Is your supply chain disruption proof?
A guide to building resilient supply chains

Keeping the supply chain moving

Understanding the impact of disruptions to your business

As supply chain networks increase in complexity – due to outsourcing, globalisation and volatility in the trading environment – so too has the risk of disruption. Natural disasters, geopolitical turmoil, cyber security threats, and pandemics threaten the ability of logistics providers, suppliers and customers to maintain a state of business continuity. In today’s tightly integrated and lean supply chain, your customer knows about problems the same time as you do.

Across the world, companies are outsourcing functions – from manufacturing to customer service – to subsidiaries or business partners in geographically remote locations based on financial considerations. The economic downturn of the last few years has accelerated this trend, with corporations becoming global, and increasingly dependant on information technology to cut costs and improve the bottom line. These trends have dispersed activities across the entire value chain – from sourcing and manufacturing to distributing products and providing customer service – across multiple organisations around the world.

Figure 1: Supply chains are becoming increasingly fragile
This evolution towards an increasingly complex global network organisation is having a major impact on the way companies assess supply chain vulnerabilities and develop contingency plans. Logistics service providers around the world have taken advantage of the wave of outsourcing to grow into region-and globe-spanning organisations to better serve their customers. Yet, the growth comes at a price. Customers are transferring the burden of maintaining business continuity to logistics providers, who are now expected to ensure that the supply chain continues moving smoothly, at competitive prices.

**Lean supply chains leave little room for disruptions**

As such, logistics providers and their customers have worked hard to streamline supply chains by identifying and reducing waste and buffers in their various forms. Yet, there is a downside to this strategy. Lean supply chains are becoming increasingly fragile, are extremely dependant on “exposed” communication networks, and are less able to deal with shocks and disruptions that can have significant, if not catastrophic, impact on the firm.

Additionally, whilst many risks to the supply chain come from external sources, e.g. war, epidemics, natural disasters, and online threats, there is also growing evidence that the structure of the supply chain is itself the source of significant risk. For example, the sudden closure of a major supplier in a tight and lean supply network may prevent downstream businesses from achieving business goals, and may have severe impact on whole industries.

To highlight the possible impact of disruptions to the supply chain, consider the following examples:

- **A US$400 million lightning bolt in Mexico (March 2000)**\(^1\) – “Creating Resilient Supply Chains – A Practical Guide”, Cranfield University, Aug 2003 – A lightning bolt sets fire to a Philips semiconductor manufacturing plant in Mexico which supplies Ericsson with vital components for its handphones, setting the company back by an estimated US$400 million in lost sales.


- **Katrina strangles global supply chain (September 2005)**\(^3\) – “Katrina Applies Supply Chain Stranglehold”, Ziff Davis Internet, September 2005 – Hurricane Katrina hit the Gulf Coast of the US, affecting global oil supplies and spurring global business snares over food-related product availability and warehouse storage. Many logistic providers’ ability to meet schedules was completely thrown out for up to three weeks after the event.

These events share certain important traits. First, single events created large-scale supply-side disruptions that were felt across the world. These disruptions affected the ability of many logistic firms to meet previously made commitments. Second, these are events that are very difficult, if not impossible to predict. Yet, once these events occurred, their effects were massive. Finally, these events had such a large impact because they hit supply chains that were not resilient – in part because vital communication components were not available to deal with the immediate fallout of the event.

**Embedding resiliency into the supply chain**

The goal for logistic providers and related companies, with no business tolerance for downtime, is to achieve a state of business continuity, where critical systems and communication networks are continuously available, no matter what happens. This means thinking proactively: engineering availability, security and reliability into business processes from the outset in order to accommodate ongoing business continuity requirements.

---

1 “Creating Resilient Supply Chains – A Practical Guide”, Cranfield University, Aug 2003
3 “Katrina Applies Supply Chain Stranglehold”, Ziff Davis Internet, September 2005
To minimise such disruptions and their effects, a logistics provider must first understand its exposure to the risk of supply disruption. As described in Figure 2, risk exposure is a function of two factors: the probability and impact of a disruptive event. The challenge is to manage supply risk due to “low probability-high impact” events, not to eliminate it. It is often difficult and expensive to entirely eliminate the chance of the event occurring. So it is critical to have the infrastructure in place to quickly remediate its impact on organisational performance and possible supply disruption effects.

That’s where the right communication solutions can play a vital role. Putting in the right communication solutions to support all of the key components of an integrated logistics provider can help embed resiliency across the supply chain.

*The next article provides a simple framework detailing the crucial steps – especially in terms of communications infrastructure – that a logistics service provider can take to make it more resilient to disruptions.*
Building a resilient supply chain

A practical framework

No sure way exists of overcoming all “low probability – high impact” risks such as an outbreak of SARS or a major terrorist attack. However, some organisations are far more able to cope with these prospects than others. There’s really no secret formula or process for dealing with risk, but they do share a critical trait: communications resilience.

The importance of communications resilience in the supply chain

For a typical logistics provider, the main operational components of the business can be grouped into the following categories: inventory management, procurement and sourcing, transportation management, physical distribution and customer service.

For each aspect, communications plays a crucial role in ensuring the successful contribution to the whole of the logistics operations. In inventory management, demand planners and sales persons share and process information in order to forecast, plan and deploy inventory across the supply chain. For strategic sourcing to work, e-procurement portals have become the norm, enabling buyers and sellers to come together to transact. Transportation management requires up-to-date tracking information to be communicated between site operations and the workers in the field. And superior customer service demands up-to-date order status tracking, and call management interfaces to deal with customer requests.

To address the competitive demands of the supply chain industry, many logistics enterprises are considering or have already implemented enabling applications such as Enterprise Resource Planning (ERP), Warehouse Management Systems (WMS) and Transport Management Systems (TMS). As a result of the information and data deluge, the demands on communication networks skyrocket and place even higher premiums on the ability of networks to withstand disruptions. Hence, a workable supply chain continuity planning process should always take into account vital communication aspects that are necessary for effective risk mitigation.

A practical communications framework for supply chain continuity planning

An effective disruption-resistant communications framework should consist of the following pillars: building a resilient core network; ensuring redundancy for vital communications; and providing the right communication tools.
Pillar 1: Building a disruption-tolerant, resilient core network

As supply and communication chains continue to grow in length and complexity, and business applications become more widely adopted, it becomes essential for organisations to put the right network foundation into place. The core network should be designed according to the “SIRS” guidelines, as follows:

• **Scalable** to accommodate possible growth in the number of users, types of IP-based applications, and data volumes piped on the network.

• **Integrate** - Provide the logistics provider with the ability to integrate new IP-based applications easily and quickly onto the network.

• **Resistant** against link failures in the network chain. This is best achieved by replacing old “hub-and-spoke” network topologies with “any-to-any” connectivity, so that there is no single point of failure. The network should also be intelligent enough to route traffic around failures, in order to ensure minimal disruption to operations.

• **Secure** against cyber-threats, given the confidential and mission-critical nature of the communications, and the interconnection of networks with partners and customers

Organisations that are looking to satisfy the above requirements should give serious consideration to the Internet Protocol Virtual Private Network (IP-VPN), which is fast becoming the de-facto standard for resilient communication networks.

Pillar 2: Ensuring disaster recovery capabilities for business continuity

With prompt and continuous customer service becoming the competitive differentiator for the logistics industry, organisations are putting up crisis management and disaster recovery centres in the event of a disruption, so that vital customer and inter-departmental communications can continue. As the diagram above shows, primary customer support and data centres need to be complemented with redundant data and voice communication links to secondary customer support and data centre sites. If a disruption hits the Corporate HQ, where the primary customer support and data centres are located, alternative sites should be available for immediate activation to keep the supply chain moving.

![Figure 4: Building in disaster recovery capabilities in the logistics network](Source: SingTel)
If the same disruption hits the primary data centre which hosts the logistics provider’s web-based portals – providing customer tracking and transactions, for example – then the burden lies on the provider to manage the “fail-over” to a backup site, which can consume significant IT resources. Alternatively, organisations can also outsource their hosting requirements to a service provider which specialises in providing secure, managed hosting services. Outsourcing to a full-service managed hosting provider may be the most cost-effective solution for organisations that want to focus on their core business, without sacrificing the know-how and technology necessary to support their resiliency needs.

Pillar 3: Planning the communications response in the event of disruptions

To complement the first two pillars which focus on the core communications network, logistics providers will also need to put in the “final mile” communications plan that keeps employees, partners and customers connected in the event of a disruption to the supply chain.

The communications plan should have the following components in place:

- **Access** – Employees and partners should be provided with the communication tools to access necessary information, such as mobile phones, laptops and personal digital devices with access to mobile or wireless networks;

- **Distribution** – The logistics provider should have the ability to send out mass notifications and updates to key stakeholders on a timely basis. Mass SMS or voicemail-blasting applications offer a robust, quick and cost-effective method to disseminate critical information when other means of communications may not be possible;

- **Connectivity** – The communications plan will need to be supported by a variety of resilient connectivity services, ranging from SMS, Voice over IP (VoIP) and Fax over IP; to mobile solutions such as GPRS, push-email and roaming capabilities. These options should be made available to key employees that need to communicate with customers or access vital network resources, in order to keep the operations going.

The rewards for building a resilient communications framework for a supply chain enterprise are substantial. The “hardened” logistics provider will be able to not only withstand high-impact disruptions but also increase its competitiveness. Unforeseen disruptions can create shortages which can provide the resilient provider with the opportunity to charge ahead of their competitors.

*Read more about how SingTel can help your organisation maintain supply chain continuity with an extensive range of seamless communication services.*