AMPS Communication

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AMPS (Analog Model Power System)

- Built by Idaho Power
- Donated to the University in the mid 1990's
- Protection scheme implemented using SEL relays

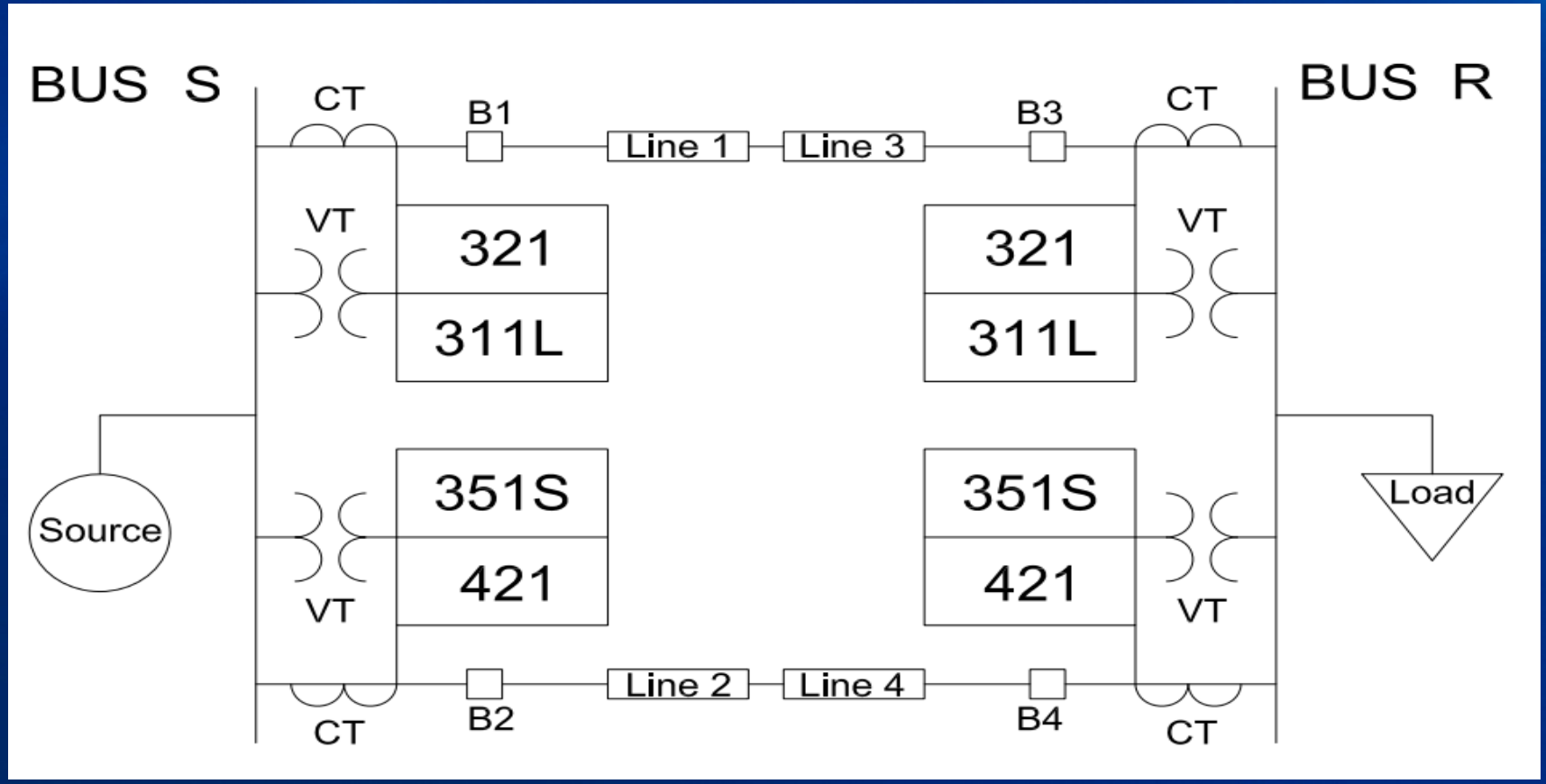
Purpose of the AMPS

- The AMPS is a scaled model of a real power system
- Breakers can be configured to different protection settings
- Faults can be initiated at any point in the line
- The AMPS is used as a learning tool; the system can be used for additional types of power studies with minimal changes as well

Goals

- Design and research potential hardware options
- Mount and wire protection equipment from SEL
- Configure communications network
- Design and implement trip logic for 2440
- Configure basic relay functionality
- Documentation

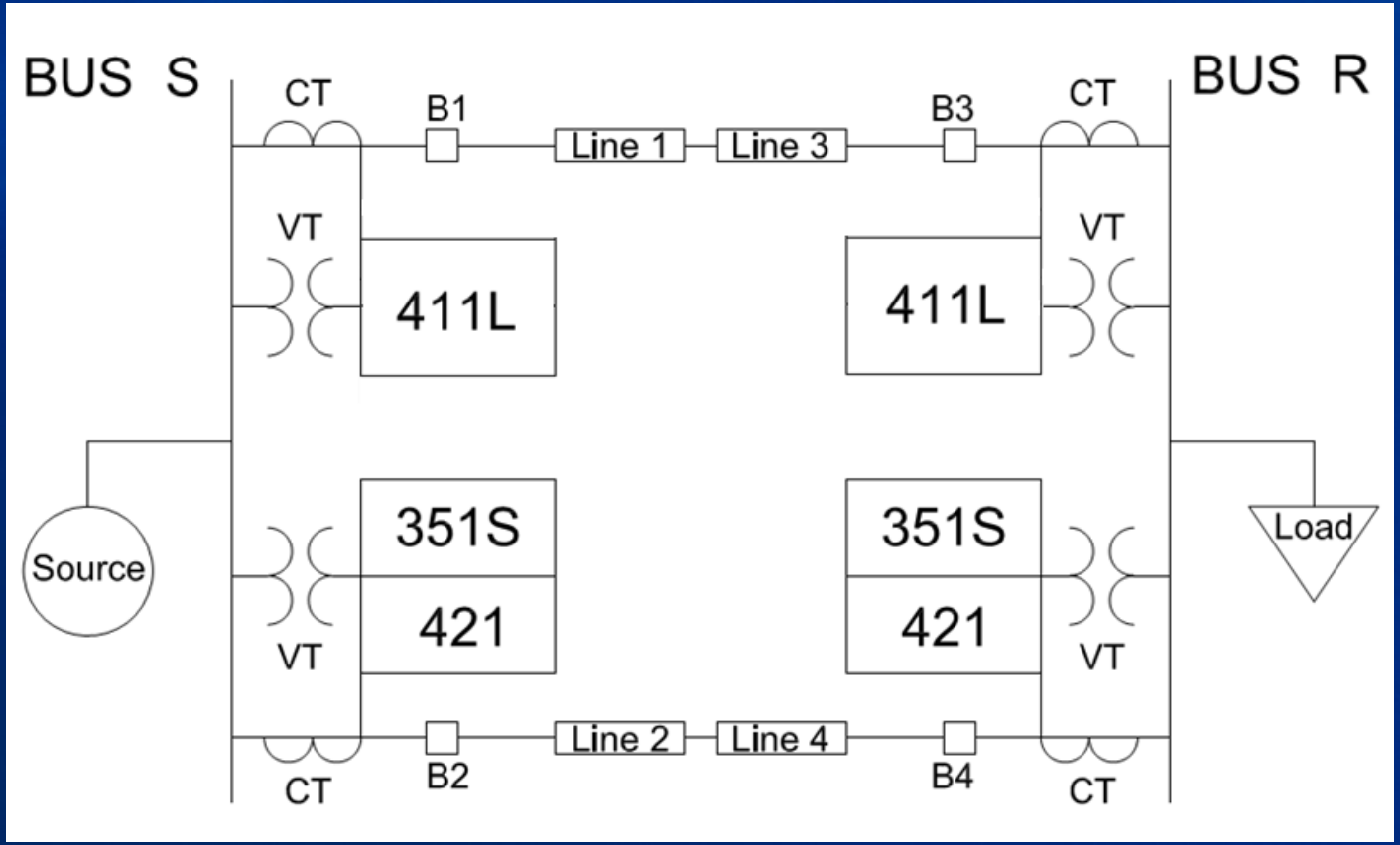
Legacy Configuration



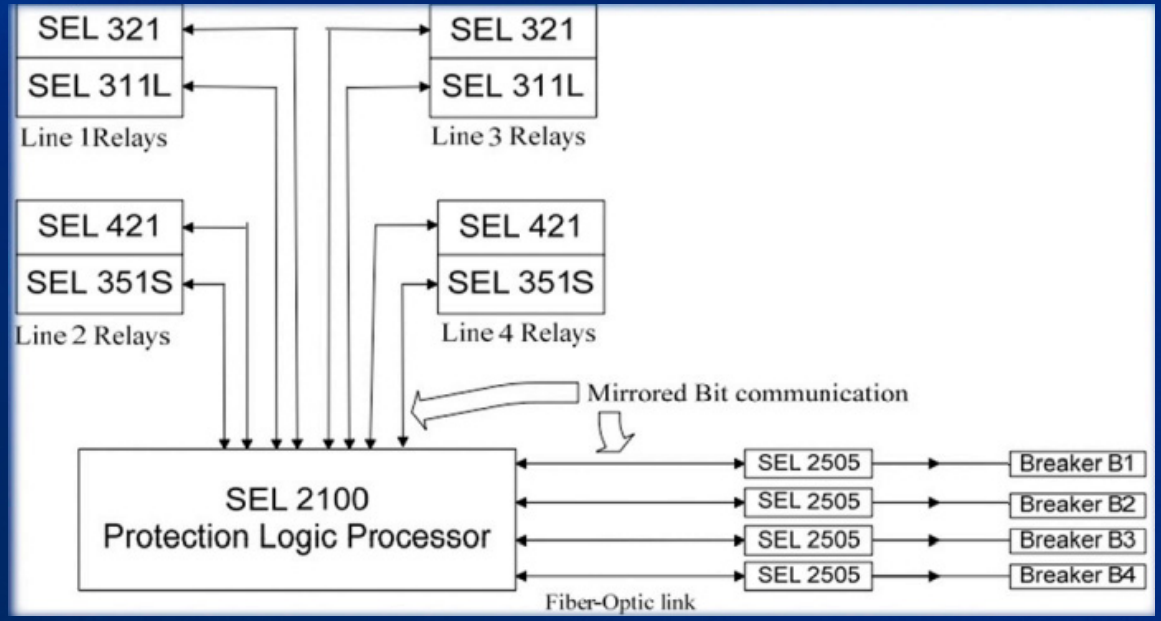
Reason for Upgrade

- Ethernet based system
- IEC 61850 compatibility
- New industry standard
- Expandability for future projects

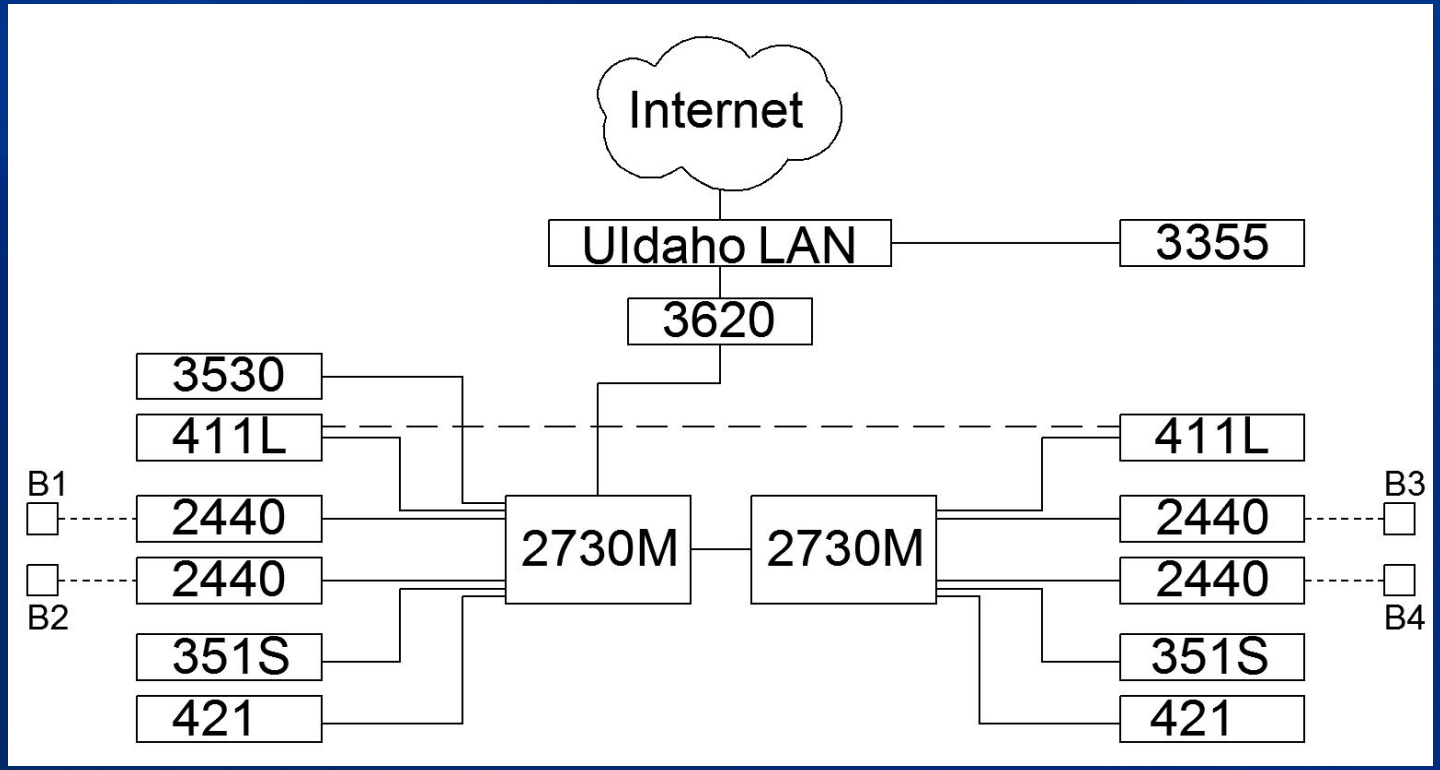
Complete Schematic



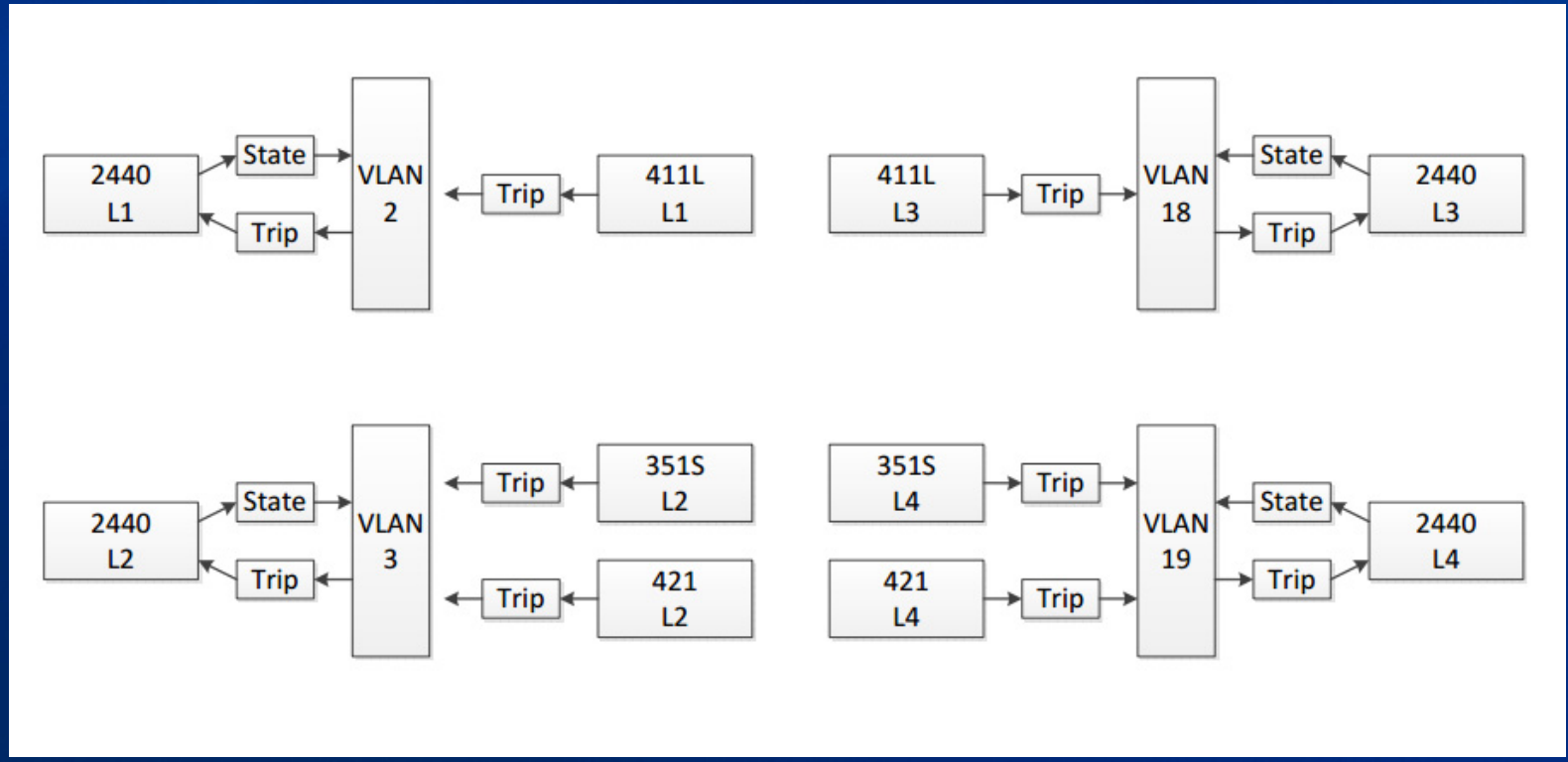
Legacy Communication



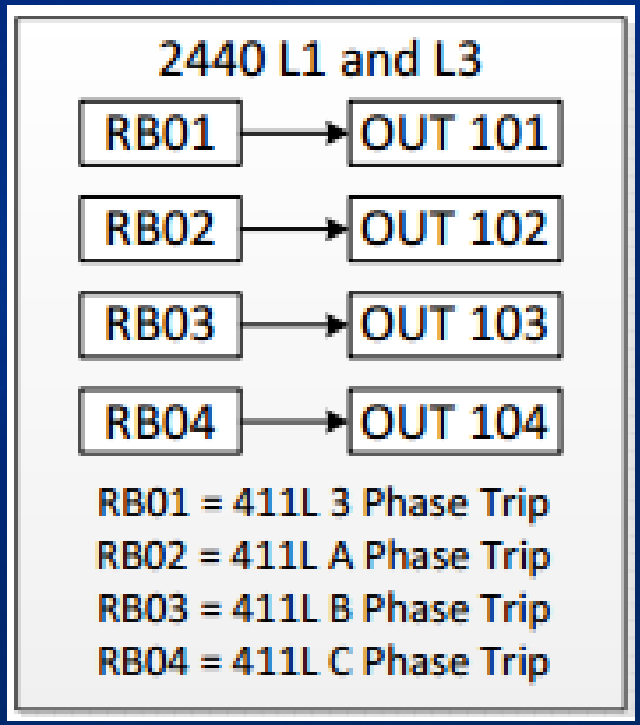
New Communication Diagram

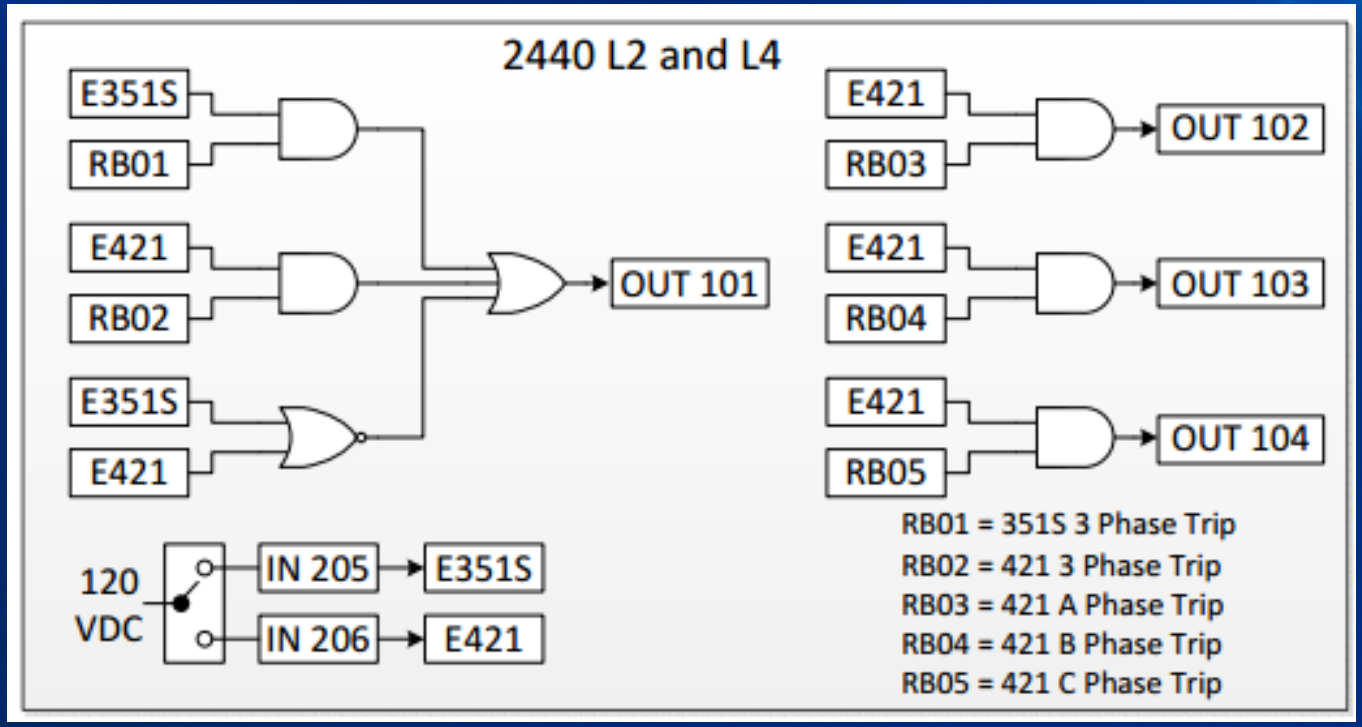


Virtual LAN Configuration



Breaker Trip Logic





Budget

Item	Number	Price Per Item	Cost
SEL-3620	1	$ 2,800	$ 2,800
SEL-3355	1	$ 3,250	$ 3,250
SEL-3530	1	$ 2,850	$ 2,850
SEL-2730M	2	$ 1,850	$ 3,700
SEL-411L	2	$ 8,515	$ 17,030
SEL-351S	2	$ 2,550	$ 5,100
SEL-2440	4	$ 960	$ 3,840
Total Donation Cost			$ 38,570
Mis			$ 470

Summary

- Install and wire all SEL equipment in AMPS Lab
- Implement new communications network into system
- Design and configure new trip logic for 2440 (DPAC)
- Apply appropriate settings to relays for proper trip signal
- Create lab manual for upgraded AMPS Lab.

Questions?

Contact us at engr-ampscommunication@uidaho.edu