FaXCORE

FaxCore High Availability & Fault Tolerant White Paper

Designing and implementing a Fault Tolerant Fax Server

Faxes are as important today as anytime in the past. Documents that are faxed typically initiate and confirm business and legal transactions. If your fax server is out of commission, your business suffers. Taking steps to maximize the uptime of a fax server is just smart business. Designing a Fault Tolerant or Fault Resilient fax server is the topic of this paper.

While both offer layers of security, there is a difference between integrating fault tolerance versus fault resilience into any technology platform.

Fault tolerance – a design methodology aimed at surviving component failures – is becoming a necessity for a growing number of companies as they place increasing reliance on computer systems for the very survival of their business. Computer applications become ever more complex, yet they are often built from unreliable components; hardware or software.

Distinguishing fault tolerance from fault resilience can be tricky. Fault tolerance is the stronger term, indicating that every component in the chain supporting the system has redundant features or is duplicated. In the event a component fails, another is available to keep the system operational.

Fault tolerant systems should also provide recovery from multiple failures. Components are often over engineered or purposely underutilized to ensure that while performance may be affected during an outage, the system will perform within predictable and acceptable parameters.

Alternatively, fault resilience usually indicates that at least one of the services or modules within an application, such as a fax board, is backed up with a secondary fax board within the same server, or a separate server. However, not all modules within the application are necessarily redundant. For instance, the fax server may have multiple fax boards but only one Rendering engine for document conversion. Performance of the system during a failure of a single module is therefore undefined. One fault resilient component does not make the system fault tolerant.

Fault tolerance, fault resilience and disaster recovery are intimately interrelated. An understanding how they work together is required in order to design a fault-tolerant fax server. Simply put, the goal is to keep the fax server running no matter what the conditions (or lack thereof), to maximize the number of failures the system can cope with, and to minimize any potential weaknesses.

Leveraging the N-tier architecture of FaxCore, the browser based "Presentation Layer" achieves fault tolerance by using a Content Switch (F5, Cisco, CoyotePoint, etc). The Content Switch provides both Fault Tolerance (in the event that one FaxCore server is offline) and load balancing between the IIS servers by implementing a Round Robin methodology.

Fault tolerance for the Telco resources can be achieved by implementing multiple FaxAgent Services which connect to Telco resources such as etherFAX, which offers 'Brooktrout boards in the cloud'. FaxCore can also leverage on-premise Dialogic/Brooktrout fax components. The FaxCore Fax Agents register with the central database and service outbound fax requests as well as receiving faxes. The FaxCore Fax Agents provide both load balancing and fault tolerance for Telco resources.

FaxCore can utilize a local SQL database or it can run as an instance against a customer provided SQL cluster/Always On and utilize the customer's SQL environment. By utilizing the customer's SQL environment, fault tolerance is achieved for Data Access. The ability to schedule maintenance and apply updates is an additional benefit of a fault tolerant system design. By implementing redundant servers that automatically load balance and failover, administrators can take systems off-line to perform maintenance yet the fax server system will continue to function.

Another aspect of a fax server that is worth making fault tolerant is the fax image repository. Creating a cluster resource and defining the FaxCore Document Server provides uninterrupted access to sent and received faxes as well as a consistently available repository for storing incoming fax transmissions. A Fault Resilient system can be achieved by using a SAN or a NAS.

FaxCore High Availability Architecture