This bulletin describes two redundant network configurations, which have been successfully tested with ProduceIT Batch version 1.2/6, Process Portal B, and the corresponding Harmony and OPC add-ons. The testing was performed with specific sets of network cards, drivers, and switches, and was focused on single failures rather than on catastrophic multiple failures.

Only the two configurations described herein have been successfully tested. There can be no deviations from these configurations, other than the number of computers in the network. A number of alternate configurations, with different hardware and software, had been previously tested and failed the testing in various and often-subtle ways.

1.1 Hirschmann + Intel Test Configuration

The following network hardware and software configuration was tested successfully:

- Hirschmann Rail Switches (RS2-TX/TX)
- Intel PRO/100 S Server Adapters (Two per machine)
- Intel PROSet Software (version 6.4.0.0), set to switch fault tolerant mode

24 PCs and 10 Hirschmann Rail Switches were setup as shown in the picture below. The Hirschmann switches were organized in pairs, with one switch for Preferred Primary NIC connections and the other for Preferred Secondary connections. Each PC was connected to a pair of switches; the Intel PROSet software, on each PC, was used to designate Preferred Primary and Secondary NICs. The communication between the switches and the PC's was configured for 100 MB and full duplex (set on the PC and the switch). The Hirschmann switches were connected via their proprietary optical backbone.
1.2 Hirschmann Setup

Each of the ten Hirschmann switches was configured via its V.24 port and Windows HyperTerminal. The “system parameter” menu was used to change the IP address, subnet mask, and default gateway. The “IP config” parameter was set to <local> and the “system name” was made unique for each switch. “Apply” was selected when done.

In the “Configuration” menu, “load after reset” and “save” were set to “local config file”, and “Apply load after reset” plus “Apply save” were selected.

The Hirschmann switches were connected with multimode optical cable with SC connectors, and the connectors had to be disassembled to create crossover cabling. Each switch had its “RM” and “standby” switches in the off position, except for one switch which had RM enabled.
2.1 Cisco+Intel Test Configuration

The following network hardware and software configuration was tested successfully:

- Cisco Catalyst 2950 Switches
- Intel PRO/100 S Server Adapters (Two per machine)
- Intel PROSet Software (version 8.2 on the batch servers, version 8.0 on all other machines), set to Switch Fault Tolerant mode with Link State failover triggering

10 PCs and 2 Cisco Catalyst 2950 switches were setup as in the picture below. Each PC was connected to both Cisco switches; all primary NICs were connected to switch A and all secondary NICs were connected to switch B. The two Cisco switches were interconnected via a 100 Mbps full duplex trunk line. The communication between the switches and the PC's was configured for 100 MB and full duplex. This was done by leaving the PC ends of each connection set to auto negotiate. The Cisco end of each connection was set to auto negotiate speed, but the duplex setting was explicitly set to full. All connections were observed to operate at 100 Mbps, full duplex. The Intel Preset software, on each PC, was configured to have the Preferred Primary NIC connected to Switch A and the Preferred Secondary connected to Switch B. The latest version of the PROSet software, version 8.2, was loaded on the batch server machines. All others ran version 8.0. In all cases, the setup was confirmed to use Link State to trigger failover between the NICs.

2.2 Cisco Setup

Each Cisco switch was configured with an IP address and the switches were clustered. All examination of the switches was done using Cisco's Cluster Management Software (CMS). The switches were interconnected using a crossover cable connected to port 24 on each switch. This connection automatically came up as a switch-to-switch trunk with no configuration required. Both switches were also connected to the existing 2900XL switches in the lab, used for other Process Portal B nodes, as shown below.

The 10 ports used for PC connections on each switch were set to auto negotiate speed, full duplex, via CMS. Per the requirements of the PROSet Switch Fault Tolerance mode, both switches had Spanning Tree enabled.