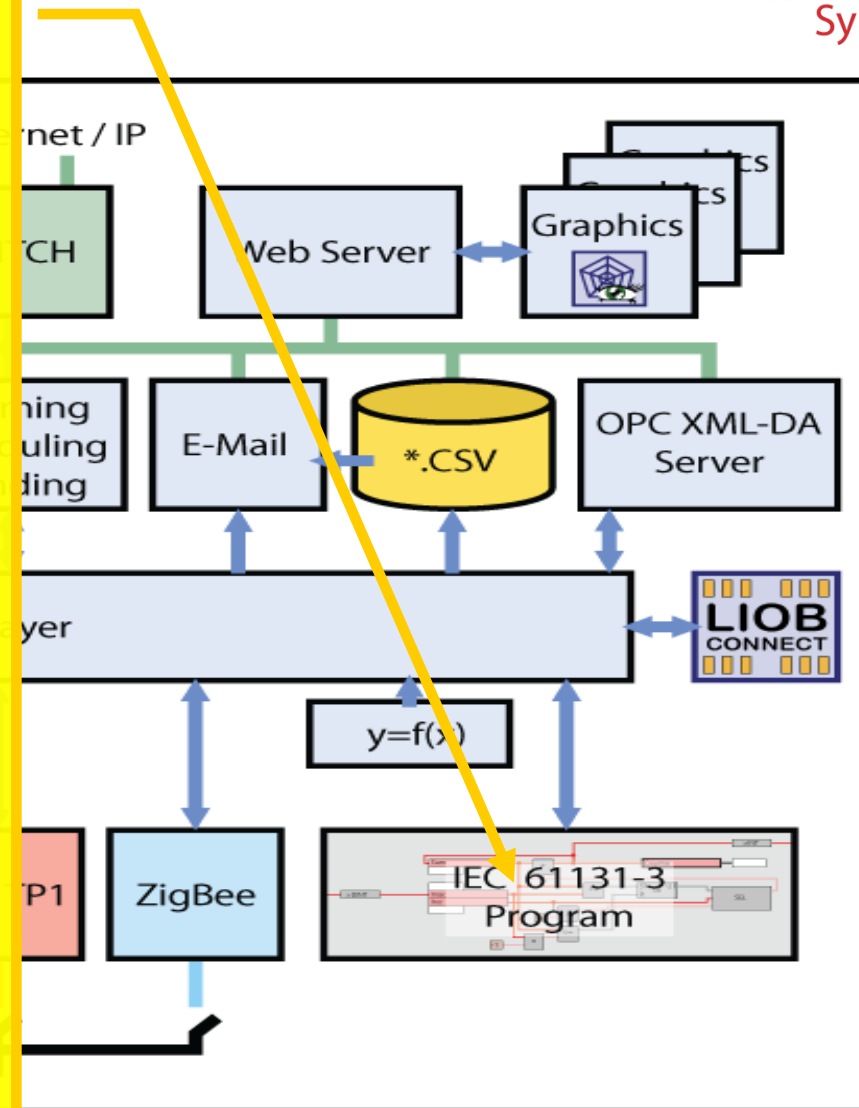


Schemat blokowy L-INX

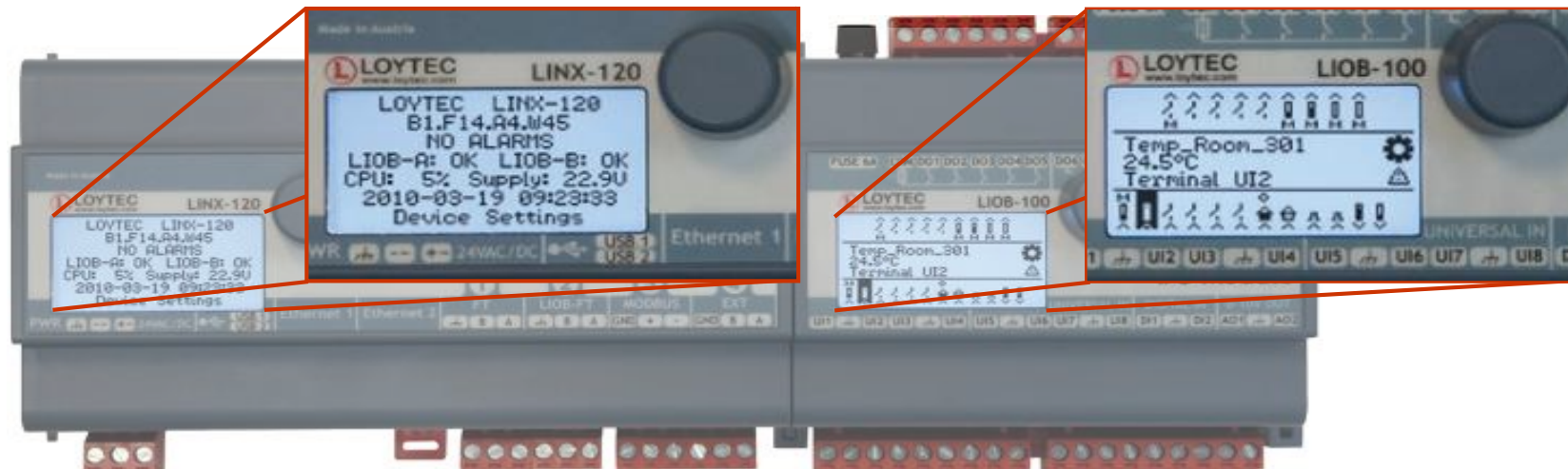
Programowanie relacji i związków pomiędzy Punktami Danych zgodnie ze standardem IEC 61131-3 w językach programowania sterowników programowalnych PLC:

- Schemat drabinkowy LD
- Schemat bloków funkcyjnych FBD
- Język listy instrukcji IL
- Język strukturalny ST
- Metoda funkcji sekwencyjnych SFC

Pełna funkcjonalność standardowego sterownika programowalnego

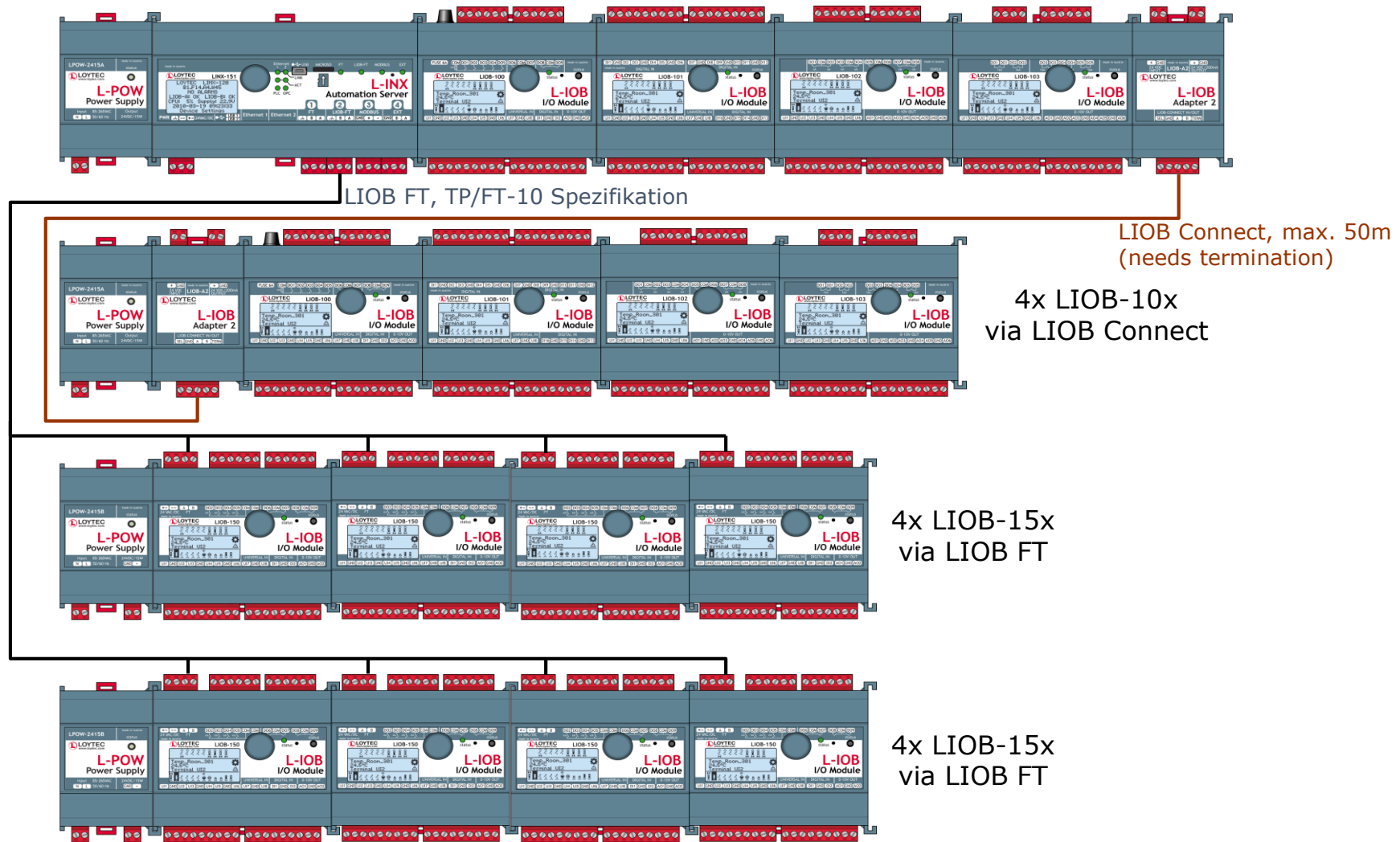


L-INX / L-IOB Obsługa lokalna



- ① 128x64 Wyświetlacz z podświetleniem
- ① Pokrętko Jog do obsługi lokalnej
 - ① Wybór pozycji menu
 - ① Wybór opcji
- ① Wyświetlacz pokazuje szczegółowe dane
 - ① dot. konfiguracji urządzenia
 - ① dot. punktów danych i fizycznych wejść/wyjść

System L-INX / L-IOB



Zasoby L-INX

Ⓛ LINX-150/151

- Ⓛ max. 320 fizycznych punktów danych
- Ⓛ max. 2.000 zmiennych sieciowych
- Ⓛ max. 1.000 zewnętrznych NVs (do odpytywania)
- Ⓛ max. 1.000 obiektów serwera BACnet
- Ⓛ max. 1.000 przypisań klientów BACnet
- Ⓛ max. 2.000 punktów danych Modbus
- Ⓛ max. 1.000 punktów danych M-Bus
- Ⓛ max. 2.000 połączeń pomiędzy punktami danych
- Ⓛ max. 10.000 Punktów Danych OPC
- Ⓛ **To wszystko obsługiwane przez
JEDEN Serwer Automatyki L-INX!**

Modele L-INXów

① Ruter lub interfejs:

- ① L-INX xx0 - zdalny interfejs sieciowy (RNI)
- ① L-INX xx1 - ruter (IP-852—TP/FT-10 lub BACnet/IP—BACnet MS/TP)

① LON i/lub BACnet:

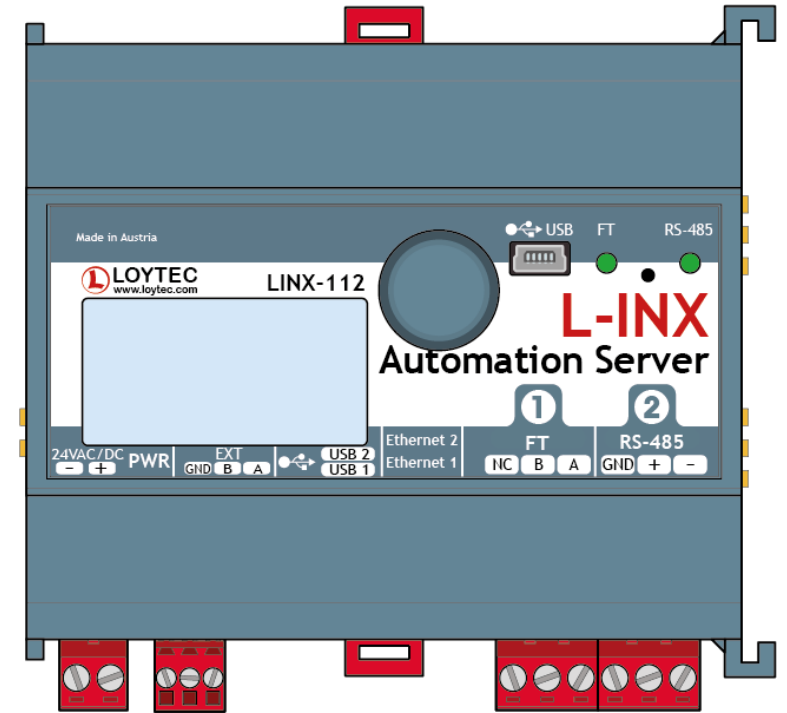
- ① L-INX 10x/11x/12x - LON
- ① L-INX 20x/21x/22x - BACnet
- ① L-INX 15x – LON i BACnet

① Możliwości:

- ① L-INX x0x – bez IEC 61131
- ① L-INX x1x – programowalny w IEC 61131
- ① L-INX x2x – programowalny w IEC 61131 + LIOB Connect
- ① L-INX 15x – programowalny w IEC 61131 + LIOB Connect

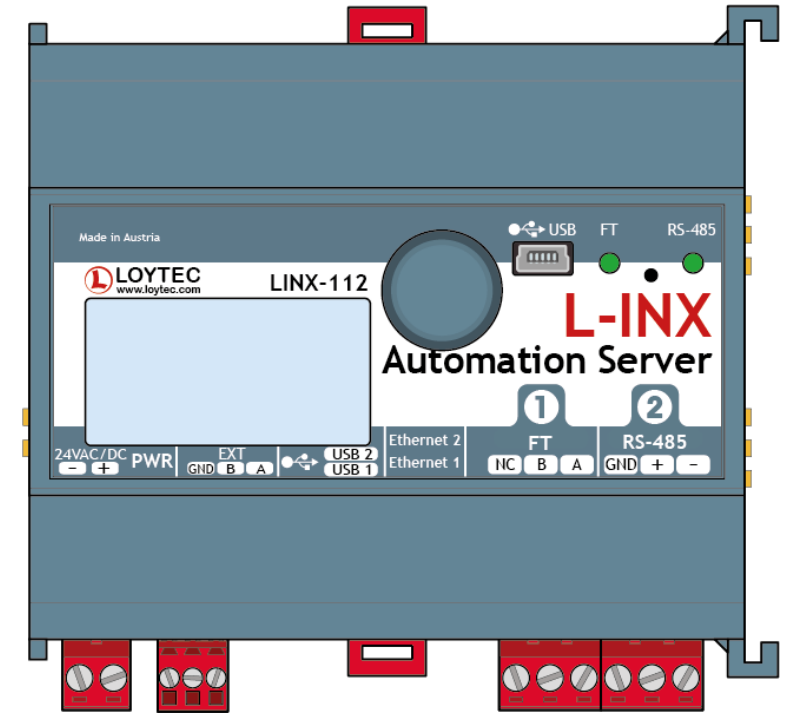
L-INX

Nowe modele (2015)



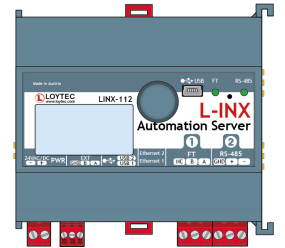
Nowe modele

- ① L-INX + 2 (LINX-110 → LINX-112)
- ① Wyświetlacz LCD oraz pokrętło jog
- ① Dwa porty Ethernet
- ① Rozdzielone sieci IP i wbudowany firewall
- ① OPC XML-DA, OPC UA, Secure Web
- ① FT, RS-485, EXT ports
- ① 2 porty USB
- ① Obsługa WLAN, EnOcean, KNX
- ① SNMP



Co więcej

- Ⓛ Więcej pamięci danych na trendy: 60MB
- Ⓛ Więcej tagów OPC: 2000
- Ⓛ Więcej możliwych klientów OPC : 32



Małe serwery automatyki



LINX-112 LON



LINX-212 BACnet

Pojedyncze narzędzie konfiguracyjne

- Zarządzanie punktami danych dla wszystkich technologii komunikacyjnych
- Zintegrowana konfiguracja AST (Alarming, Scheduling, Trending)
- Połączenia punktów danych
- Integracja i konfiguracja I/O
- Projekty L-WEB
- Zintegrowane programowanie funkcji logicznych

Pojedyncze narzędzie konfiguracyjne

Datapoints | Connections | Connection Overview | Statistics | L-Web Projects | LogiCAD Files | LIOB | Web Interface

Model No. 01 | Auto | Range 0 - 255

Datapoint Configuration

- Imported
 - BACnet EDE File
 - BACnet Network Scan
 - CEA709 CSV File (0 Items)
 - CEA709 LNS Scan
 - CEA709 Network Scan
 - CEA709 Devices from XIF
 - M-Bus Network Scan
 - KNXnet IP File Import (0 Items)
- Device Templates
 - CEA709 Device Templates
 - M-Bus Device Templates
 - Modbus Device Templates
- Filter Templates
 - CEA709
 - M-Bus
- LTNY 151

technologies

- Favorites (0 Items)
- System Registers (21 Items)
- User Registers (0 Items)
- IEC61131 Variables (0 Items)
- CEA709 Port
 - Datapoints (21 Items)
 - 8000004AAB1 (11 Items)
 - Calendar (1 Items)
 - Scheduler (1 Items)
 - Alarm (1 Items)
 - Trend (0 Items)
 - Statistics (18 Items)
 - Remote Devices
 - BACnet Port
 - CEA852 Port
 - M-Bus Port
 - Modbus Port RS485
 - LIOB (3 Items)
 - LIOB-FT (0 Items)
 - KNXnet IP (0 Items)

DPs device

- Global Objects
 - E-Mail Configuration (1 Items)
 - Math Object Configuration (0 Items)
 - Alarm Log Object Configuration (1 Items)

Global Objects

Local datapoints - CEA709 Port/Datapoints

| Datapoint Name | No. | OPC | Param | PLC | Direction | Local NV | Remote NV | Allocation | Type | Index | Use |
|---|-----|-------------------------------------|--------------------------|-------------------------------------|-----------|------------------|-----------|------------|------------------|-------|-----|
| <input type="checkbox"/> nviOnOff | 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | In | nviOnOff | | Static NV | SNVT_switch | 78 | 0 |
| value | 1.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | In | nviOnOff | | Static NV | SNVT_switch | 78 | 0 |
| state | 1.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | In | nviOnOff | | Static NV | SNVT_switch | 78 | 0 |
| <input type="checkbox"/> nvoOnOffFb | 2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoOnOffFb | | Static NV | SNVT_switch | 79 | 0 |
| value | 2.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Out | nvoOnOffFb | | Static NV | SNVT_switch | 79 | 0 |
| state | 2.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Out | nvoOnOffFb | | Static NV | SNVT_switch | 79 | 0 |
| nvoTempODFb | 3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoTempODFb | | Static NV | SNVT_temp_p | 80 | 0 |
| nvoTempExhFb | 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoTempExhFb | | Static NV | SNVT_temp_p | 81 | 0 |
| nvoTempSupplFb | 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoTempSupplFb | | Static NV | SNVT_temp_p | 82 | 0 |
| nvoFilterInAlarm | 6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoFilterInAlarm | | Static NV | SNVT_temp_p | 83 | 0 |
| <input checked="" type="checkbox"/> nvoDamperOutFb | 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoDamperOutFb | | Static NV | SNVT_switch | 84 | 0 |
| <input checked="" type="checkbox"/> nvoDamperInFb | 8 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoDamperInFb | | Static NV | SNVT_switch | 85 | 0 |
| <input checked="" type="checkbox"/> nvoDamperExchFb | 9 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoDamperExchFb | | Static NV | SNVT_switch | 86 | 0 |
| <input checked="" type="checkbox"/> nvoPumpHeatFb | 10 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoPumpHeatFb | | Static NV | SNVT_switch | 87 | 0 |
| nvoHeatValveFb | 11 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoHeatValveFb | | Static NV | SNVT_lev_percent | 88 | 0 |
| nvoHeatTForwFb | 12 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoHeatTForwFb | | Static NV | SNVT_temp_p | 89 | 0 |
| nvoHeatTRetFb | 13 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoHeatTRetFb | | Static NV | | | |
| nvoHeatFreezeAl | 14 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Out | nvoHeatFreezeAl | | Static NV | | | |

data point list

Properties | Manage Datapoints | Connections | Connection Overview

Basic Properties

| Name | Value | Description |
|-------------------------|-------------------------------------|---|
| Data Point Type | Structured | Class type of the data point |
| Datapoint Description | | Description with user-readable language |
| Datapoint Name | nviOnOff | Identifying name that cannot contain special characters |
| Direction | In | Communication direction (out writes to network) |
| OPC Tag | <input checked="" type="checkbox"/> | Expose over OPC |
| Persistent | <input type="checkbox"/> | Make the value persistent over power-on resets |
| PLC - IEC61131 Variable | <input checked="" type="checkbox"/> | Make available as a variable in the logic program |
| Poll on Startup | <input type="checkbox"/> | Poll value once over network when starting up |
| NV Allocation | Static NV | Defines how the NV is allocated on the device |
| SNVT | SNVT_switch (95) | SNVT |
| Local Functional Block | PLC [0] | Functional block for this static NV |

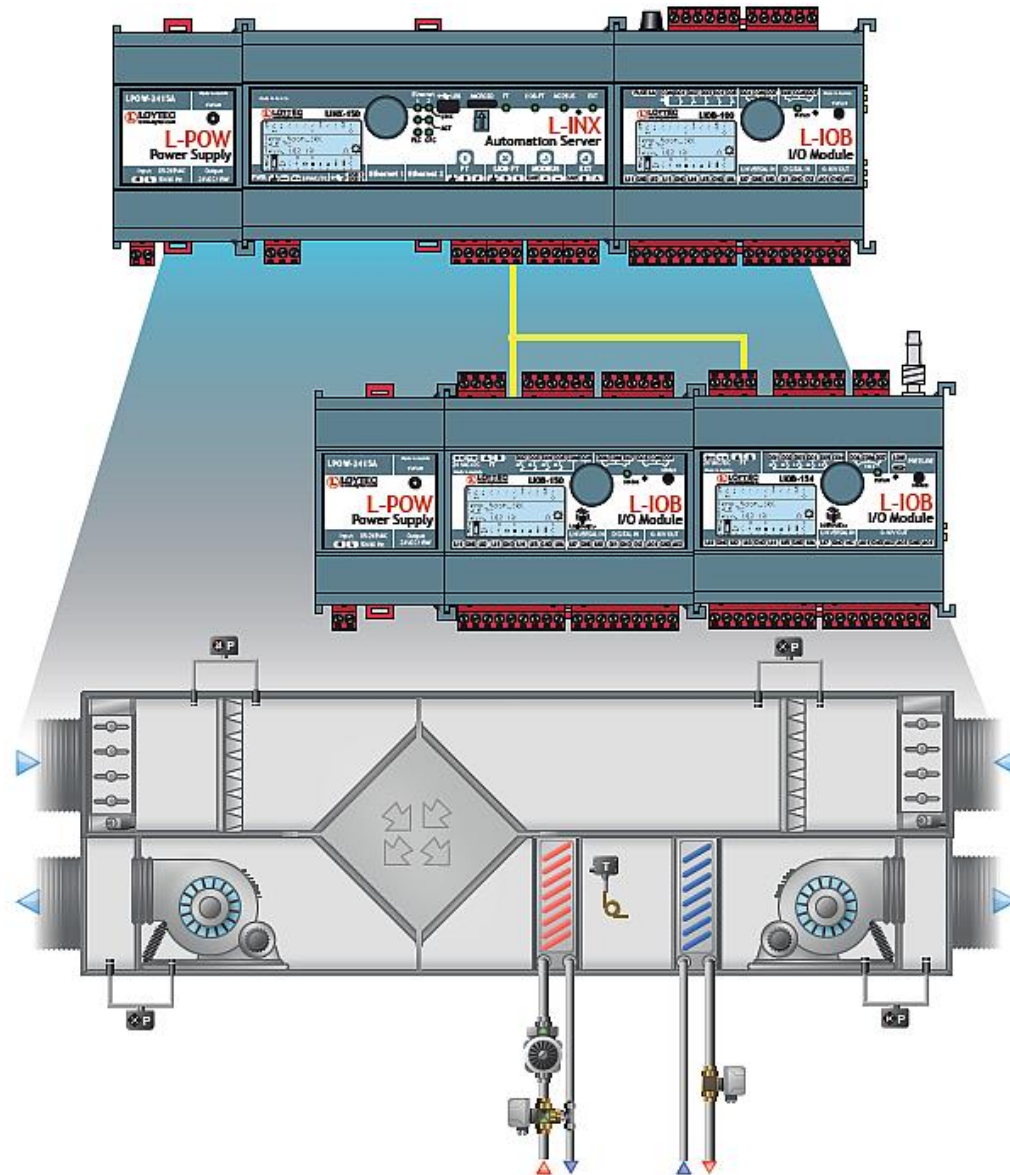
data point properties

L-INX Configurator

Ⓛ Konfiguracja:

- Ⓛ wszystkich modeli L-INXów i LIOBów – wspólna metodologia,
- Ⓛ punktów danych wszystkich protokołów,
- Ⓛ połączeń punktów danych,
- Ⓛ wszystkich funkcji aplikacyjnych (oprócz samego programowania zgodnego z IEC 61131):
 - Ⓛ AST, obiekty matematyczne, e-maile, LIOB,
- Ⓛ zarządzanie projektami L-Web 800 oraz IEC 61131

Przykład zastosowania L-INX



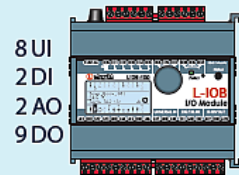
Przykład rozbudowy wejść/wyjść serwera



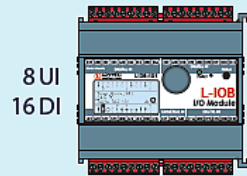
Moduły rozszerzenia wejść/wyjść

LIOB-Connect

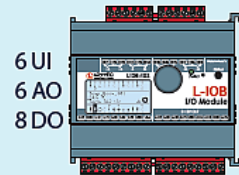
LIOB-100



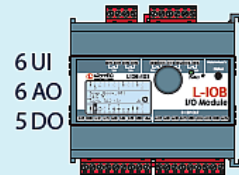
LIOB-101



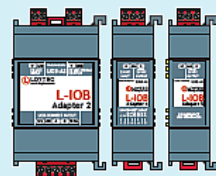
LIOB-102



LIOB-103

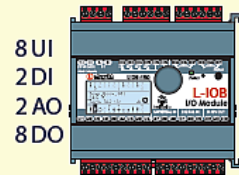


LIOB-A2/A4/A5

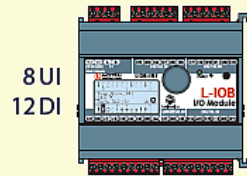


LonMark TP/FT-10

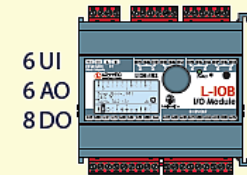
LIOB-150



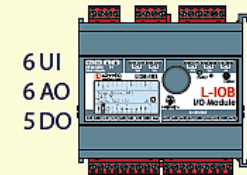
LIOB-151



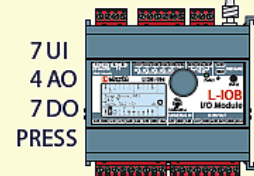
LIOB-152



LIOB-153

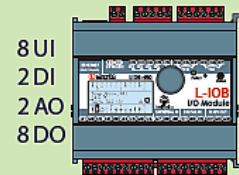


LIOB-154

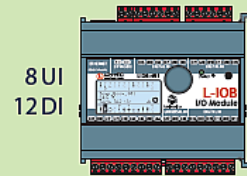


LonMark IP-852

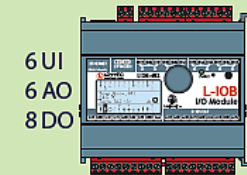
LIOB-450



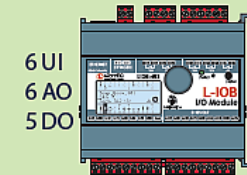
LIOB-451



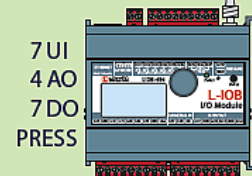
LIOB-452



LIOB-453

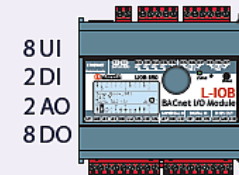


LIOB-454

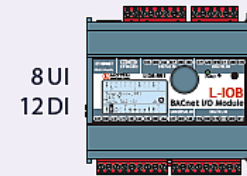


BACnet/IP

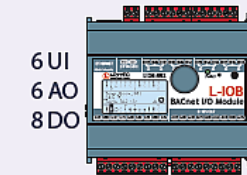
LIOB-550



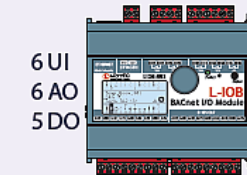
LIOB-551



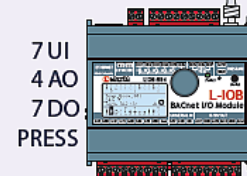
LIOB-552



LIOB-553



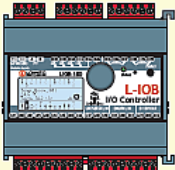
LIOB-554



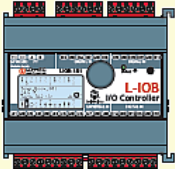
Sterowniki L-IOB I/O

LonMark TP/FT-10

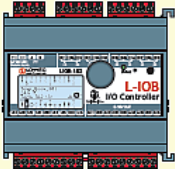
LIOB-180
8 UI
2 DI
2 AO
8 DO



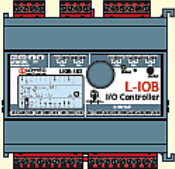
LIOB-181
8 UI
12 DI



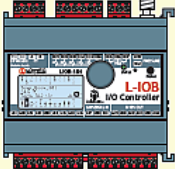
LIOB-182
6 UI
6 AO
8 DO



LIOB-183
6 UI
6 AO
5 DO

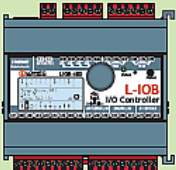


LIOB-184
7 UI
4 AO
7 DO
PRESS

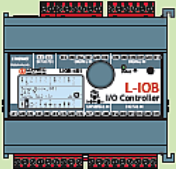


LonMark IP-852

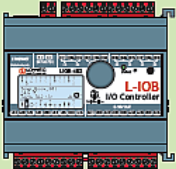
LIOB-480
8 UI
2 DI
2 AO
8 DO



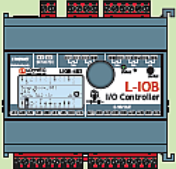
LIOB-481
8 UI
12 DI



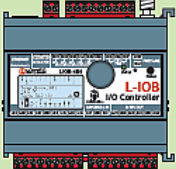
LIOB-482
6 UI
6 AO
8 DO



LIOB-483
6 UI
6 AO
5 DO

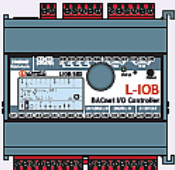


LIOB-484
7 UI
4 AO
7 DO
PRESS

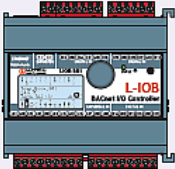


BACnet/IP

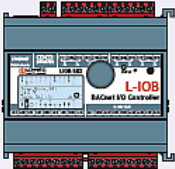
LIOB-580
8 UI
2 DI
2 AO
8 DO



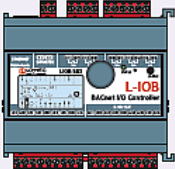
LIOB-581
8 UI
12 DI



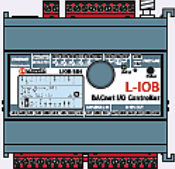
LIOB-582
6 UI
6 AO
8 DO



LIOB-583
6 UI
6 AO
5 DO

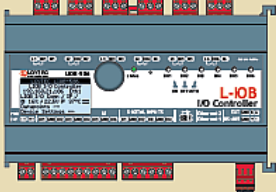


LIOB-584
7 UI
4 AO
7 DO
PRESS

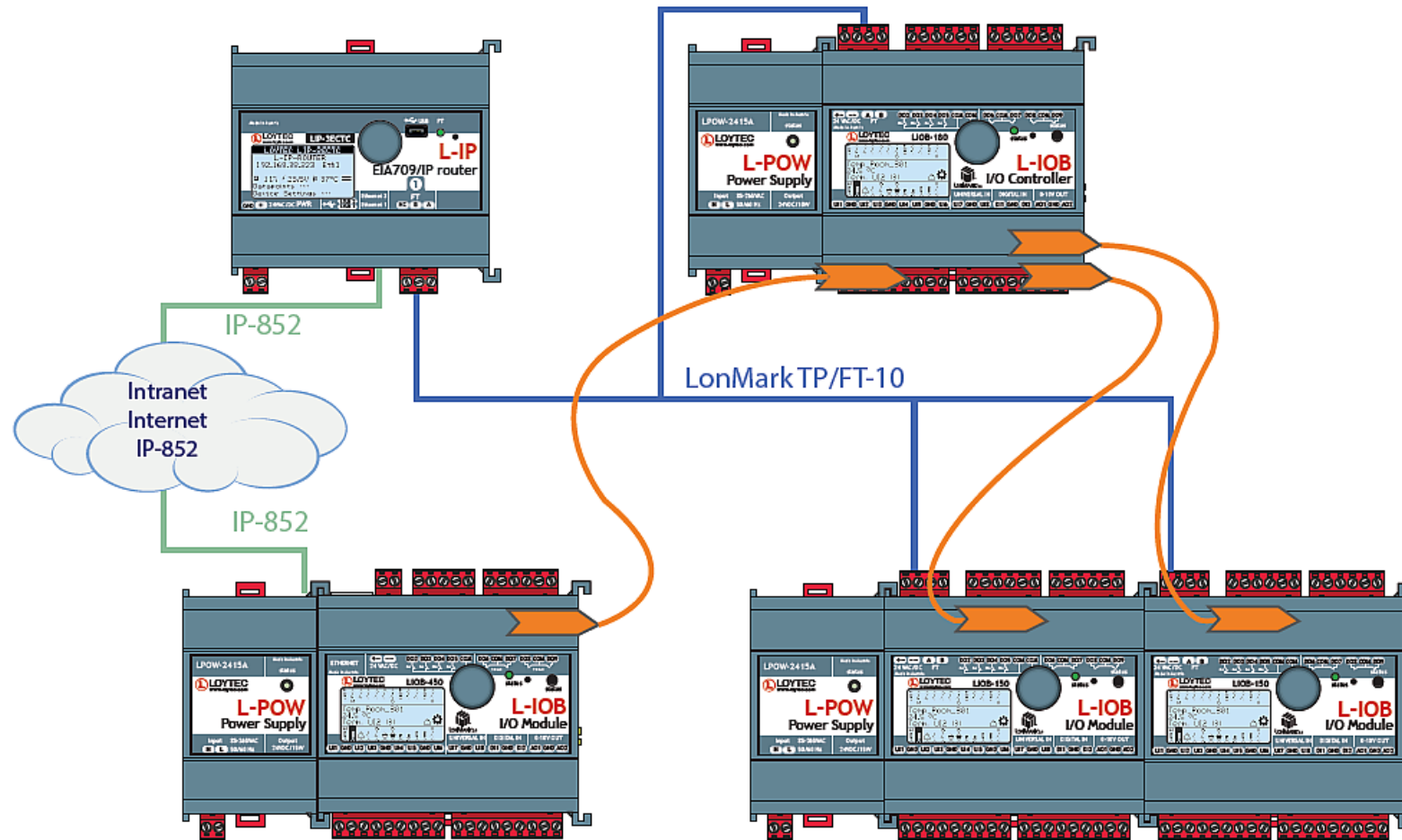


**BACnet/IP
and LonMark IP-852**

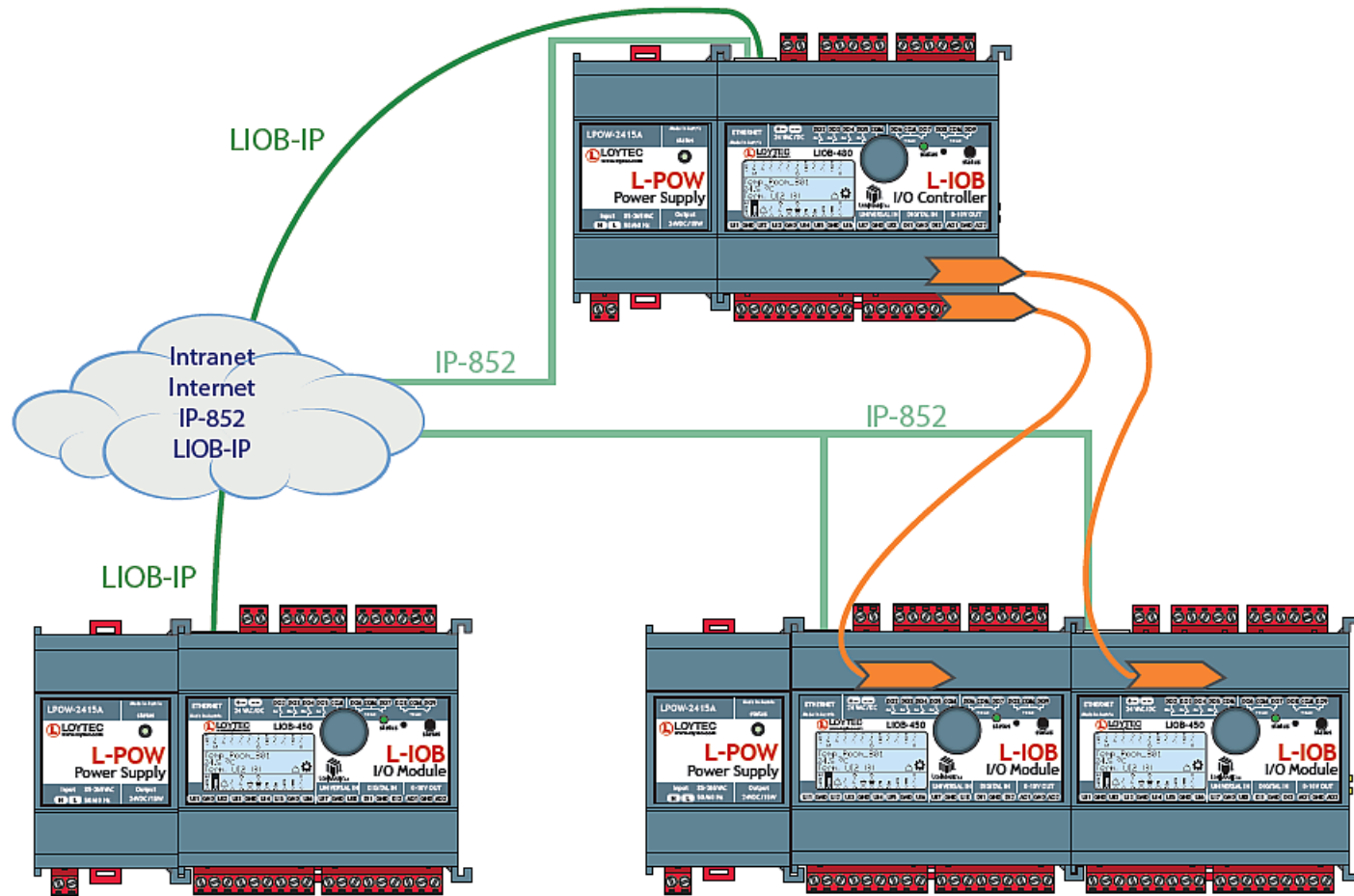
LIOB-586
6 UI
4 DI
6 DO



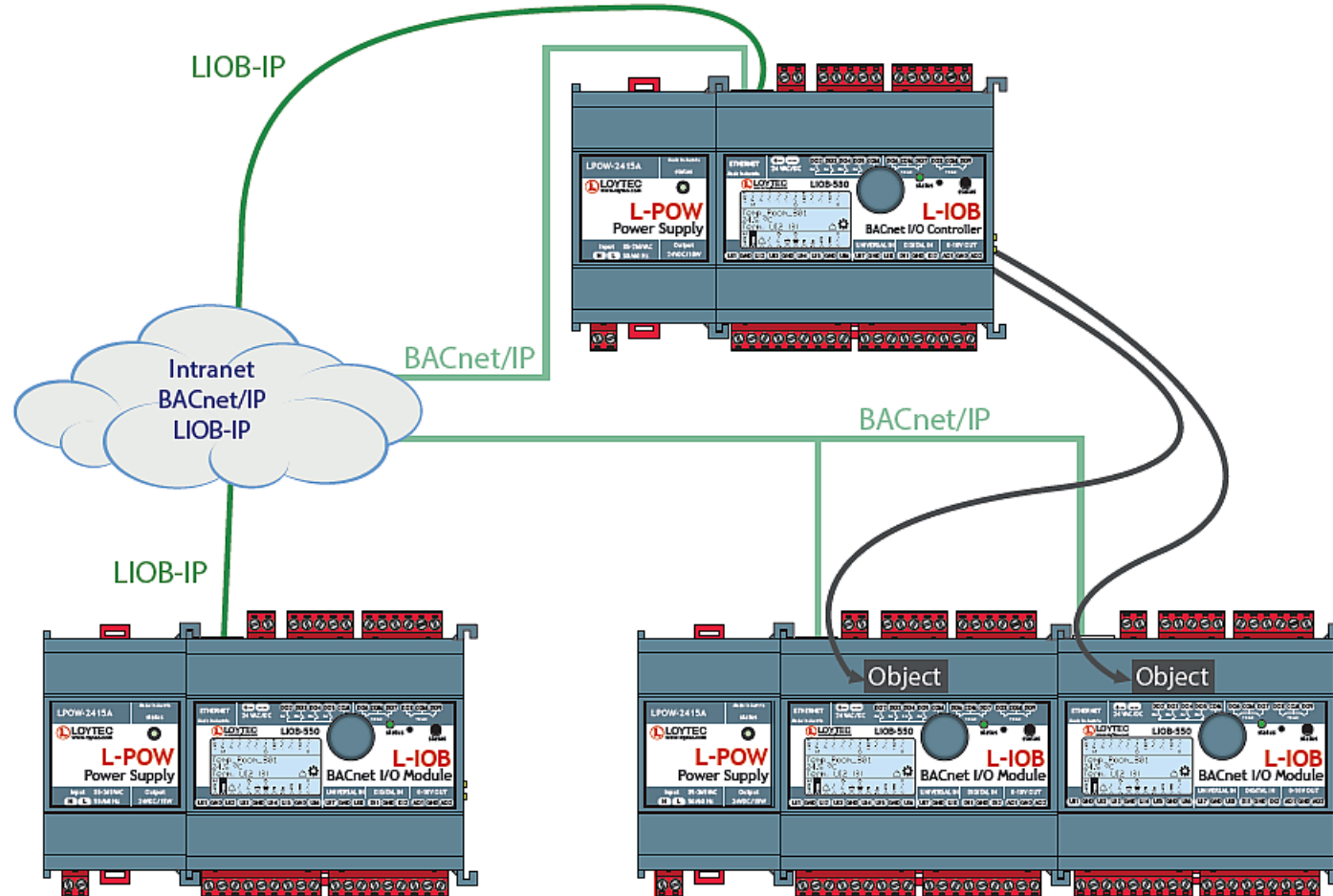
Przykład konfiguracji sterownika i I/O połączonych siecią TP/FT-10



Przykład konfiguracji sterownika i I/O połączonych przez IP-852

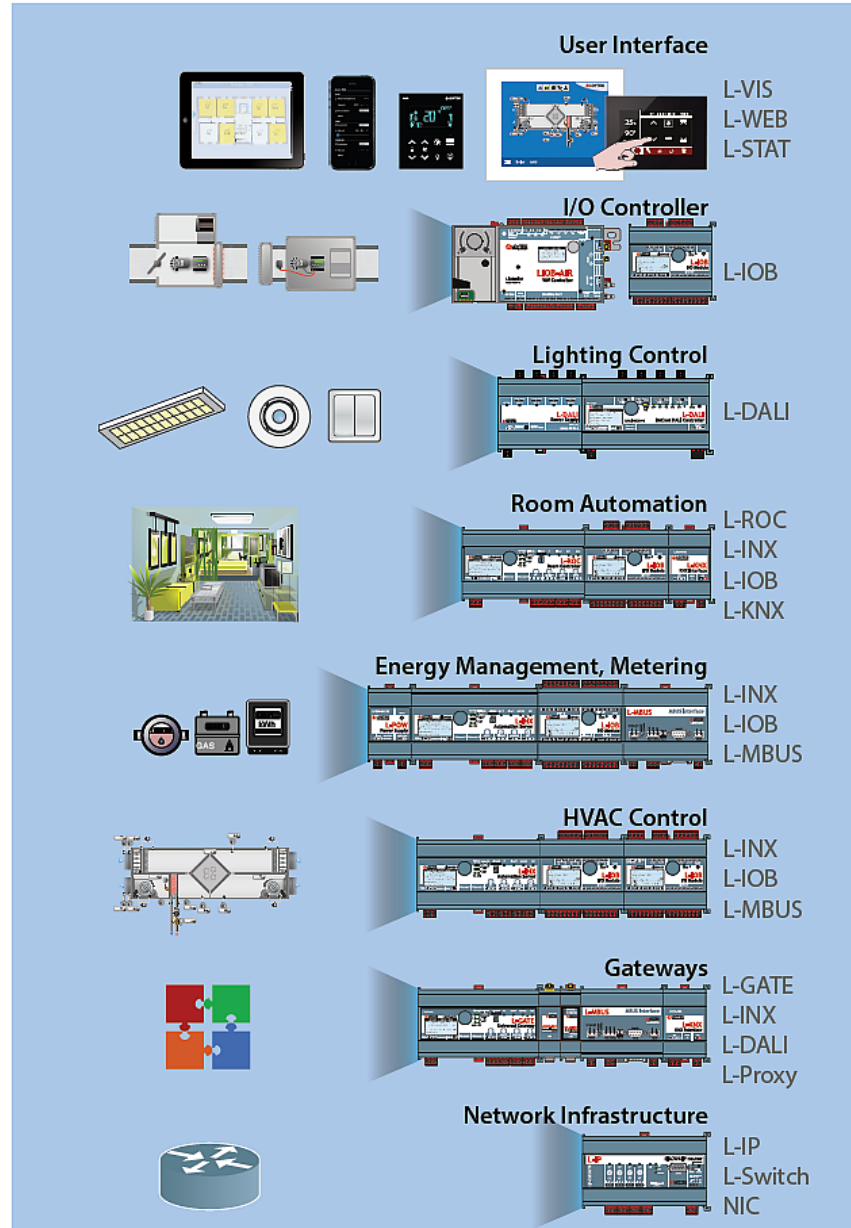


Przykład konfiguracji sterownika i I/O połączonych przez BACnet/IP



Podsumowanie

Zastosowania
Właściwości
i standardy
komunikacji
poszczególnych
rodzin
urządzeń
firmy LOYTEC



| LON | BACnet | KNX | EnOcean | DALI | Modbus | M-Bus | OPC | Programowalne | SMI |
|-----|--------|-----|---------|------|--------|-------|-----|---------------|-----|
| ✓ | ✓ | | | | | ✓ | | ✓ | |
| ✓ | ✓ | | | | | | | ✓ | ✓ |
| ✓ | ✓ | | | ✓ | ✓ | | | ✓ | |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| ✓ | ✓ | | | | | | | ✓ | |

Więcej Informacji



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