Enterprise Networking Trends in the Pacific Rim

by Ken Zita

Columbia Institute for Tele-Information
Graduate School of Business
809 Uris Hall
New York, NY 10027
(212)854-4222

"Enterprise Networking Trends in the Pacific Rim"

Demand for corporate networks in Asia is soaring.

As multinational firms continue to invest heavily in commercial and manufacturing operations in the Far East, the need for supporting enterprise management information infrastructures has grown acute. Telecoms is redefining the concept of market proximity and business strategy in Asia: the gap between regional business centers, international sourcing and export destinations, and corporate headquarters shrinks with the installation of each new digital exchange and fiber optic line.

Several trends are encouraging users to extend international enterprise networks to the Asia/Pacific region. The most notable is an astronomical growth in digital bandwidth. Eleven major fiber optic cables are under construction within and across the Pacific. Between 1989 and 1994, fiber transport capacity will expand at a compound rate of nearly 50% per year, from 7,560 circuits to over 85,000. Similarly, satellite carriers such as Intelsat, AsiaSat, and PanAmSat are expanding facilities to meet traffic growth that in some corridors is approaching 60% per year.

Increased capacity lowers transport costs, and users have begun to achieve predictable annual rate reductions -- on some routes approaching 20% per year. Competitive supply-side pressures across the Pacific are not nearly as great as they are across the Atlantic, but the situation is changing fast, and tremendous economies will emerge over the next 18 months.

Falling bandwidth charges remove the most critical barrier to implementing comprehensive enterprise networking solutions: the high cost of private circuits. Trans-pacific leased circuits have been prohibitively expensive for all but the largest firms. Today, a T1 full circuit operating over fiber between Tokyo and New York has fallen to as low as $85,000-$90,000 per month, depending on the carrier and gateway. See Figure 1:

Japan t1 projection here

After Japan liberalized its market in 1985, two new carriers – International Digital Communications (IDC) and International Telecom Japan (ITJ) -- were formed to compete with Kokusai Denshin Denwa (KDD), the former state monopoly for international services. Since 1989, when the new carriers began operations, they have won 18% share of Japan-U.S. services traffic, and have forced KDD to make five major rate reductions over the same period.

This pattern will be repeated in other markets. In Korea, effective this month, the Korean Ministry of Communications is allowing Dacom, the dominant domestic data carrier, to offer international switched and leased services. Dacom is initially opening links to the U.S., Japan and Hong Kong, though 11 other countries will be introduced throughout 1992. Dacom will likely undercut Korea Telecom's (KT) rates, which have been static since mid 1990; as a regulated carrier, KT's tactical response will be slow, but we expect international tariff reductions before the end of next year.

In Australia, Aussat, the state-owned satellite carrier, is being sold off in a closed auction. Two consortia are in the running: Optus, led by BellSouth and Cable and Wireless; and Kalori, a group that lost its backing from France Telecom and an alliance between Ameritech/Bell Atlantic (the same team which purchased New Zealand Telecom earlier this year), and is now supported by AT&T and GTE. The new carrier will challenge OTC/Telecom Australia's heretofore monopoly position and unquestionably drive rates down.

Other key markets in the region -- notably Hong Kong, Singapore and Taiwan -- are more resistant to competitive change. Hong Kong's international telecommunications are governed by an exclusive franchise owned by Cable and Wireless, which expires in 2006. The Hong Kong government, however, may propose a loose interpretation of the parameters of the contract, conceivably even allowing international resale of circuits under certain restrictions.

Singapore and Taiwan are both planning market privatizations of their state-owned operators. But, market placements by the two carriers, Singapore Telecom and the Directorate General of Telecommunications (DGT), respectively, will come without significant competition; each government will continue to exercise maximum control over "basic services." As a result, neither Singapore nor Taiwan are expected to introduce competition for international lines any time soon. To remain price competitive in the region, however -- particularly in the intensifying pursuit of multinational user network hubs -- the national carriers will need to meet the ante of neighboring states.

Corporate networking alternatives in Asia are also being brightened by steady improvements in local public network infrastructures. In all major Asian markets, international gateways and domestic transit switching exchanges are being upgraded to digital technology. Hong Kong's domestic network is 80% digital while Singapore's is 57%; both have already deployed metropolitan fiber rings linking trunk exchanges, and both expect fully digital backbone networks by 1994. Each country is also significantly boosting capacity of DACS overlay systems, streamlining network management of local leased lines. International VPN service from the U.S. is available in Australia, Hong Kong, Japan and Singapore, though exact feature roll-out and feature interoperability issues with the major U.S. carriers varies considerably. ISDN enjoys considerable credibility (though still low penetration) in Asia, partly because national operators are keen to preserve the ongoing preeminence of public network solutions. In Singapore, ISDN has become something of a national mission, similar to the environment in France. ISDN is well suited for facsimile, the preferred medium for ideograph-based languages, and for communicating over wide time zones. We estimate that nearly 60% of trans-Pacific traffic is fax.

In Asia's developing countries, overlay networks are springing up which establish separate facilities immune to congestion and common outages so common to public networks. In China, for instance, the Ministry of Posts and Telecommunications, AT&T and KDD are teaming to offer Dragon Link, a group of special gateway and local bypass circuits for foreign companies in Beijing and Shanghai. Similar plans are in the works in Indonesia, Malaysia and Vietnam.

Regional Hubbing

Hubbing is the central issue in pan-Asian networks planning and management today. Historically, only the largest U.S. firms have hub networks in Asia. Yet with regional and trans-Pacific traffic flows exploding, and network economies shifting increasingly in users' favor, the scope and scale of user network topologies is growing more sophisticated, and more in line with multinational firm's global information systems network architectures.

Selection criteria for choosing hub sites are complicated, and no hard and fast rules apply. Interconnection capabilities and requirements vary widely by country, as do restrictions and opportunities for circumventing state monopolies with value-added network services. Likely hub sites may be regional management offices or especially large manufacturing facilities, where many computers are installed, but the network hub technology can reside at an entirely independent location. Making comparisons among different countries' service offerings can be complex. Economics, location and technical support are all key variables. Firms must evaluate which country and competitive carrier offers the best terms, and place a value on a variety of intangible factors -- not least of which is cultural comfort and peace of mind.

For carriers, securing prestigious multinational client hub accounts has become the latest search for the Holy Grail. Carriers' eagerness to attract and please users is partly about money -- the hub site concentrates numerous circuit rentals to a single operator -- though winning hubs is every bit as much about macroeconomic national rivalries. The governments of major hubbing destinations in Asia -- Australia, Hong Kong, Japan and Singapore -- expect that telecommunications will consolidate and ~~extend~~ their position as regional economic and political anchors.

Today Hong Kong and Singapore are the preferred hubbing choices, despite heavy traffic in and out of Japan. The high costs of real estate, technical support and general business operations make Japan prohibitively expensive as a regional traffic concentrator for all but the largest firms, even though circuit charges are relatively competitive.

Hong Kong has an impressive technological infrastructure and diverse business culture, but the transfer of sovereignty in 1997 is making some users nervous. Both Reuters and Federal Express have pulled primary hub facilities out of the Colony, but they are the exception rather than the rule. Greg Crew, managing director for Hong Kong Telecom International in Hong Kong, notes that "no user would change hubs out of Hong Kong on account of the telecoms facilities."

Singapore, long in pursuit of becoming a sanitized business haven, portrays itself as invincibly stable, hoping to capitalize on political apprehensions stewing in Hong Kong. Its trouble, however, is overcoming a reputation for inflexibility and an unwillingness to accommodate transnational users. Like Hong Kong, Singapore also has impressive facilities, including the most advanced EDI network in Asia, but end-user support and personalized customer management is ~~wanting. Some complain that~~, in Singapore, there is no soul in the machine.

The newest competitor on the scene is Australia. Extensive fiber facilities into Australia will not be available until 1994, but good satellite coverage is in place today. The lingering question is how Australia, some 4,500 miles distant from both Hong Kong and Tokyo, could serve as a hub. In the reality of information networks, physical distances are becoming virtual distances -- and in terms of passing computer bits, arguably irrelevant. The Australian government, as if to underscore the point, is providing tax incentives and financial breaks for overseas investment that can sweeten the non-technical, non-tariff elements of a hub deal.

With regional infrastructures becoming rapidly digital, and regulatory reform stimulating competition, national hub offerings will be on increasingly equivalent technical and economic footing. By the mid-1990s, basic public networking facilities in Asia's largest information ports will be comparatively equal. Differentiating factors will lie with international carrier and systems support alliances, networking management and outsourcing capabilities, labor costs, local lifestyle, and significantly, tax incentives for investment.

Unlike Europe, where economic planning and information networking developments are monitored closely by the European Commission, Asia has no common market, few similarities in industrial or political organization, and widely divergent cultural values and expectations. Each country has vastly different rules and procedures regulating private network provisioning and interconnection standards, shaping both the scope and flexibility of end-user network opportunities.

Nevertheless, telecoms users operating Asia today are in an excellent position. Facilities are improving, competition is intensifying, and supply-side competition is heating up. Now is a good time for users to deploy regional enterprise networks -- and to bargain hard with service suppliers.

/end