Patapsco Communications

Application Note 010

Removing vulnerability for Frame Relay Network providers

Frame Relay networks are by inherently resilient. Many enterprises have installed their own network using this technology, and more are using Frame Relay services from Carriers and Service Providers on a national and international basis.

But, for many customers, the connection to the nearest Point of Presence (PoP) represents a dangerous point of vulnerability.

Patapsco has a range of products designed to overcome this weakness, and to keep customers' applications working.

The benefits of using Frame Relay (FR) to corporate users are:

- Lower cost alternative to leased lines
- Routing many virtual circuits within a single link
- Built in resilience and alternate routing (within the FR cloud)
- Transparent to all HDLC data
- "Predictable" performance
- Does not require a lot of direct management
- Can include a managed Router (although many network managers are reluctant to accept Routers connected to their network which they cannot fully control.)

Competition for the lucrative multinational network market is intense. Differentiation between competitors is often limited to price and coverage.

In this extremely competitive environment, incumbent and alternative Carriers are keen to provide extremely resilient networks. In many cases, the tail circuits (shown in orange in the diagram below) have to be provided by the incumbent carrier who may be a competitor to the FR provider, raising support issues.

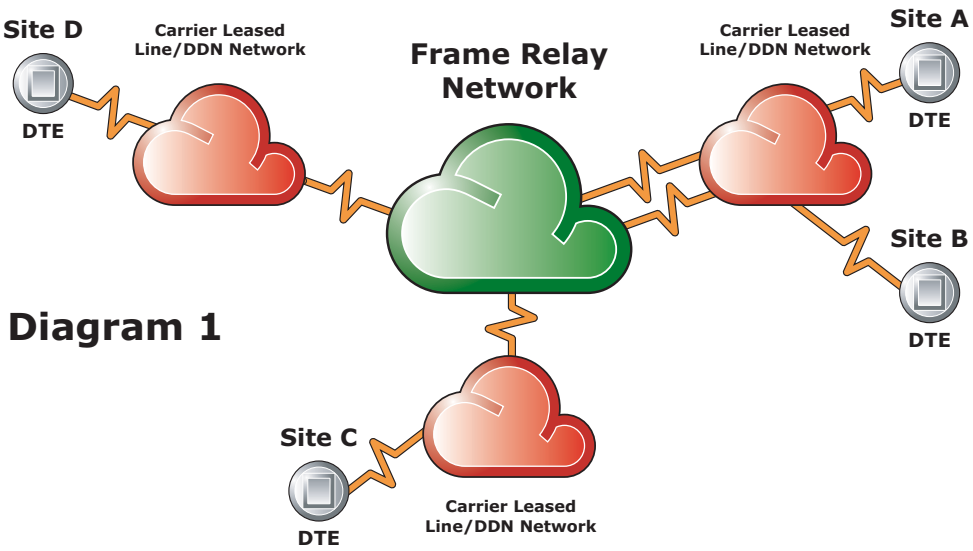

Diagram 1

Products supporting this application:

- Databand Mini Backup
- Databand LLB
- Databand LL30
- Databand LLN
- DB120
  - SGN Cards
  - SGNDS Cards
  - DPRI Cards
  - QBRI Cards
- DBManager

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Alternate routing for these tail circuits is often impossible or extremely expensive, particularly when considering that it is only needed when there is a tail circuit failure.

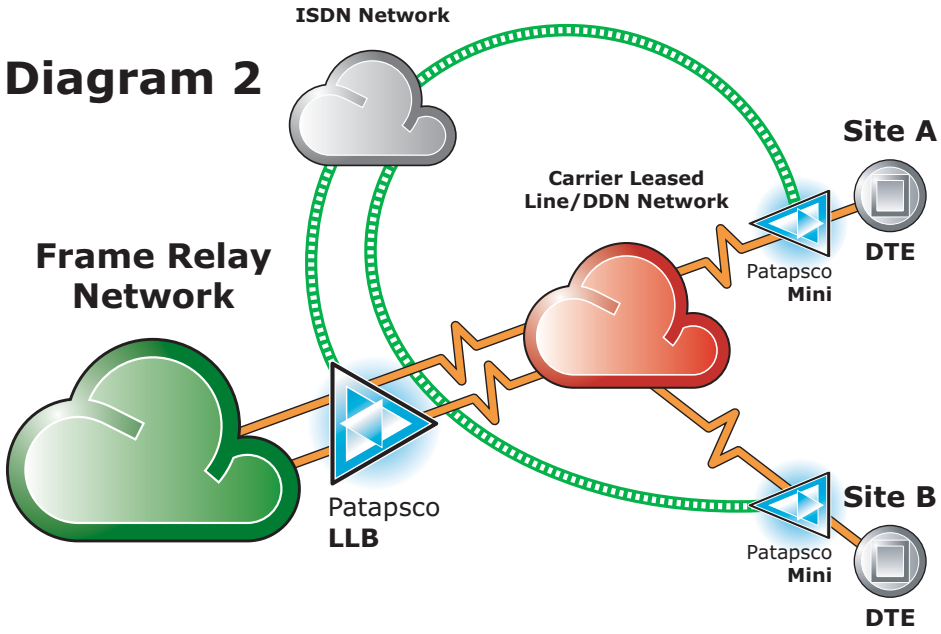
Many FR network providers would like to offer resilience for these tail circuits as part of their global or national services offering.

Because FR networks offer many-to-many virtual circuit connections, using traditional point to point backup methods may not work as traffic from Site A may go to Sites B, C, and D.

How Patapsco overcomes this weakness – Stage 1

Diagram 2 shows a segment of the network from Diagram 1 for Sites A and B. Databand Mini units are installed at Sites A and B with a Databand LLB unit connected to the Frame Relay network. Sites A and B can then be quickly backed up via ISDN in the event of a leased line failure, or if the circuit is taking excessive errors.

The Databand LLB can connect to two leased lines. This solution is ideal for such a small requirement and provides a very cost effective answer. Frame Relay network providers like this solution because the Databand units can be remotely upgraded if extra bandwidth is required, they can be managed remotely, and as is always the case with Patapsco products, the backups are the fastest in the world.



How Patapsco overcomes this weakness – Stage 2

Diagram 3 shows the same segment of the network as Diagram 2, but the Frame Relay Network connection is a G704 channelised circuit, with data from Sites A & B presented in separate timeslots in the G704 link. The Databand LLB is replaced with a Databand LLN which can back up any combination of timeslots in the G704 circuit, meaning that backups can be established to Sites A & B independently, or simultaneously.

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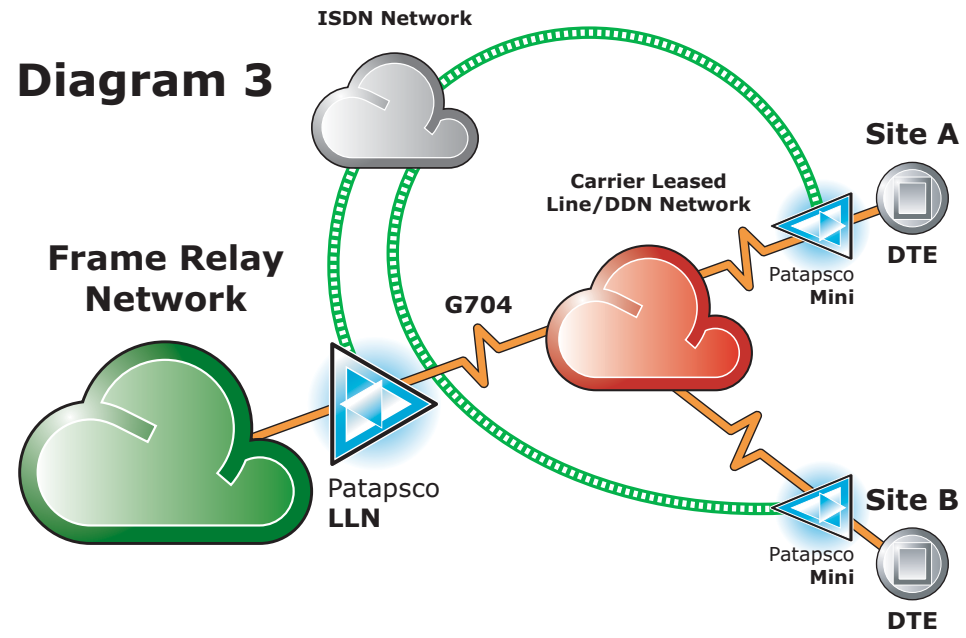
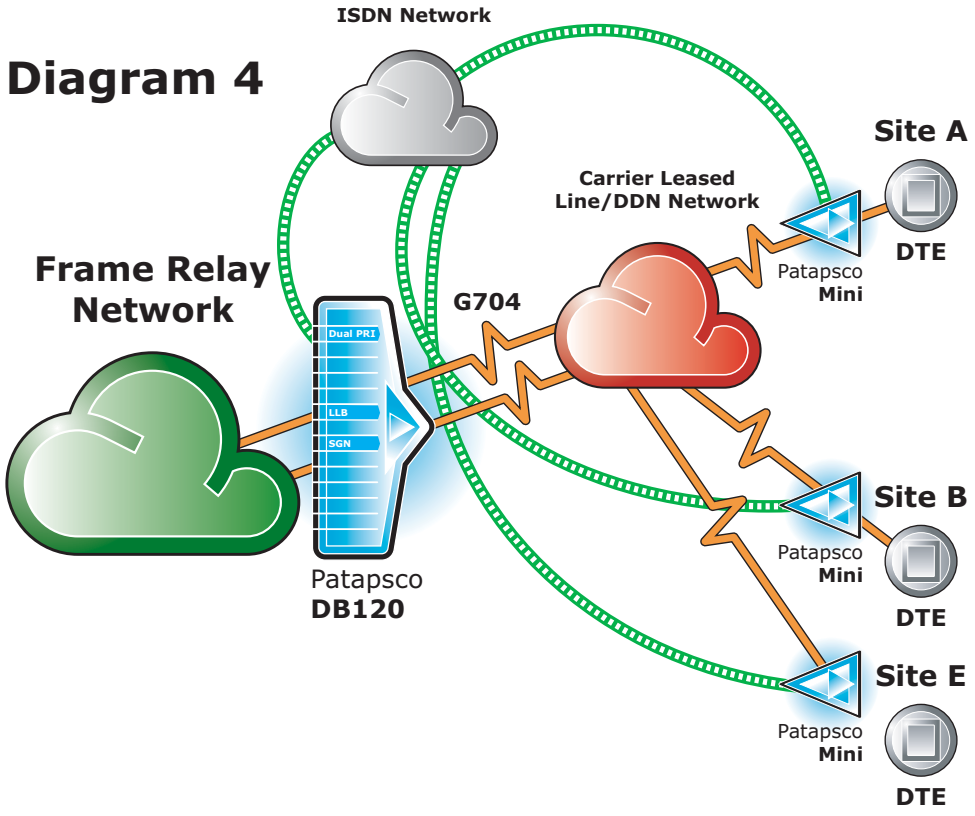


How Patapsco overcomes this weakness – Stage 3

Diagram 4 shows the same segment of the network following the addition of extra sites, such as E. Patapsco solutions can easily handle such network growth. The Databand LLN is replaced with a Databand DB120 chassis which can provide backup solutions for larger networks, including multiple G704, V.35 and X.21 circuits.



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The Patapsco Solution – what are the benefits?

1. To the Carrier or Service Provider:

- Global Service Level Agreements can be delivered with confidence.
- Applications are kept running often without user sessions being interrupted.
- No change is required to customer equipment.
- It allows for provision of lower-cost reduced speed backup (See Application Note AN-013 for further details).
- Full statistics are generated on network failures and recoveries – as seen at the customer premise, giving objective data for the measurement of SLA's.
- It is inexpensive to provide.
- It is very easy to install, the Databand units can be pre-configured with the final setup being carried out remotely from the NMC.
- It makes the best use of ISDN resources, since most PoP sites will operate with contention.
- It is easily re-programmed to allow for changes in "n" in the n*64 channel configurations.
- It is a fully managed automatic service, and Carrier NMC staff can concentrate on directing field staff to repair the fault, as the customer still has service.
- It provides full end-to-end diagnostic tools without the need for additional test equipment, giving the NMC staff visibility of the performance being experienced by the customer.
- It can be set to operate on a combination of very flexible leased line failure and recovery criteria, including error rates.
- Plus all the benefits shown in Application Notes AN-008 & AN-009.

2. To the customer:

- It provides a higher availability, Managed Service, Wide Area Network from a single supplier.
- A single SLA can be negotiated on a global basis.
- The service provider will usually deal with local carriers.
- Does not require specialist network management staff locally.
- It is independent of router manufacturer or type and does not require any router configuration.
- There is a clear, simple interface between the customer's and the Carriers network.
- End Users are usually unaware of problems, meaning that they can focus on their normal work.
- It is a flexible solution which can easily be expanded to provide extra capacity.
- Plus all the benefits shown in Application Notes AN-008 & AN-009.

Summary

Frame relay network providers operate on a national or international basis. They focus on dealing with the largest enterprises, which focus on Business Continuity and demand inherently resilient networks.

Patapsco has a unique range of products designed to provide the Frame Relay Network Operator with the best solution to improve network resilience.

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