Smart solutions for smart networks

Version 1.1

VCL-SafeComm-E-FE-DIN

Automatic Ethernet Failover / AB / Fallback Switch

Product Overview

VCL-SafeComm-E is a family of Ethernet Failover Protection Switches that provide 1+1 Automatic Ethernet Failover / AB Fallback Protection between an "active" and "standby" equipment; or between "main" and "standby" networks which are connected to the network through an Ethernet interface.

VCL-SafeComm-E-FE-DIN - 10/100BaseT Fast Ethernet Failover (Compact DIN-Rail) unit which supports a maximum of 100MBits/sec. data throughput on its primary and standby interfaces. The unit is powered from a 12VDC power source with the option of an external AC-DC adapter.

Number of interfaces available in Fast Ethernet version: Three

- 1 x 10/100 Fast Ethernet Interface: Network A (Primary)
- 1 x 10/100 Fast Ethernet Interface: Network B (Standby)
- 1 x 10/100 Fast Ethernet Interface User (Protected)

1+1 AC or DC power supply available in 19 Inch Rack Mount version.

Use Case # 1: The VCL-SafeComm-E, Ethernet Failover equipment provides 1+1 Automatic Ethernet Failover Switching / Fallback Protection between two, Main and Standby Switches, Servers, RTUs or any other similar terminals to provide equipment redundancy in applications which require 99.99% terminal equipment up-time. The Ethernet 1+1 fail-over protection automatically switches to the "standby" terminal equipment in the event of failure of the "primary" terminal equipment to ensure that the 99.99% terminal equipment up- time requirements are always being met.

Use Case # 2: The VCL-SafeComm-E, Ethernet Failover equipment provides 1+1 Automatic Ethernet Failover / AB Fallback Switch provides protection between an "active" and "standby" IP / Ethernet / MPLS Networks (including "active" and "standby" Gateways and Routers) to provide 1+1 automatic Ethernet fail-over protection between two distinctly separate networks through an Ethernet interface.

CXR Networks

Features and Benefits

- Fail-Safe. Never becomes a point of failure. Automatically reverts to and reconnects to the “primary network” / even in a power down condition.
- End-to-End network Link monitoring
- User configurable link test parameters.
- User configurable switching parameters.
- Built-in real-time clock (RTC) / real-time logging maintains a history of all events.
- Serial Management Interface (USB) for local access.
- Remote access over TCP-IP networks. Allows the user to access and carry out maintenance, or / and switch the links remotely, if required
- Password Controlled Access. Maintains a complete log of all logins.
- Script Assisted Switching. Automatically initiates switching upon receipt of the scripted message / SNMP Trap.
- Switching initiated through external triggers such as “Dry Contact Alarm Relays”.
- Manual Switching through front-panel buttons automatic front panel locking to prevent accidental switching.

Applications

- Enhances network availability and reliability.
- Eliminates network downtime by automatically / seamlessly switch to the "backup” / “standby" network in the event of the complete and total failure of the primary/ active IP network.
- Disaster Recovery. To provide automatic failover protection in mission critical applications requiring minimum downtime.
- To switch between and automatically re-route IP traffic to the “standby” terminal equipment upon the failure of the “primary” terminal equipment.
- Alerts the user upon the failure ot unavailability of any one of the two “active” / “primary” or "secondary”/“standby" terminal equipment .
- Automatic Test Feature. Concurrently tests both “active” and “standby” equipment,, for “end-to-end” link and terminal equipment availability.
- VCL-Safecomm-E-FE-DIN may be used to provide automatic fail-over protection and switching between two terminal equipments such as Routers, Servers, Gateways, RTUs, SCADA Servers, Railway Signaling Equipment, Data Terminal equipment (any type of Ethernet device) etc...

User programmable criterion for switching between Primary and Standby (Protected) Networks

- Automatically switches between “active” and “standby” equipment upon failure of the “connected” equipment.
- Completely eliminates the need to move (reconnect) cables. Automatically re-routes the traffic to the “available” equipment.
- Failsafe: Never becomes a point of failure. Automatically reverts to and reconnects to the primary equipment even in power down condition.
- Switching criterion is completely user programmable.
- Automatic Failover Switching criterion includes:
    - Loss of Signal
    - Loss of Link; Loss of end-to-end link connectivity
    - Heartbeat; Script (Message) based switching
    - User programmed timed switching based upon “Wall-Clock” (Time of Day)
    - Script (Message) based switching
- Manual Failover Switching:
    - Manual Switching through front-panel buttons

VCL-SafeComm-FE-DIN providing 1+1 Network Protection

1. Provides 1+1 Network / Link Protection
2. **Failsafe:** Never becomes a point of failure. Automatically reverts to the primary equipment even in power down condition.
3. Fast automatic equipment switching upon nequipment failure. Eliminates Equipment Downtime.
4. Completely eliminates re-routing of Ethernet cables. Ethernet cables are automatically moved to the available equipment port.
5. Essential for any application that requires 1+1 Terminal / Equipment redundancy such as Sub-Stations, Airports and Air Traffic Control Centers, Railway Signaling Networks and Industrial Installations etc., requiring minimum service interruption due to equipment failure.
6. Disaster Recovery.

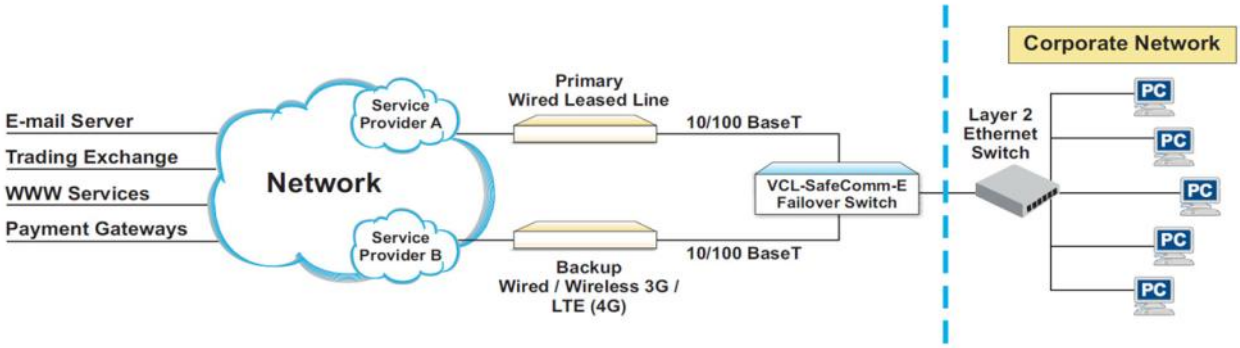
VCL-SafeComm-FE-DIN Chassis Desciption:

The VCL-SafeComm-FE-DN, Ethernet Failover Switch is available in a small form factor, compact DIN Rail / Desktop version for various applications that provides access to all external interfaces, including User and Network side Ethernet Interfaces, Access and Management ports.

CXR Networks

Switching parameters include:

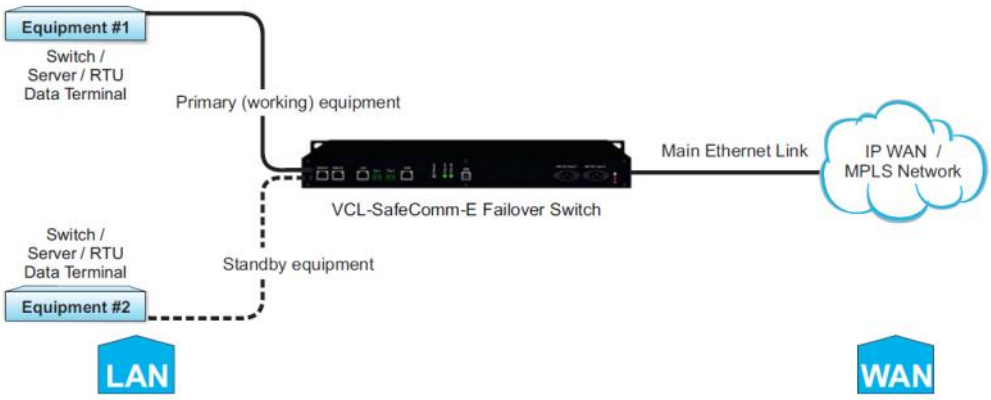
- Network Interface(s) go down. Loss of signal on the network interface.
- Gateway(s) (Routers) go down and the routers(s) are unreachable.
- External triggers (such as the closing of an external alarm relay of your either of your routers). The user may use / may not use this option.
- Script assisted switching (and SNMP trap generated by any one of your routers to initiate switching due to router / network failure). The user may use / may not use this option.
- The actual network to become unreachable. This is done by programming a network target IP address in the VCL-Safecomm-E-GE. The network target IP address is the last point (or an omnipresent point) in a network that can be programmed by the user which can be a Google DNS server (such as 8.8.8.8), or user's corporate server (such as 161.170.140.127), if you are working in protected VPN. If, in the event, the connectivity between VCL-Safecomm-E-GE and the user programmed network target IP address is lost through the "primary" network / route, the VCL-Safecomm-E-GE automatically switches to the "standby" network / route.
- All switching events are time-stamped and logged in VCL-Safecomm' s non-volatile memory. The logs may be viewed by the network administrator at any time for network quality analysis.
- Recovery / fallback parameters to the primary route / primary network is also user programmable. These can be "automatic recovery to the primary network" upon the restoration of the primary route / primary network, or upon the failure of the standby / alternate network. One note to add here is the VCL-Safecomm-E-GE simultaneously tests both active and standby routes so the system is always aware of the status of both networks. Switching to a "dead" route shall never occur under any condition.



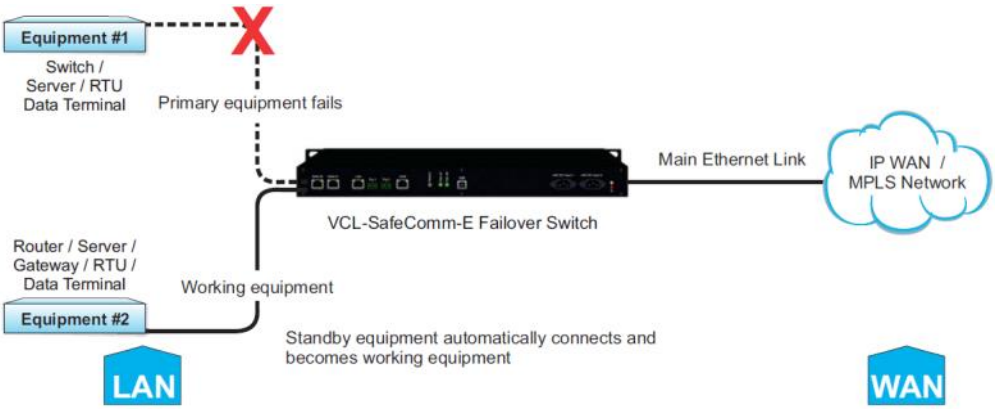
Application Diagrams

To provide 1+1 Terminal / Equipment Failover Protection.

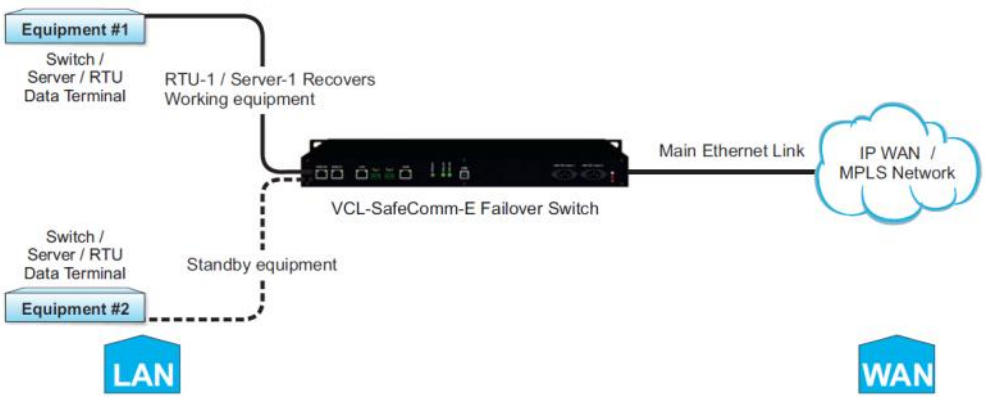
Ethernet link is connected to NRouters, Servers, Switches, RTUs, Data Terminals (any terminal) etc.



Equipment 1 fails. Ethernet link automatically switches to Routers, Servers, Switches, RTUs, Data Terminals (any terminal) etc.



Equipment 1 recovers. Ethernet link automatically reverts and reconnects to Routers, Servers, Switches, RTUs, Data Terminals (any terminal) etc.



Technical Specifications

Specifications	
Number of Ethernet	3
Interfaces	• 1x 10/100 Ethernet Interface: Network A (Primary) • 1 x 10/100 Ethernet Interface: Network B (Standby) • 1x10/100 Ethernet Interface User (Protected)
Guaranteed Maximum Data Throughput	100Mbps
Interface Type	10/100BaseT
Conformity	IEEE-802.3
Management and Control Ports	
Serial Management Port - RS232 COM Port and USB Port	
10/100 BaseT for remote management	
NMS (with Telnet) Specifications	
OAM Network Interface	RJ-45 Ethernet, 10/100BaseT
Compatibility	Ethernet Version 2.0 IEEE802.3
Input Voltage reversal Protection	Provided in the system
Monitoring and Management	Serial login, Telnet, SSH (with option to disable clear text for users)
AC Power Supply Specifications	
Range of input AC	100~240VAC, 50/60Hz
DC Power Supply Specifications	
Input DC voltage	12VDC (nominal)
Range of input voltage	9 to 14 VDC Input
Input voltage reversal Protection	Provided
Short Circuit Protection	Provided
110VDC~220VDC Power Supply Specifications	
Input DC voltage - Dual Input	110VDC; or 220VDC (nominal)
Range of input voltage	85VDC to 290VDC
Input voltage reversal Protection	Provided
Short Circuit Protection	Provided

CXR Networks

Power Consumption	
<10W at ambient (steady state 24°C)	
Power Supply Options	
AC Power (100 to 240 VAC, 50/60Hz)	
DC Power 12VDC; 110VDC; 220VDC	
Environmental (Equipment)	
Operational	0 to +50°C (Typical +25°C)
Cold Start	0°C
Storage	-20 to +70°C
Humidity	95% non-condensing
Cooling	Convention Cooled. No cooling fans are required.
Mechanical Specifications	
Height	34 mm
Width	154 mm
Depth	134 mm
Weight	220g
Command Language	
English text commands	
Graphical User Interface (GUI) - English	
MTBF and Equipment MTBF	
Never becomes a point failure	
Per MIL-HDBK-217F: ≥ 17 years @ 24°C	
Per Telcordia SSR 332, Issue 1: ≥ 26 years @24°C	
Compliance	
EMC FCC Part 15 Class 2	
Operation ETS 300 019 Class 3.2	
Storage ETS 300 019 Class 1.2	
Transportation ETS 300 019 Class	

Ordering Information

Core Unit without PSUs	
VCL-SafeComm-FE-DIN	Automatic Ethernet Failover Switch - Provides 1+1 Automatic Ethernet Failover Protection between two (Main and Standby) Ethernet Switches, Gateways, Terminals, Servers, Routers, RTUs, etc - DIN Rail version Supports: - 3 x Ethernet [100Mbps RJ45 (F)] [1 for Network A, 1 for Network B, 1 for User] - Management: Telnet (RJ45 (F) Port), Serial Port (USB), EMS, Graphical User Interface (GUI) - Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual

CXR
T +33 (0) 237 62 87 90
www.cxr.com

17 Rue de l'Ornette 28410 Abondant France
contact@cxr.com